PUBLIC SECTOR PERFORMANCE PROGRAMME 2022-2025

An International Benchmarking Study
Sub-Study 2022

The European Institute of Public Administration (EIPA) in cooperation with the Ministry of the Interior and Kingdom Relations of the Netherlands

EIPA European Institute of Public Administration

Ministerie van Binnenlandse Zaken en Koninkrijksrelaties

ISBN: 978-90-6779-224-0

European Institute of Public Administration
O.L. Vrouweplein 22 | P.O. Box 1229
6201 BE Maastricht | The Netherlands

+31 43 32 96 222
info@eipa.eu
www.eipa.eu

European Institute of Public Administration
Institut européen d'administration publique

The European Commission supports EIPA through the European Union budget

TABLE OF CONTENTS

1. INTRODUCTION

1.1. FOREWORD

The European Institute of Public Administration (EIPA) in cooperation with the Ministry of the Interior and Kingdom Relations of the Netherlands ('the Ministry') is conducting a benchmarking study 2022–2025, having as an objective an in-depth analysis of public sector performance in 35 countries. It is the fourth edition of the study with previous reports published in 2004, 2012 and 2015. The current edition updates key indicators and extends the previous editions by including additional indicators and policy areas. In the course of 2022 to 2024, the programme analyses public sector performance in ten policy areas; in 2025, the respective sub-studies will be updated and revised to include the latest data and recent developments. This report presents results of the first 2022 sub-study of the Public Sector Performance Programme covering the following four domains:

- public administration
- social safety
- education
- housing

The 2023 sub-study will focus on these policy areas:
- economy, infrastructure and science, technology and innovation
- social security, employment, income and wealth
- environmental protection and climate change

The 2024 sub-study will be concerned with:
- health
- sports, culture and participation
- (a 10th policy area still to be decided)

Finally, in 2025 the sub-studies published between 2022 and 2024 will be updated with the latest figures, information and further analysis of all policy areas and public services concerned.

The Public Sector Performance Programme is conducted thanks to the generous grant of the Ministry, which enables the extension in terms of scope and depth of analysis of public sector performance in respective policy areas. From the Ministry side the programme is led by Frans van Dongen (Programme Manager Public Performance) and Zoë Rouwhorst (Advisor at ICTU). The EIPA team is very grateful to them for their support throughout the project and is particularly happy about the fruitful cooperation with the Ministry. The EIPA team consists of Dr. Iwona Karwot (Project Leader and Senior Lecturer), Christoph Klika (Senior Lecturer), Miranda Lovell-Prescod (Researcher and EIPA Data expert) and Paolo Giovanetti (Research Assistant), who were also responsible for the delivery of the public administration chapter.

The EIPA team wishes to express its gratitude to external experts involved in the preparation of the remaining chapters: for social safety – Dr. Lorenzo Pasculli (University College London, UK); for education – Tommaso Agasisti Prof. Dr. and Marta Cannistrà (Politecnico di Milano, Italy), Dr. Giovanna D'Inverno (KU Leuven, Belgium and University of Pisa, Italy) and Kristof De Witte Prof. Dr. (KU Leuven, Belgium and UNU-Merit, the Netherlands); for housing – Dr. Kees Dol, Pieter Kranenborg and Sander ten Hove (RIGO Research en Advies, Amsterdam, the Netherlands).

The EIPA team would also like to thank Dr. Martijn Eskinasi (Ministry of the Interior and Kingdom Relations), Herman Scholten (Ministry of Education, Culture and Science) and Fons van Gessel (Ministry of Justice and Security) for their support during the preparation of the 2022 sub-study; Valerio Sorbello (former EIPA colleague and member of the team) for substantial work on the study proposal for the Public Sector Performance Programme and Neil Foster-McGregor (Deputy Director and Professor of Innovation and Globalisation at UNU-MERIT) for invaluable support on the methodological approach underpinning the public administration chapter of this study.

The coordination between all partners involved in the preparation process of the 2022 sub-study report began with the kick-off meeting which took place on 21 January 2022. During the meeting the Ministry, the EIPA team and the external experts agreed on the next steps to deliver the sub-study. It was agreed that the plan of each chapter should be completed in April, the first draft between May and June and the final version should be delivered in October. It was also agreed to carry out the final conference in early 2023. Finally, to facilitate coordination, it was decided to hold regular meetings between all partners every two months, and monthly meetings for each policy area between the relevant experts, the Ministry and the EIPA team.

1.2. INTRODUCTION

In response to recent social and economic crises, we are witnessing the acceleration of the trend of increasing state intervention in various social and economic policies. After years of contractionary fiscal policies, de-regulation and privatisation, this 'return of the state' seems to reverse at least some of these trends, thus shifting the balance between the public and the private, the state and the market in the production and delivery of public services. While this balance is subject to specific historical, social and political contingencies in various political systems, the overarching objectives of all democratic systems of governance is the efficient and effective provision of public services for citizens. For it is the citizenry that, in democratic systems, delegates specific tasks to state institutions, which are in turn accountable to these same citizens. Hence, public sector performance is essential for upholding this circle of delegation and accountability, and thereby the quality and legitimacy of government action.

The EIPA Public Sector Performance Programme examines the performance of the public sector in 35 countries (see box below). The EIPA study will update the SCP report and broaden its perspective by including additional indicators. Moreover, all policy areas will be analysed in depth and separately to support better insight into the achievements of every policy domain. It will be the fourth edition of the study since the last report published in 2015, prepared by the Netherlands Institute for Social Research (Sociaal en Cultureel Planbureau – SCP), covering the period from 1995 to 2012.

Countries included in the study with abbreviations

AT	Austria	ES	Spain	NL	The Netherlands
AU	Australia	FI	Finland	NO	Norway
BE	Belgium	FR	France	NZ	New Zealand
BG	Bulgaria	HR	Croatia	PL	Poland
CA	Canada	HU	Hungary	PT	Portugal
CH	Switzerland	IE	Ireland	RO	Romania
CY	Cyprus	IS	Iceland	SE	Sweden
CZ	Czechia	IT	Italy	SI	Slovenia
DE	Germany	LT	Lithuania	SK	Slovakia
DK	Denmark	LU	Luxembourg	UK	United Kingdom
EE	Estonia	LV	Latvia	US	United States of America
EL	Greece	MT	Malta		

In this sub-study, we present the results of the first four policy areas covered by the Public Sector Performance Programme:

- public administration
- social safety
- education
- housing

The main objective of the study is to provide a comprehensive analysis of public sector performance in the respective policy areas by answering the following questions:

- What are similarities and differences in terms of input, output and outcome? Which countries perform best and which are the worst?
- How do inputs, outputs and outcomes change over time?
- How effective are countries in the achievement of objectives? How efficient are countries in the process of service delivery? What is the correlation between inputs and outputs?
- What is the perception of citizens and other relevant stakeholders, regarding service delivery (e.g. satisfaction, trust)?
- How can we explain similarities and differences between countries?

The report is structured as follows. First, we introduce the conceptual framework and research design underpinning the study. This framework will inform the analysis in the four thematic chapters providing a common terminology and conceptualisation of public sector performance. The first thematic chapter covers public sectors from the perspective of public administration, to lay the foundation for a better understanding of service delivery in specific policy areas. The following chapters deal with these areas: social safety, education and housing. In the concluding chapter, the results of the thematic chapters are synthesised.

2. RESEARCH DESIGN AND CONCEPTUAL FRAMEWORK

The research design of the Public Sector Performance Programme was developed in line with the objectives and research questions of the study. The design is based on the following steps (Van Dooren, 2015): defining study objectives, selection of indicators, data collection, analysis and reporting.

The **conceptual framework** is based on the input–output–outcome model commonly applied in benchmarking studies (see Figure 1)[1]. The model distinguishes between output, outcome and impact, and includes the relation between input and output, i.e. throughput and processes and the efficiency of service delivery, as well as causal mechanisms to explain outcomes and the relation between input–outcome related to the cost-effectiveness.

It includes the following concepts:

- **Environment:** social, economic and political context of a public service or policy area;
- **Needs:** the functional requirements of service deliver and the political demands stemming from the environment;
- **Objectives:** the goals set as a result of these demands;
- **Input:** anything that is put into a system, e.g. an organisation that addresses input with a view to produce an output – in the context of benchmarking studies, these are non-monetary and monetary resources dedicated to service delivery;
- **Activity:** actions that are necessary to process input with a view to producing an output;
- **Output:** anything that comes out of a system being the result of input processing – output might be used immediately or be readily available for use by citizens in the future;
- **Effect/outcome:** anything going beyond output, i.e. the societal, economic and political results relevant for a policy area;
- **Trust:** the belief of citizens in the ability of public sector organisations to deliver services and to achieve desirable objectives.

In addition to the concepts included in the model, the study will also take into consideration the concept of **satisfaction**, defined as a subjective indicator which measures the quality of a specific service (Bouckaert & van de Walle, 2003).

The concept of **environment** will be further developed to include the **mechanisms, policy design and institutional arrangements**. These elements are relevant in shaping the policy outputs and outcomes, and contribute to explaining the differences in the countries' performances.

The model entails two **dimensions of analysis**: the span of performance and the depth of performance.

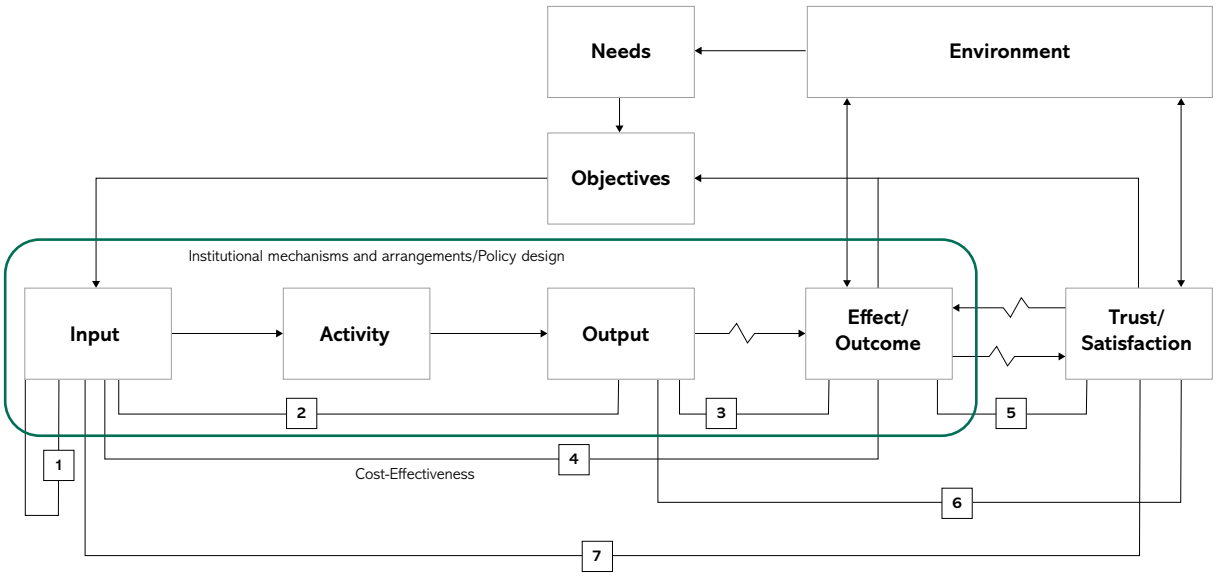
The **span of performance** relates to the causal relationships between concepts. Three relationships can be distinguished: efficiency, effectiveness and cost-effectiveness, and trust and satisfaction. These relationships link the various concepts of the model and range from a minimum to a maximum span (see numbers in Figure 1).

- **Link 1 (economy) and 2 (efficiency)**
  The minimum span of performance relates input with output. It is concerned with the efficiency of service delivery, i.e. the level of productivity in transforming input into output.

- **Link 3 (effectiveness) and 4 (cost-effectiveness)**
  The medium span of performance relates input with outcome, and output with outcome. It is concerned with the effects of service delivery, i.e. the effectiveness in achieving objectives and the comparison between relative costs and outcomes. Hence, analysing the medium span of performance also includes consideration of the environment of service delivery and the setting of objectives based on environmental needs and demands.

- **Link 5, 6 and 7 (satisfaction and trust)**
  The maximum span of performance relates input, output and outcome with satisfaction and trust. It is concerned with the effects of efficient and effective service delivery on satisfaction and trust. Hence, the analysis of the medium span of performance includes consideration of the environment of service delivery and the setting of objectives based on environmental needs and demands. Moreover, satisfaction is not only affected by public performance, but also affects service delivery; there are inverse causal relations.

Figure 1: Conceptual framework



Source: Bouckaert & Halligan 2008:16 (modified)

[1] This section follows the chapter 'What is managing performance?' (see Bouckaert & Halligan 2008: 11-34).

The **depth of performance** relates to the level of analysis.

- The **micro-level** relates to direct **service delivery to the user/customer/citizen**. The perception of citizens as users of services is thus an important element of performance measurement. The level of satisfaction is the result of the interaction between citizens' expectation and the quantity and quality of service delivery. In this respect, trust in the service-delivering organisation is positively related to outcomes and thus has an impact on satisfaction.
- The **meso-level** relates to **service delivery by several organisations in a specific policy area**. This level is concerned with performance of polices and thus satisfaction with, and trust in, the delivery of policies to achieve specific, policy-relevant objectives.
- The **macro level** relates to **public performance of countries**, including several performance indicators from various policy areas. This level is ultimately concerned citizens' trust in the state institutions and the state itself.

The scope covering 35 countries, 10 policy areas and the study objectives were defined in close cooperation with the Ministry. Defining study objectives is essential for benchmarking as it narrows down and specifies which public services will be the subjects for examination. The study objectives relate to the analytical value added by the Public Sector Performance Programme:

- updating the results of the 2015 SCP report;
- broadening the scope by including additional indicators;
- providing more comprehensive analysis.

In line with the elements of the conceptual framework of the study, the main objective is to examine the effectiveness, efficiency, cost-effectiveness, satisfaction and trust of citizens, enterprises and other relevant stakeholders. This regards available products, services, provisions and outcomes in ten policy areas in 35 countries, with a longitudinal perspective.

These specifications facilitate the selection of performance indicators and data collection. The data informing the study is based on primary and secondary data (policy-relevant and academic literature). The primary data consist of datasets that include numerical data measuring performance and other indicators in policy areas and countries within the scope of the study. In general, indicators are essential for measuring performance in line with the conceptual framework underlying the analysis.

There are three characteristics of indicators which are most relevant in terms of measurement: objective and subjective measurement, single and ratio indicators, and composite indicators.

Objective and subjective measurements

Objective measurement refers to a 'precise assessment of a dimension of performance' and involves an 'external process to verify its accuracy' (Andrews et al., 2007). The best example is perhaps the results of school exams. **Subjective measurement** refers to a dimension of performance, but is subject to judgement either by individuals inside (e.g. managers) or outside the organisation (e.g. clients and citizens).

Single and ratio indicators

Single indicators measure characteristics of separate elements of the conceptual framework; **ratio indicators** measure the relationship of elements (Van Dooren, 2015). The distinction between single and ratio indicators corresponds with the grouping of research objects. Single indicators measure performance based on isolated concepts, whereas ratio indicators measure performance of related concepts.

Single Indicators	Ratio Indicators
Environment	Efficiency (input–output)
Input	Effectiveness (output–outcome)
Output	Cost-effectiveness (input–outcome) (environment)
Outcome	Satisfaction and trust (input–output–outcome–trust) (environment)

The use of ratio indicators requires that indicators for two related concepts have to be combined to analyse efficiency, effectiveness, cost-effectiveness and the related effects on satisfaction and trust. This includes input indicators and indicators that measure the environment (or relevant aspects of it) in which the delivery of public services takes place. There are several input factors that are presumably relevant to services across the board, but we assume that for each policy area, specific environmental aspects, and thus input indicators, are relevant for service delivery in the respective areas.

Composite indicators

While indicators measure specific aspects of performance, these aspects can be conceptualised as being multi-dimensional. For instance, the quality of an educational system can be appraised with several dimensions, e.g. the number of graduates or equality in terms of access. Single indicators only provide snapshots of complex realities while composite indicators account for the multidimensionality of objects. By doing so, composite indicators also reduce the number of single indicators needed for assessing performance. At the same time, the construction of composite indicators is methodologically challenging. These pros and cons should be kept in mind.

The study adopts two main **data collection methods**: administrative data from programme or agency records, and 'customer' surveys (Hatry, 1999). The first method is useful for gathering input, output and, to some extent, outcome indicators, while the second one is an important source of information about service quality and outcomes.

The data come from **external data sources** provided by national and international organisations, i.e. Eurostat, OECD, UN statistics, the World Bank and National Statistics Institutes. The data search is also complemented by other methods, e.g. 'snowballing' by reviewing reference lists in the selected relevant literature.

The selection of the data has been performed taking into account the full coverage of the countries considered by the benchmarking study, the indicators used in the previous version of the study, and new relevant indicators for comparing and measuring the performances of public sector in each policy area, as well as the perception of service delivery, user satisfaction and citizens' trust.

The selection has been made also taking into consideration the coverage of the time frame 2007–2020.

In terms of analysis, the most important element of the Public Sector Performance Programme is the comparison of performance against a specific norm or target. For comparative analysis at the systems level (countries), the performance of other countries can be used as a benchmark. The comparison of indicators facilitates learning by confronting specific elements of performance (e.g. output) between comparable countries.

The study aims to examine public sector performance from a comparative and longitudinal perspective. This includes comparison of countries' performance horizontally (cross-country) and over time, usually based on quantitative single or ratio indicators as well as composite indicators. Moreover, the study utilises several univariate and multivariate methods of quantitative analysis; details are provided in the respective chapters and technical annexes.

3. PUBLIC ADMINISTRATION

List of tables

List of figures

List of abbreviations

COFOG	General government expenditure by function
EIPA	European Institute of Public Administration
EQLS	European Quality of Life Survey
EVS	European Value Survey
GDP	Gross domestic product
NACE	Statistical classification of economic activities in the European Community (Nomenclature statistique des activités économiques dans la Communauté européenne)
OECD	Organisation for Economic Co-operation and Development
PA	Public administration
PSE	Public sector efficiency
PSP	Public sector performance
RRF	Recovery and Resilience Facility
SCP	Netherlands Institute for Social Research
UN	United Nations
UNEP	United Nations Environmental Programme
WVS	World Value Survey

EXECUTIVE SUMMARY

In this chapter, public administrations of the 35 countries studied in the EIPA Benchmarking Study will be analysed, applying the conceptual framework informing the study. Since public administration is critical for performance in all policy areas, this chapter aims to lay the foundation for those thematic chapters by providing an overview of the system characteristics of public administrations, the input and activities of administrations and the output of these systems, as well as the social and economic effects of government activities.

The evidence presented in this chapter is based on an extensive dataset which was created specifically for this study, and which is based on numerous sources. Measurements are based on single indicators related to various components of the framework, i.e. input, output/outcome, and satisfaction/trust and happiness as well as relational and composite indicators to measure efficiency, cost-effectiveness and performance.

The methodology underlying this chapter is based on qualitative and quantitative methods. It includes desk research and the study of secondary literature as well as several methods of descriptive and explanatory statistics.

The chapter identifies several trends and patterns, which seem to suggest that the public sector in the 35 countries, by and large, is facing significant challenges and that the recent crises have disrupted service delivery and continue to change public administrations.

In this summary, we present the key results of the study and we provide a first set of reflections on the possible ways forward to improve performance. The results are structured in line with the conceptual framework, and thus mirror the organisation of this chapter.

Input and activity

Public expenditure and employment

- The majority of countries have increased government spending. At the same time, the majority of countries have decreased the share of public employees.
- The development of input factors, both decreasing and increasing, is contingent on external events (e.g. financial crisis, Great Recession).
- In line with demographic and social trends, public sectors are in general characterised by an ageing workforce and by a rising share of female employees. However, there is significant regional variation.

How do countries respond to new challenges?

- In general, many countries respond to new challenges by using performance and accountability tools in public service senior management, and by developing leadership capabilities. However, there is still room for improvement and the twin transition to green and digital public administration will remain a challenge for recruitment, workforce management and career development.
- There is a general trend of digital transformation in all countries, as they are all showing increasing values of e-government indicators.
- Public administrations have taken steps towards decarbonisation by adopting sustainable public procurement practices, however not all countries have done so on a large scale.
- In terms of democracy, the image is mixed. While all countries show an increase in values of e-participation indicators, looking at the societal consultation indicator there is no overall trend of improvement.

Good governance indicators, public sector performance

- In general, there is a decrease in the quality of governance. In five out of six indicators there is a negative trend, i.e. the majority of countries show decreasing scores in the respective indicators.
- Moreover, there is evidence that overall performance is decreasing and there is also a trend of decreasing efficiency with most countries showing declining efficiency indicator scores.

Economic and social outcomes

Economic indicators

- Almost all countries have experienced an increase in GDP per capita in the 2007–2020 period. However, most countries experienced a decrease in 2020 due to the Covid-19 pandemic.
- There is an even divide between countries with a more equal distribution of wealth and less equal distribution. Yet, there is significant correlation between countries' regional location and distribution of wealth.

Correlations between economic and good governance indicators

- Government effectiveness is positively correlated with GDP per capita. However, this correlation warrants further research given the negative trend in perceived quality of public service, which might affect economic growth and thus public sector effectiveness in the long run.
- Corruption is negatively correlated with GDP per capita, i.e. countries with lower levels of corruption have better economic performance.

Satisfaction, trust and happiness

- Almost all countries have experienced an increase in the levels of trust in government in the 2007–2020 period.
- There is a significant regional correlation with high and increasing trust countries located in western and northern Europe and low trust countries mostly located in central and eastern Europe.
- While overall trends can be discerned from the data, several regions – apart from northern Europe – display significant variation among countries' level of trust.
- These numbers indicate two important aspects. First, despite some regional similarities, there are significant variations in the levels of trust in general and over specific periods in which values increase for one country whereas they decrease in another country.
- In line with previous research, there is a strong correlation between perceived corruption and public sector performance with trust. High levels of trust correlate with high levels of performance and low levels of corruption.
- Likewise, satisfaction with public services tends to be higher in northern and western Europe and lower in southern, central and eastern Europe.
- The same can be said for happiness, which has generally increased from 2015 to 2021. Moreover, a correlation that finds ample support in the literature between happiness and government effectiveness, is confirmed.

Explaining performance

How can we explain corruption?

- There is evidence suggesting that introducing anti-corruption policies is negatively related to corruption. However, this correlation appears to be weaker in countries that are characterised by a more politicised civil service (corroborating previous findings in the literature).
- It follows that public sector management should focus on measures to depoliticise the public sector and ensure independence of public administration, e.g. through merit-based recruitment practices and career trajectories. In line with the literature, this study finds that such measures are conducive to reducing the amount of corrupt practices in the public sector.

How can we explain government effectiveness?

- In line with the literature, there is evidence suggesting that media freedom, civil liberties and political accountability are positively related with government effectiveness.
- There is evidence suggesting a negative relationship between fiscal decentralisation and government effectiveness, i.e. countries in which fiscal competences are centralised perform more effectively. However, this relation is contingent on the countries' administrative culture, which warrants further research into the conditions under which centralised and decentralised systems perform better.
- This finding suggests that countries can increase their performance, measured as government effectiveness, by implementing reforms towards a more service-oriented public administration.

How can we explain trust?

- There is evidence suggesting that the quality-of-service delivery, measured as government effectiveness, is positively related to citizens' trust in government (corroborating previous findings in the literature). This correlation is amplified in countries characterised by a less politicised civil service.
- The findings provide further support for the recommendation that public administrations should take steps to be less influenced by the political sphere and more responsive to the needs and views of citizens, which increases their level of trust in government.

Covid

- Public administrations across countries have responded differently to the challenges of the Covid-19 pandemic, as shown by the varying levels of the adoption of remote working at the onset of the crisis.

Countries whose public administrations adopted more substantially working from home were countries characterised by a higher level of digitalisation of public service delivery and better quality of IT infrastructure.

3.1. INTRODUCTION

The EIPA Benchmarking Study analyses the performance of 35 countries in ten policy areas. In line with the conceptual framework informing the study, the public sector is a critical component of performance because it shapes the specific environments in which policies are designed and implemented. The public sector entails relevant institutions of government, it channels input in the form of expenditure and staff, and through administrative procedures at national, regional and local level transforms this input into output. Ultimately, this output is expected to have a desirable impact in the respective policy area and thus contribute to the achievement of policy objectives. Since governments and administrations are critical for public sector performance, they are subject to academic analysis and public scrutiny. In this chapter, the performance of public administrations in the 35 countries will be analysed.

There are several conceptual and methodological challenges when assessing public sector performance. As already indicated in the previous edition of this study by the Netherlands Institute for Social Research, there is a fundamental challenge in defining the public sector (SCP, 2015; also van de Walle, 2008: 330). Given that government and administration have multiple ramifications and levels, and they are intertwined with the private sector and societies at large, there is consensus among scholars that a clear and common definition of terms such as 'public sector', 'administration' or 'government' does not exist (van de Walle, 2008: 330; Blondel, 1982: 5; Peters, 1992: 89; SCP, 2015: 257). In the context of this study, public administration can be defined as the 'management of public affairs or the implementation of public policies' (Shafritz, 2000: 6). Hence, public administration refers to all those activities and procedures related to the formulation and implementation of policy and governmental and other public programmes, and to the management of the organisations and activities involved.

3.1.1. The role of public administration in service delivery and the achievement of policy objectives

This short definition somewhat hides the political, legal and social facets of what governments do, and how these facets affect businesses and citizens in their daily life. Public administration is not a direct provider of final goods and services, but rather it is an enabler (Van Dooren et al., 2012). Through public service, national administrations manage to convert 'government policies and programmes into tangible goods and services for the consumption of the citizenry' (Shittu, 2020). So, what is the role of public administration? Public administration has to ensure that the input, namely the state resources, is efficiently translated into output, i.e. the public service. Concepts such as input, output and outcome along with efficiency and effectiveness will be dealt with later in this chapter. In line with the goals of the benchmarking study we focus on the delivery of services, either directly or indirectly, to achieve policy objectives and in pursuit of the public interest.

Hence, service delivery is not an end in itself, but it is embedded in the broader context of the policy areas covered in the other chapters of the EIPA Benchmarking Study. Effective service delivery is an essential condition for the achievement of wider policy objectives, for instance in the area of education or social safety. This is covered in the chapters on the respective policy areas.

3.1.2. The goals of this chapter

In this chapter, we focus on the structure and organisation of the public sector, service delivery and the effects on citizens' satisfaction, trust and happiness.
This chapter has three goals:

- First, it provides an overview of the system characteristics of the public administrations in the 35 countries with a view to set the scene of the environment in which policies are made and implemented.
- Second, it investigates possible links between inputs, outputs and outcomes to provide insights or explanations of countries' performance.
- Finally, by doing so, it lays the foundation for the subsequent thematic chapters on the different policy areas. As the analysis progresses, these chapters will be aligned and, furthermore, thematic results can be linked to the insights relating to public administrations.

The analysis will enable a better understanding of public administration characteristics in the 35 countries. In line with the conceptual framework informing the benchmarking study, these characteristics can be seen as the environment in which policies are formulated and implemented. In the analysis, these environmental characteristics can be modelled as control variables to refine the examination of a wide range of socio-economic outcomes including levels of trust, satisfaction and happiness of citizens. Hence, the aim of the study is twofold: a) to understand how countries perform (that is how each country ranks and whether there have been improvements over time) and b) to elicit possible explanations for why countries are able to reach these outcomes.

3.1.3. Outline

With attention to accessibility and readability, the chapter is structured in line with the conceptual framework. It first provides an overview of the system characteristics of public administrations to provide a better understanding of the policy environments in which administrations operate (Section 3.2). It then reflects on current challenges the public sector is facing across countries. These challenges can be seen as a reflection of new demands and needs based on which policy objectives are being formulated (Section 3.3). The chapter then explains the methodology and the underlying data foundation (Section 3.4).

These data inform several types of analysis, which will be presented as follows. First, we present evidence on input and activities of public administrations. This section includes data which is related to the specific responses of governments to current challenges (Section 3.5). In the subsequent sections, we then present evidence on output measured as good governance (Section 3.6), public sector performance and efficiency (Section 3.7), and social outcomes (Section 3.8). Thereafter, we extend the analysis by performing regression analysis to determine which explanatory factors are linked to specific dimensions of public sector performance (Section 3.9). In Section 3.10, we briefly discuss the conceptual and empirical implications of the Covid-19 pandemic on the public sector before concluding the chapter (Section 3.11).

3.2. ENVIRONMENT: SYSTEM CHARACTERISTICS OF PUBLIC ADMINISTRATIONS

The countries which are subject to this benchmarking study do not present a homogeneous population. Rather, these countries have very different characteristics as regards their system of governance and, as such, can be categorised as different politico-administrative regimes with different state structures, administrative procedures, and cultures and traditions. In presenting the evidence regarding countries' performance, we will make use of geographical differentiation to distinguish between different groups of countries. However, to gain additional analytical leverage, it is necessary to consider the different system characteristics of countries irrespective of their geographical grouping.[1] In this section, we present a general overview of the different regime types and briefly describe the differences and commonalities of public administrations.

The academic literature in the fields of comparative politics and public administration is abundant. As such, it provides different possibilities for categorising countries based on the features of their politico-administrative systems (see Raadschelders & Vigoda-Gadot, 2015; Lijphart, 1984; Schultz et al., 2015; Gottschall et al., 2015; Dahlström & Lapuente, 2010; Goldfinch & Wallis, 2009; Lægreid, 2017). In this study, we draw on Pollitt and Bouckaert (2017) by focusing on five dimensions of regime types. The features of these types refer extensively to Pollitt and Bouckaert but are complemented with the aforementioned literature.

[1] The presentation of evidence based on geographical differentiation useful because we can assume that countries with spatial proximity also share, to some extent, administrative-cultural traditions. Hence, there are overlaps between geographical groups and regime types, and furthermore, it can be assumed that geographical and cultural proximity facilitates mutual learning.

The five dimensions are:

1) state structure
2) executive government
3) relations between government and the civil service
4) administrative culture
5) diversity of policy advice.

1) State structure

The structure of the state can be perceived as having two fundamental dimensions: a vertical and a horizontal dimension.[2] First, the vertical dimension refers to the distribution of power between different levels of government. The main feature of the vertical dimension is the distinction between unitary and federal states.[3] The second feature of this dimension is the level of centralisation. Whereas some countries are highly centralised with power concentrated at the federal level, other countries are decentralised with significant powers vested in regional and local levels of government.[4]

The Netherlands is categorised as unitary and decentralised.

2) Executive government

The nature of the executive government is a product of the electoral systems and measures the strength of the executive government (see also Lijphart, 1984). A basic distinction can be made between a) majoritarian governments, where a single party holds more than 50% of the seats in the legislature; and b) consensual governments, where parties rule as minority cabinets or as part of grand coalitions. Whereas the former are associated with more adversarial systems of governance, the latter are associated with consultation and consensus-seeking.

The Netherlands is categorised as consensual.

3) Type of relations between government and the civil service

The type of relationship between the executive government and the civil service is an essential part of the system characteristics of public administration. This feature includes several dimensions, but the literature does not provide a commonly accepted system of classifying these dimensions (see Pollitt and Bouckaert 2017: 59).[5] Hence, for the purposes of this chapter we focus solely on the dimensions of politicisation. The features of this dimension refer to the degree to which the recruitment of top civil servants is in the hand of ministers and whether these civil servants remain in office after changes of government.

The Netherlands is categorised as mildly politicised.

4) Administrative culture

The notion of administrative culture refers to the values, beliefs and habits that characterise public administration.[6] This includes the relationships between the public sector and civil society broadly defined (see Painter & Peters, 2010). In the academic literature, two different ideal-types are distinguished: the *Rechtsstaat* model and the 'public interest' model (see Pierre, 1995). In the *Rechtsstaat* model 'the state is a central integrating force within society, and its focal concerns are with the preparation, promulgation and enforcement of laws' (Pollitt & Bouckaert, 2017: 61). In the public interest model, on the other hand, the state has a less extensive or dominant role within society and rather acts as a trusted referee in the competition for policy influence among different interest groups. Public administrations of the latter model tend to be more service- and performance-oriented, with more attention to individual rights as opposed to collective rights, accountability and professionalism (Pierre, 2009). In other words, they have introduced market-based reforms that make their functioning more closely resemble that of the private sector, where customer satisfaction is paramount.

---

[2] Note that for the purposes of this chapter, we will focus on the vertical dimension of state structure, i.e. levels of centralisation. The horizontal dimension refers to patterns of coordination at the central government level, i.e. degree to which ministries are able (and willing) to coordinate in the policy process.

[3] Pollitt and Bouckaert distinguish between federal and unitary states based on whether the vertical distribution of power is based on the constitution (federal) or not (unitary).

[4] The level of centralisation is a rather basic measure of differentiation for countries with similar structures and significant differences may prevail. For instance, Germany and the US are both federal countries, but significant differences in governance and policymaking prevail.

[5] For instance, as regards the career patterns of ministers and top civil servants, the Netherlands is categorised differently by Pollitt and Bouckaert (2017) and a comparative study of public administrations in the EU (see European Commission 2018).

[6] As mentioned above, there is an overlap between administrative culture and geographical groups of countries (see Pollitt and Bouckaert 2017: 62–63).

According to Pierre (1995) very few countries have a system that falls entirely between these two main models, as nowadays most civil service systems present features of both (Demmke & Moilanen, 2010; Hood & Lodge, 2006). Several countries have enacted reforms that allowed them to transition from purely legalistic systems to more service-oriented ones, and they are classified as 'mixed' by Pollitt and Bouckaert (2017). The Netherlands is one of these countries, because after World War II the Dutch state profoundly modified its policymaking process, making it more open and consensual, while maintaining the role played by traditional social actors in influencing government decisions (Pollitt & Bouckaert, 2017).[7]

5) Diversity of policy advice

The notion of diversity of policy advice refers to the sources of information that feed into the policy process. Hence, this dimension refers to the extent to which academic experts can influence government decision-making. Non-governmental experts from academia tend to propose more impartial and objective solutions, so that policies are drafted incorporating a wider range of views as opposed to just relying on governmental experts or from the private sector (Gottschall et al., 2015: 71). The diversity of policy advice increases the likelihood that new ideas from outside the public sector are brought to the attention of governments (Pollitt & Bouckaert, 2017).

The 35 countries subject to this benchmarking study have multiple differences on one or more dimensions. Nonetheless, they can be broadly classified into different categories for each of these five key dimensions (see Table 1). As can be seen in the table, almost all countries considered in this study have a unitary state structure (29 out of 35), and 19 out of 35 countries have at least some degree of decentralisation. Regarding the second key system characteristic, the nature of executive government, countries are almost evenly split between the three categories. There is a clear division between the Anglo-Saxon countries that share a public-oriented administrative culture and most of the European countries that share a *Rechtsstaat* administrative culture. A few countries have made various reforms transforming from *Rechtsstaat* to public interest, showing several different levels of mixed administrative culture (CZ, FI, HU, NL, SE). The last element to take into consideration is the diversity of policy advice. Only 8 countries out of 35 show a high level of reliance on external expertise to inform their policymaking. Almost half of the countries (17 out of 35) still rely on the civil service, at both the cabinet and civil servant levels, while frequently resorting to the advice of external experts. The remaining countries still heavily rely on the civil service and do not, or rarely, employ external experts.[8]

As already mentioned, categorising the countries subject to this study is relevant for gaining additional analytical leverage in interpreting the results. These results, in connection with the relevant dimensions of the respective regime types, will allow us to derive conclusions about public performance and possible public sector reform. In this vein, it can be assumed that reform is more or less feasible in systems with specific characteristics. For instance, it is more likely that reforms are broader in scope and more likely to be implemented in a uniform manner in centralised systems with majoritarian governments. In turn, decentralised and consensual systems likely entail different challenges in regard to the scope, speed and uniformity of reform measures. Hence, proposals for reform as well as references to successful or unsuccessful reform measures in other countries have to be seen as being contingent on these system characteristics, given that such characteristics can facilitate or impede mutual policy learning.

[7] Note that the comparative study of public administrations in the EU mentioned above categorises the Netherlands as 'managerial' rather than 'mixed' or 'procedural' (see European Commission 2018).

[8] For more detailed analysis of the system characteristics of single EU countries, please refer to the work done by Thijs and Hammerschmid (European Commission, 2018). For Australia, Canada, New Zealand and the US refer to Pollitt and Bouckaert (2017). For Switzerland see Ladner (2019: 43). For Iceland and Norway see Lægreid (2017).

Table 1: Key features of the politico-administrative system

Key features of the politico-administrative system

Country	State structure (unitary/federal)	Executive government	Minister/Civil service relations	Administrative culture	Diversity of policy advice
Australia	Federal, Coordinated	Majoritarian	Mildly Politicised	Public interest	Medium: mainly civil service
Austria	Unitary; Decentralised	Consensual	Politicised	Rechtsstaat	Low: civil service
Belgium	Federal; Decentralised	Consensual	Politicised	Rechtsstaat	Low: civil service
Bulgaria	Unitary; Centralised	Consensual	Politicised	Rechtsstaat	Medium: civil service and external experts
Canada	Federal; Decentralised	Majoritarian	Mildly Politicised	Public interest	High: mainly political advisers/external experts
Croatia	Unitary; Centralised	Majoritarian	Politicised	Rechtsstaat	Low: civil service
Cyprus	Unitary; Centralised	Intermediate	Depoliticised	Rechtsstaat	Medium: civil service and external experts
Czechia	Unitary**; Decentralised**	Majoritarian	Politicised	Mixed	Medium: civil service and external experts
Denmark	Unitary; Decentralised	Consensual	Politicised	Rechtsstaat	Medium: civil service and external experts
Estonia	Unitary; Centralised	Consensual	Politicised	Rechtsstaat	Low: civil service
Finland	Unitary; Decentralised	Consensual	Politicised	Mixed	Medium: civil service and external experts
France	Unitary; Decentralised	Intermediate	Politicised	Rechtsstaat	Medium: civil service and external experts
Germany	Federal; Coordinated	Intermediate	Politicised	Rechtsstaat	Medium: civil service and external experts
Greece	Unitary***; Decentralised***	Majoritarian	Politicised	Rechtsstaat	Low: civil service
Hungary	Unitary; Centralised	Majoritarian	Politicised	Mixed	Medium: civil service and external experts
Iceland	Unitary; Centralised	Majoritarian	Politicised;	Rechtsstaat	Medium: civil service and external experts
Ireland	Unitary; Centralised	Intermediate	Politicised	Public interest	High: civil service and external experts
Italy	Unitary; Centralised	Intermediate	Politicised	Rechtsstaat	Medium: civil service and external experts
Latvia	Unitary; Decentralised	Consensual	Politicised	Rechtsstaat	Medium: civil service and external experts
Lithuania	Unitary; Decentralised	Intermediate	Politicised^	Rechtsstaat	Medium: civil service and external experts
Luxembourg	Unitary; Centralised	Consensual	Politicised	Rechtsstaat	High: external experts
Malta	Unitary; Centralised	Majoritarian	Mildly Politicised	Public interest	High: civil service and external experts
Netherlands	Unitary; Decentralised	Consensual	Mildly Politicised	Mixed	High: civil service and external experts
New Zealand	Unitary; Centralised	Majoritarian	Politicised	Public interest	Medium: civil service and external experts
Norway	Unitary; Decentralised	Intermediate	Politicised	Rechtsstaat	High
Poland	Unitary; Centralised	Intermediate	Politicised	Rechtsstaat	Medium: civil service and external experts
Portugal	Unitary; Centralised	Majoritarian	Politicised	Rechtsstaat	High: civil service and external experts
Romania	Unitary; Centralised	Majoritarian	Politicised	Rechtsstaat	Low: civil service
Slovakia	Unitary; Centralised	Majoritarian	Politicised	Rechtsstaat	Low: civil service
Slovenia	Unitary; Centralised	Intermediate	Politicised	Rechtsstaat	Low: civil service
Spain	Unitary*; Decentralised	Majoritarian	Politicised	Rechtsstaat	Low: civil service
Sweden	Unitary; Decentralised	Consensual	Politicised	Mixed	Medium: civil service and external experts
Switzerland	Federal; Decentralised	Consensual	Depoliticised	Rechtsstaat	Low: civil service
United Kingdom	Unitary*,**; Decentralised	Majoritarian	Politicised	Public interest	Medium: civil service and external experts
United States	Federal; Decentralised	Intermediate	Very Politicised	Public interest	High: political appointees, corporations, think tanks, consultants

Source: Pollitt and Bouckaert (2017)

* *Federal in practice*

** *Mix of centralised and decentralised*

*** *Partially decentralised, but heavily monitored from the central government*

^ *Integrated but a mix of politicised and depoliticised*

3.3. PUBLIC ADMINISTRATION: NEW CHALLENGES AND KEY TRENDS

The system characteristics of public administrations described in the previous section can be seen as the environment in which policies and policy processes operate. From this environment stem specific political demands and policy objectives. These demands and objectives pertain to the functional requirements of public service delivery.
In the last decades, this environment has been changing radically due to technological, economic and societal transformations. As a result, governments worldwide have been actively engaged in reforming the public sector to adapt to these transformations. At the same time, public sector reform aims to render policy processes and service delivery more open, accessible and transparent. In short, governments strive to adhere to principles of good governance and democratic policymaking. Moreover, the various social, economic and political crises in recent years have been important drivers for accelerating the pace of ongoing reforms.

The Covid-19 pandemic is a case in point. While many reforms have been ongoing for some time addressing long-term challenges, the pandemic forced policymakers to act swiftly to cushion the immediate effects on public health and economic activities. Measures such as social distancing, remote working, ease of administrative procedures and the application of digital solutions at short notice, to name but a few, have affected the way in which the public sector and private businesses are operating. It is too early to make definitive statements as to whether some of these measures will induce lasting change. Yet, to account for the significance of the Covid-19 pandemic on public administrations and, potentially, various policy fields which are covered in this first substudy and later substudies, this chapter includes a separate section (3.10) on key issues related to the post-pandemic.

The five main challenges for the public sector can be summarised as the '5Ds'. These challenges are, at the same time, drivers of change and the result of administrations adapting to ongoing and new crises. As such, they are the expression of new societal needs and political demands regarding the structure and function of public administrations as well as the delivery of public services. The 5Ds are the following:

- digitalisation
- diversity
- demography
- decarbonisation
- democracy.

In this section, the report provides an overview of these challenges grouped as follows:
1) challenges relating to public sector workforce (demography and diversity);
2) public sector activities and processes of service delivery (digital transformation and decarbonisation);
3) democracy.

3.3.1. Diversity and demography

This dimension relates to ageing populations and the public sector workforce as well as new challenges regarding the inclusion of diverse social groups, with a view to reflect the diversity of populations at large in the public sector.

Most countries considered in this study have to deal with an ageing population and therefore an ageing workforce in the private and public sectors. Moreover, in the past years countries had to restructure and reduce public sector employment due to budgetary constraints following austerity policies in the wake of the financial crisis.
These measures took the form of recruitment freezes, non- or partial replacement of retiring people, dismissals, etc. The result is that the share of employees in public administration aged 55 or older is 'significantly higher than the broader labour market' (OECD, 2021b). The ageing workforce not only poses a problem in terms of replacement of the workforce, but also in terms of reskilling and upskilling of senior employees to maintain a well-performing civil service.

Diversity is core to building a flexible and resilient workforce with a wide set of skills, competencies and values. In recent years, many countries have put in place measures and strategies to ensure a diverse and inclusive public sector. According to the Survey on the Composition of the Workforce in Central/Federal Governments conducted by the OECD in 2020 [9], 11 out of the 28 countries have specific targets to ensure that their public administration is more inclusive; 5 out of 28 have targets only for senior level public servants; 4 out of 28 countries do not set specific targets but have adopted inclusion policies; only 8 countries do not have policies or targets in place. According to Pollitt and Bouckaert (2017) a more diverse composition of the workforce, in terms of a growing share of women and ethnic minorities, could contribute to changing the administrative culture. Increasing diversity and changing the administrative culture could lead to an increase in the quality of public services. That is because public employees who are more aware of the different needs and preferences of a diverse society could design and implement better services (Nolan-Flecha, 2019). According to Nolan-Flecha (2019) a more inclusive work environment 'could also lead to greater efficiency and productivity: satisfied employees who could bring their "whole selves" to the office worked harder and better'.

In this study, we will look at diversity and inclusion from both an age and gender balance perspective with reference to total employment in the public sector, and leadership and management positions.

3.3.2. Digital transformation and decarbonisation

This dimension relates to the twin transition towards green and sustainable policies as well as policies fostering digitalisation, including measures to cope with risks of the digital transformation.[10] The green transition is based on the ambition to mainstream environmental sustainability across all policy areas which, in many cases albeit not exclusively, relates to climate action. It is a twin transition because this ambition and related policies often regard digital solutions as important measures to reduce carbon footprints.[11]

To pursue the green transition towards more sustainability, public administrations need to assume leading roles in designing and implementing innovative solutions for environmental protection and climate change. The public sector is in a unique position to lead the transition process both as a consumer and as a decision-maker. As a user, public administrations can 'green' their budgets and their public procurement processes to contribute to sustainable consumption and production. As decision-makers they can provide instruments and incentives to support the green transition, in particular in those sectors which still cause high levels of carbon emissions.

The digital transformation fundamentally affects the way public administration works: from administrative procedures and decision-making to service delivery to citizens. Adapting to technological change has proved to be, and remains, a challenge. However, at the same time, this change contributes to the development of transparent digital practices, fosters collaboration among different levels of administration, and contributes to increasing the efficiency in delivering services to citizens.

In the context of digital transformation, we have to make a conceptual distinction between e-government and digital government. While the former implies the digitalisation of analogue procedures, the latter implies the re-engineering and redesigning of services and processes. Moreover, e-government focuses on the adoption of digital technologies to improve public sector operations, while digital government 'leverages digital data and technologies for more cohesive service transformation, cross-cutting collaboration and data sharing to produce open, user-driven and proactive public sector organisations' (OECD, 2020a: 11). In the following sections, when analysing the single indicators we will have a closer look at these concepts to assess how governments are managing the transition, and how fast they are adapting to it. It is clear that the strategic use of digital technologies and data is fundamental to support public administrations 'to transform service design and delivery, which in turn will have a direct influence on citizens' satisfaction and trust in governments' (OECD, 2020a: 15).

[9] The Survey on the Composition of the Workforce in Central/Federal Governments does not have data for Iceland, Bulgaria, Croatia, Malta and Cyprus. Denmark and Sweden are not included because of the lack of common processes in the central administration.

[10] In the literature, a distinction is often made between the different terms 'digitisation', 'digitalisation' and 'digital transformation' whereas the latter are more recent and refer to process and policies more broadly. Thus, we do not use the term 'digitisation' as it is outdated, but we will refer to both 'digitalisation' and 'digital transformation' using them synonymously.

[11] This is perhaps most evident in the Recovery and Resilience Facility of the EU, which sets targets for Member States recovery expenditure for climate action and digital transformation (see Section 8.1.1).

3.3.3. Democracy

This dimension relates to the multiple challenges for democratic decision-making, which is at the heart of open systems of governance. For instance, the European Democracy Action Plan is based on three focal areas: fair elections, free media and disinformation. The aim of the action plan is to empower citizens and civil societies in the context of democratic backsliding in the EU and beyond. These focal areas resonate with the OECD agenda on reinforcing democracy, which also identifies misinformation and disinformation in the post-truth society, inequality and a general uncertainty (and scepticism) about governments' ability to address pertinent challenges effectively as threats to open systems of governance.

It is important to stress that such threat perception and the related agenda are not merely value-driven, even though democracy in itself is a value worth being pursued. Rather, the threats undermining democracy can also be seen as debilitating governments in their ability to address the challenges which are, at the same time, the root causes of citizens' uncertainty and scepticism. By making electoral choices based on misinformation, by retreating from participatory processes and by withdrawing trust from political institutions, citizens undermine the legitimacy of political processes and thereby the public sector's ability to address challenges and solve problems, which in turn leads to output legitimacy.

The dimension of democratic decision-making will be examined in more detail below as part of the 'good governance' indicators. The indicator 'voice and accountability' measures the perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association and a free media.

Closely related to democracy is the issue of trust, on which a particular focus is laid in this study. To maintain and regain trust, governments have to be reliable and responsive in delivering public services and anticipating new needs; at the same time, policy processes need to be characterised by integrity, openness and fairness (see Brezzi et al., 2021). Trust is the result of adopting good governance principles in service delivery and is, at the same time, an important currency for governments to strengthen their ability to provide good outcomes. Hence, low levels of trust in government could jeopardise the effectiveness of policies and regulations, delay reforms and finally result in low-quality public service delivery.

3.4. DATA AND METHODOLOGY

In this section, we provide an overview of the data underlying the benchmarking study as well as the methods applied to inform the analysis. The description of the various data sources is in line with the overarching conceptual framework presented in the Introduction. The framework entails several interconnected components linking inputs with outcomes in a given policy environment. For each of these components, we have identified indicators to measure the respective values by country and year in the time covered by the study. Identifying these indicators was one of the first steps in the research process, which is fundamental for answering the questions this study sets out to answer.

3.4.1. Data

In addition to the literature review, the compilation of quantitative data is the foundation for this benchmarking study. Hence, the analysis is based on a dataset that has been created specifically for this study. The dataset draws on an extensive list of sources such as the World Bank, the OECD, Eurostat and the UN and includes data for the 35 countries subject to the study in the period from 2007 to 2020.
For studies like this one, which aim to assess a relatively high number of countries located in different geographic areas over an extended period, ensuring data completeness is a particular challenge. To address this challenge and to ensure the soundness of the analysis, we have applied statistical methods to address missing data (for more details, see Section 1.1 in the Annex).
In this subsection, we provide an overview of the indicators used to measure or capture the respective components of the conceptual framework. A comprehensive overview of indicators, descriptions and sources is given in Table A6 in the Annex.

3.4.1.1. Single indicators

The single indicators provide measures for specific components of the conceptual framework. In the context of a given policy environment, input refers to monetary and non-monetary resources that are essential for staging activities which result in certain outcomes. To obtain values for such input and activities, the study draws on several sources providing data on government expenditure and the public sector workforce. In turn, outputs and outcomes are the result of activities and relate to the short- and long-term effects. These effects concern the beneficiaries of public services directly as well as societies at large. Indicators that provide data on the functioning of governments are essential for capturing both output and outcome components. As regards output, we measure this with good governance indictors, whereas outcomes are measured with indicators on economic and social effects.

Among the various outcome indicators, the satisfaction with public services and citizens' trust in the political system are special components for two reasons. First, satisfaction and trust can be considered as long-term societal outcomes, which directly affect the quality-of-service delivery. Second, beyond service delivery and citizens' consumption of public goods, trust is particularly essential for the stability of political systems. These indicators are mostly captured from survey data and datasets focused on democracy.

3.4.1.2. Composite indicators

In addition to the single indicators providing values for specific components of the framework, we have also constructed composite indicators. These indicators enable us to capture the relationships between components and derive conclusions about performance based on aggregation, i.e. combined values of single indicators.

These composite indicators are the public sector performance (PSP) indicator (see the components in Table 2) and public sector efficiency (PSE) indicator, respectively. Technical details on the construction of both indicators are provided in Sections 1.2 and 1.3 in the Annex.

Table 2: Components of the public sector performance indicator

Public sector performance		
Administrative indicators	**Economic indicators**	
Corruption	**Distribution**	Gini index
Red tape	**Stability**	Coefficient of variation of GDP growth
Judicial independence		
Property rights		Standard deviation of inflation
Informal economy	**Performance**	GDP per capita
		GDP growth
		Unemployment

3.4.2. Methodology

The methods underlying this study are geared towards answering the benchmarking questions. To this end, we rely on several qualitative (i.e. literature review) and quantitative methods. As regards quantitative methods, a variety of statistical approaches were applied to yield a holistic understanding of public sector performance in the 35 countries subject to this study.

3.4.2.1. Descriptive statistics

The first level of analysis entails descriptive statistics of a selection of meaningful variables ranging from inputs to outcomes, and measures of citizens' satisfaction and trust (for example, see Table 3). To this end, we compare values between countries and over time and hence, we are able to derive conclusions about public sector performance. As part of this comparison, a particular focus will be put on specific countries and regions.

Table 3: Trust in government

Region	Country	2010	2013	2016	2019	2020	2020	Change
Western Europe	LU	**76,8**	-3,18	-5,77	**78,0**	.	.	1,2
Western Europe	CH	.	.	**79,9**	0,81	3,97	**84,6**	4,7
Western Europe	NL	**63,6**	-9,32	2,93	4,43	16,42	**78,1**	14,5
Western Europe	DE	**39,5**	16,23	-0,51	1,58	8,56	**65,4**	25,9
Western Europe	AT	**49,2**	-7,47	1,55	7,97	11,38	**62,6**	13,4
Western Europe	IE	**33,3**	-4,76	28,97	0,65	0,69	**58,8**	25,6
Western Europe	FR	**40,1**	-0,63	-11,12	9,79	2,86	**41,0**	0,9
Western Europe	UK	**50,4**	-12,43	2,94	-6,78	0,61	**34,7**	-15,7
Western Europe	BE	**33,7**	21,76	-13,49	-9,13	-3,31	**29,5**	-4,2
Northern Europe	NO	.	.	**65,8**	-5,97	23,12	**82,9**	17,1
Northern Europe	FI	**46,2**	-4,12	6,51	15,35	16,94	**80,9**	34,7
Northern Europe	DK	**58,7**	-19,53	7,63	16,53	8,28	**71,6**	12,9
Northern Europe	SE	**60,3**	-2,30	-9,41	2,75	15,78	**67,1**	6,8
Northern Europe	IS	.	**45,70**	-9,30	15,79	7,10	**59,2**	13,5
Southern Europe	CY	.	.	.	.	.	.	.
Southern Europe	MT	.	.	.	.	.	.	.
Southern Europe	PT	**24,5**	-6,56	17,53	8,11	17,91	**61,5**	37,0
Southern Europe	EL	**23,7**	-9,29	-1,11	26,39	0,10	**39,7**	16,1
Southern Europe	ES	**30,3**	-11,82	11,80	6,53	1,40	**38,2**	7,9
Southern Europe	IT	**33,4**	-18,79	9,16	-1,57	15,26	**37,5**	4,1
Central and Eastern Europe	BG	.	.	.	.	.	.	.
Central and Eastern Europe	HR	.	.	.	.	.	.	.
Central and Eastern Europe	RO	.	.	.	.	.	.	.
Central and Eastern Europe	LT	**11,5**	26,97	-10,46	12,76	6,68	**47,4**	35,9
Central and Eastern Europe	EE	.	**26,1**	7,92	6,35	6,15	**46,5**	20,4
Central and Eastern Europe	SI	**33,2**	-16,85	8,64	14,73	5,58	**45,3**	12,1
Central and Eastern Europe	HU	**25,2**	7,63	-2,41	18,02	-5,52	**42,9**	17,7
Central and Eastern Europe	CZ	**31,2**	-6,95	17,26	.	-10,19	**31,9**	0,7
Central and Eastern Europe	SK	**30,9**	-2,52	8,87	-14,12	7,65	**30,7**	-0,1
Central and Eastern Europe	LV	.	**23,4**	8,15	-7,59	6,74	**30,7**	7,3
Central and Eastern Europe	PL	**35,6**	-19,20	21,91	11,53	-22,49	**27,3**	-8,3
Oceania	NZ	**63,9**	-9,56	2,62	10,55	-4,66	**62,9**	-1,0
Oceania	AU	**61,0**	-15,39	-0,31	1,60	-2,23	**44,6**	-16,4
North America	CA	**55,1**	-4,51	11,22	-6,89	5,11	**60,0**	4,9
North America	US	**41,8**	-12,96	0,86	6,56	10,21	**46,5**	4,7

Source: OECD

Note: The table represents the share of respondents answering 'yes' (the other response categories being 'no', and 'don't know') to the survey question: 'In this country, do you have confidence in the national government?'.

3.4.2.2. Two-way (time-lagged) correlations

The second level of analysis entails linking specific indicators to find patterns in the relationships between two indicators (correlations). To do so, we conduct simple two-way correlations using the Pearson correlation coefficient. This enables us to explore the magnitude and direction (negative or positive) of the relationships between variables and to ascertain whether they are statistically significant or not.

There are two methodological pitfalls which should be kept in mind: first, there is a possibility of bias due to unobserved variables affecting the correlation (statistical noise). Second, statistically significant correlations do not directly allow conclusions about the causal relationship between two indicators (in other words, correlation does not imply causation).

Nonetheless, this second level of analysis is an important step in the methodological approach. Correlations can be useful for their ability to suggest possible causal relationships. For instance, patterns showing that countries with effective public sectors also display high levels of trust suggests that effectiveness can be a causal factor leading to higher trust.

Hence, correlations point to possible interactions between indicators that are worth being analysed further by means of more sophisticated tools such as regression analysis.

3.4.2.3. Fixed effects regression modelling

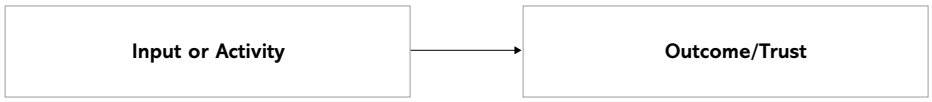
The third level of analysis entails applying more sophisticated statistical tools. By utilising the conclusions derived from the correlations as well as relying on existing literature, we focus on three key performance elements for such analysis. These elements are essential for good governance and gaining insight into the explanatory factors of these outputs is therefore pertinent.
The regression analysis focuses on the following elements:

- corruption
- government effectiveness
- trust in government.

These elements can be termed dependent variables and relate to specific outputs (control of corruption and government effectiveness) and to trust (trust in government). By applying regression analysis to investigate these indicators, we aim to determine which explanatory factors affect these dependent variables that are essential for public sector performance. Hence, for each performance indicator, we identify relevant factors, and integrate them into three different regression models linking each dependent variable with a set of explanatory factors (independent variables) (see Section 2 in the Annex).

The respective models are informed by the conceptual framework and secondary literature. By linking the regression models to the conceptual framework, the analysis aims to link the descriptive evidence on certain elements in the framework with an overall analysis of public performance on key indicators. Therefore, our multivariate analysis is keenly interested in isolating the relationship between our input or activity variables and outcomes or trust variables (see Figure 1). More technical details on the fixed effects regression models are provided in Section 2 in the Annex.

Figure 1: Relationship between income/activity and outcome/trust



Finally, we hope to determine whether the key features of the politico-administrative system described in Section 3.2 have an effect on the relationship between input or activity and our variables of interest (corruption, government effectiveness and trust). That is, whether they affect the magnitude of the relationship shown in Figure 1.

3.5. INPUT AND ACTIVITY

In line with the theoretical framework, input refers to monetary and non-monetary resources that are essential for carrying out activities which result in certain outcomes. In this section, we present data on input indicators which are essential for ensuring the functioning of public service delivery. These indicators are public expenditure measured as the share of total GDP spent on public administration as well as indicators related to the public sector workforce. Here, we make general observations about the performance of the 35 countries, both relative to each other and over time.

3.5.1. Public expenditure

As regards the development over time, in the majority of countries there has been a net increase in government spending between 2007–2020 (see Table A7 in the Annex). It is noteworthy that before 2019, the majority of the countries decreased government expenditure; however, all of those countries increased government spending in 2020. It can be assumed that this pattern is directly related to the Covid-19 pandemic. Hence, the increase in government spending in 2020 marks the transition from the post-Great Recession austerity following the financial crisis to a robust government response in the wake of the pandemic.

In comparison, France and Belgium are some of the countries that have the highest level of public expenditure, totalling 61.4% and 59.2% of GDP, respectively. These countries are also examples of two ends on the spectrum of centralisation. On the one hand, France is highly centralised, having the lowest level of subnational government spending among major European countries (OECD (2021c), *Subnational governments in OECD countries: Key data*). Belgium, on the other hand, has a decentralised governance system (OECD (2021c), *Subnational governments in OECD countries: Key data*). Nonetheless, both systems entail high levels of public expenditure. In France, public expenditure funds an extensive welfare state which takes up the highest share of GDP among OECD countries (OECD 2020b, *Social expenditure (SOCX) update 2020: Social spending makes up 20% of OECD GDP*).

Romania (42%), Switzerland (37.8%), Ireland (27.3%) and Bulgaria (42%) have the lowest level of government expenditure as a percentage of GDP. The Netherlands' government expenditure (47.6%) is somewhere in between the two groups, with a share of GDP slightly below average.

The biggest increases can be observed in Norway, Italy and Greece. Both Greece and Italy also have high levels of public debt. This increase in public expenditure is particularly visible in Greece's response to Covid where, in 2020, Greece saw the largest increase. In 2007, compared to its northern European counterparts, Norway's public spending was very low; however, in 2020 public spending was very high, with significant increases in the pre-Covid area.

There are five countries in which public expenditure decreased. It should be noted that in the Irish case in particular, government spending went from around 65% of GDP in 2010 to 27.3% in 2020. That was because of the post-2008 banking crisis that forced the government to bail out banks and act as a guarantor of struggling financial institutions (European Commission, 2019); hence, the anomalous figure for 2010. For more recent years, we should also be aware of distortions to foreign multinational corporations being based in Ireland, which could explain the low level of government spending as a percentage of GDP.

3.5.2. Employment: The demographics of the public sector

In this subsection, we analyse the other fundamental input of public administration: the workforce. We will first consider the different sizes of public employment across countries, then some aspects of the concept of diversity: age and gender.

As regards development over time, a majority of the countries for which we have data registered a decrease in the share of public employees, while a minority registered net increases. Overall, increases and decreases are evenly distributed in terms of regional collocation, making it difficult to discern region-specific trends. The largest decreases in the share of public employees were in the UK and Greece, as shown in Table A8 in the Annex.

Northern European countries, which are well known for their strong welfare states and large public sectors, have the highest share of government employees as a percentage of total employment. This is not surprising, especially if we consider this variable as a proxy for government size. It is interesting that countries classified as being located in central and eastern Europe such as Lithuania and Estonia are quite close to their northern neighbours (albeit at a lower level). The Netherlands, Germany and Switzerland have the lowest share of government employees.

3.5.2.1. Diversity

As discussed in Section 3.1, in line with broader demographic and social trends, diversity entails several dimensions related to gender, ethnicity, disabilities or sexual orientation. In this subsection, we first look at the age and then at gender distribution in the public sector.

3.5.2.1.1. Age

In line with the overall demographic trend of the population at large, public sectors are in general characterised by an ageing workforce. The share of employees aged 55+ has been increasing in 22 (out of 26) countries (see Table A9 in the Annex). The most sizeable (percentage point) increases in the share of age 55+ employees occurred in the following countries: Portugal (16.9%), Spain (11.2%), Greece (9.5%), Germany (9.3%), Austria (9%), Lithuania (7.9%) and Slovenia (6.9%). Countries with an older workforce are generally located in southern Europe with Italy and Spain having the highest share (48.5 and 46.6% respectively). Hence, almost half of the workforce in these two countries is 55 years of age or older. Several countries in western, central and northern Europe as well as North America have a share of employees aged 55+ of around one-third of the workforce (the Netherlands, Poland, Lithuania, Finland and the US).

At the same time, the share of employees 18–34 has been increasing in 13 countries (out of 26) (see Table A10 in the Annex). This means that in half of the countries, the share of young employees is decreasing. Countries with a younger workforce of employees aged 18–34 are spread across regions with the following countries having the highest share of young employees: Hungary (30.6%), Denmark (29.5%), Luxembourg (28.9%), New Zealand (28.3%); Hungary and Luxembourg also have very low shares of employees aged 55+ (11.8% and 10.5% respectively).

3.5.2.1.2. Gender diversity

In this subsection we focus on gender diversity, measured as the share of female employees in the public sector.

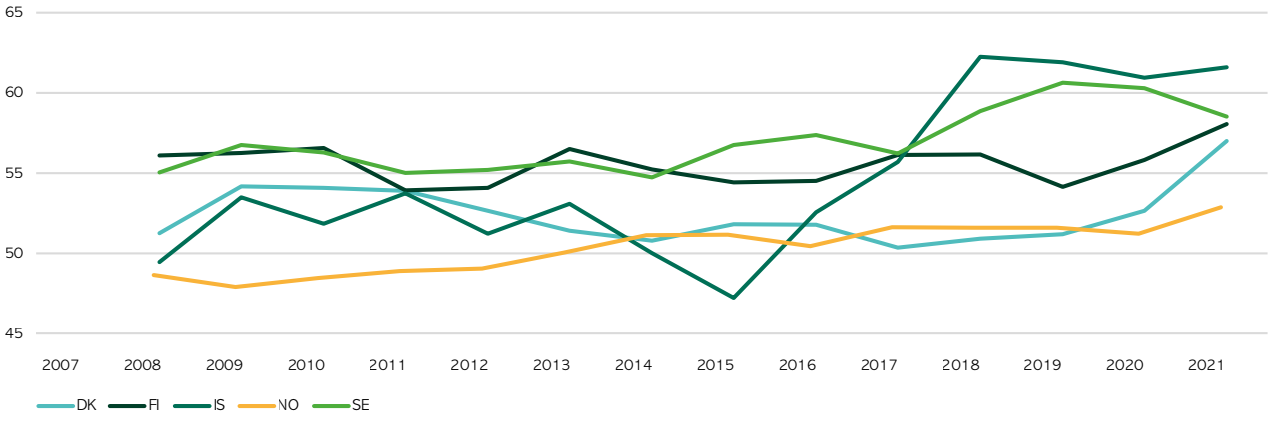
Research suggests that gender parity in the public sector is becoming a reality. A recent UNDP report found that almost half of the workforce in public administrations globally is made up of women (see Finkel et al., 2021). However, the UNDP report also states that substantial variation across regions and countries remains. The numbers presented in this section corroborate this picture (see Table A11 in the Annex).

Since 2008, the average share of female employees in the public sector increased from 46.6% to 49.4% (2021). Hence, the workforce of the public sector in the countries studied in this report is characterised by an increasing share of female employees, i.e. nearing gender parity. There are only three countries in which the share of women in the workforce decreased: Estonia (−3.2%), the US (−0.55%) and Romania (−0.16%).

In this dimension, the Netherlands still lags behind other western European countries, even though there has been a 5.5% increase over the period (from 40.5% in 2008 to 46% in 2020).

The countries with the biggest increases are located in various regions of Europe: Iceland (12.2%), Luxembourg (7.3%), Hungary (7.2%), Latvia (7.1%), Germany (7%) and Ireland (6.7%). Other countries had a low share of female employees and a limited increase over time: Greece (38% in 2008, 0.7% increase) and Italy (34.5%, 0.8% increase). Countries in northern Europe have had high gender parity for a considerable number of years, yet in recent years the numbers have picked up again in three countries (while two countries stabilised on a high level), as shown in Figure 2. In particular, the percentage of women employed in public administration in Iceland went from around 47% in 2015 to more than 60% in 2021, a substantial increase in just six years. A similar trend, characterised by a high base level and a further increase, can be observed with the two Oceanic countries in our sample Australia and New Zealand.

Figure 2: Share of female employees in northern Europe



Source: Eurostat

It should be noted that these numbers do not say anything about the distribution of women in different policy areas and their role in the administration of these areas. The UNDP report on gender parity shows that women remain under-represented in specific areas and, in general, in decision-making roles (see Finkel et al., 2021). The evidence presented here is based on objective data. Hence, it is not possible to make further conjectures tapping into evidence based on subjective data, for instance on the perception of women regarding the workplace and their role (see Bishu & Hedley, 2020).

As already mentioned, gender is only one of several dimensions of diversity in the public sector, which ought to represent diverse populations in terms of disabilities, minorities or sexual orientation. While more evidence has become available over time, there is still a dearth of high-quality data that disaggregates public workforces in line with several dimensions and roles, which enables reliable analysis on gender parity and diversity.

3.5.3. How do countries respond to new challenges?

In Section 3.3, we have outlined several challenges that the public sector faces: diversity and demography, digital transformation and decarbonisation, and democracy. These challenges result from, inter alia, technological innovation, economic changes and transformation of societies at large. Hence, public administrations must be able to adapt to these changes, and to cope with specific challenges to ensure public sector performance. To do so, administrations have to change the way in which input factors such as government expenditure are transformed into output. This section summarises the situation with public management, digital transformation and decarbonisation, and democracy.

3.5.3.1. Public management

The notion of public management denotes the interventions taking place at the organisational level of administration, such as training, leadership development and performance indicators. Evaluating such interventions and their effect on outcomes is notoriously difficult (see Pollitt & Bouckaert, 2017: 15; 16–7). Nevertheless, despite such difficulty, it is essential to investigate such interventions and moreover, to examine whether they are systematically related to the improvement of service delivery and performance.

In this section, an indicator on the management of senior level public servants from the 2020 OECD Public Service Leadership and Capability Survey[12] is analysed. In general, countries perform around the average level of 0.5 indicating that, by and large, there has been an effort to develop leadership capabilities and use performance and accountability tools in senior management. At the same time, there is still room for improvement.

While for many indicators examined in this chapter we see that countries located in the same region tend to perform similarly, in this case the picture is rather heterogeneous (see Table A12 in the Annex). Some of the best performers are located in North America (Canada, with a score of 0.84), western Europe (the UK, 0.82) and southern Europe (Greece, 0.66). Some of the worse performers are also in western Europe (Germany, 0.29) and in eastern Europe (Slovenia, 0.25 and Poland, 0.23). The Netherlands has a score slightly above average (0.6).

3.5.3.2. Digital transformation and decarbonisation

The green and digital transformation are, arguably, the strongest drivers of public sector reform. In this subsection, we examine this twin transformation by analysing the e-government development index. This measure is based on the United Nations (UN) e-government survey indicators (see OECD, 2021b: 182)[13] to operationalise or capture the performance of countries in regard to the digital transformation. The green transformation is captured by the sustainable public procurement index with data from UNEP.[14]

3.5.3.2.1. Digital transformation

There is clear evidence of digital transformation across the board with all countries showing increasing values, particularly in southern and eastern Europe, where the starting levels were quite low in 2008 (see Table 4). Digital transformation is fairly equally spread in that all countries have values above 0.75 (where the index range is between 0 and 1). Countries with the highest scores are evenly spread across regions: northern Europe (Denmark (0.98), Finland (0.95) and Sweden (0.94)), western Europe (the Netherlands (0.92) and the UK (0.94)), Oceania (Australia (0.94) and New Zealand (0.93)), North America (the US (0.93)), and central and eastern Europe (Estonia (0.95)).

[12] The indicator is made up of the following dimensions of senior level public service management: 1) the development of leadership capabilities and 2) the use of performance and accountability tools. The index ranges from 0 (no policies to manage the senior level public service) to 1 (high level of use of policies to manage the senior level public service). The data presented here are for 2020.

[13] The survey gauges three key components of e-government: the provision of online services, telecommunication connectivity and human capacity. More broadly, it uses determinants of access to digital services such as IT infrastructure and education to measure their effect on the involvement of citizens in government activities. The index ranges from 0 (lowest level of e-government development) to 1 (highest level of e-government development). Data are available biennially from 2008 to 2020.

[14] The index measures the level of implementation of sustainable public procurement (SPP). The index has the following categories: 1 (low level of SPP implementation), 2 (medium–low level of SPP implementation), 3 (medium–high level of SPP implementation). Data are available for 2020.

In contrast, there is a clear geographical concentration of countries with lower scores, as they are mostly located in central and eastern Europe: Romania (0.76), Croatia (0.77), Hungary (0.77), Latvia (0.78), Slovakia (0.78) and Bulgaria (0.8). Greece has a score of 0.8 as well as Belgium, which is the worst performer in western Europe. It should be noted, however, that even these scores are not extremely low, signalling widespread improvements in the digitalisation of public services.

Table 4: E-government development index

Region	Country	2008	2012	2016	2020	2020	Change
Western Europe	UK	**0,79**	▲ 0,11	▲ 0,02	▲ 0,02	**0,94**	0,15
Western Europe	NL	**0,86**	▲ 0,05	▼ -0,05	▲ 0,06	**0,92**	0,06
Western Europe	AT	**0,74**	▲ 0,04	▲ 0,04	▲ 0,07	**0,89**	0,15
Western Europe	CH	**0,76**	▲ 0,05	▼ -0,06	▲ 0,14	**0,89**	0,13
Western Europe	FR	**0,80**	▲ 0,06	▼ -0,02	▲ 0,03	**0,87**	0,07
Western Europe	DE	**0,71**	▲ 0,09	▲ 0,01	▲ 0,03	**0,85**	0,14
Western Europe	IE	**0,73**	▼ -0,01	▲ 0,05	▲ 0,07	**0,84**	0,11
Western Europe	LU	**0,75**	▲ 0,05	▼ -0,03	▲ 0,06	**0,83**	0,08
Western Europe	BE	**0,68**	▲ 0,09	▲ 0,02	▲ 0,02	**0,80**	0,13
Northern Europe	DK	**0,91**	▼ -0,02	▼ -0,04	▲ 0,12	**0,98**	0,06
Northern Europe	FI	**0,75**	▲ 0,10	▲ 0,03	▲ 0,06	**0,95**	0,20
Northern Europe	SE	**0,92**	▼ -0,06	▲ 0,01	▲ 0,07	**0,94**	0,02
Northern Europe	IS	**0,72**	▲ 0,07	▼ -0,02	▲ 0,14	**0,91**	0,19
Northern Europe	NO	**0,89**	▼ -0,03	▼ -0,05	▲ 0,09	**0,91**	0,01
Southern Europe	ES	**0,72**	▲ 0,05	▲ 0,04	▲ 0,07	**0,88**	0,16
Southern Europe	CY	**0,60**	▲ 0,05	▼ -0,05	▲ 0,27	**0,87**	0,27
Southern Europe	MT	**0,66**	▲ 0,05	▲ 0,03	▲ 0,11	**0,85**	0,20
Southern Europe	PT	**0,65**	▲ 0,07	▲ 0,00	▲ 0,11	**0,83**	0,18
Southern Europe	IT	**0,67**	▲ 0,05	▲ 0,06	▲ 0,05	**0,82**	0,16
Southern Europe	EL	**0,57**	▲ 0,12	▲ 0,00	▲ 0,11	**0,80**	0,23
Central and Eastern Europe	EE	**0,76**	▲ 0,04	▲ 0,03	▲ 0,11	**0,95**	0,19
Central and Eastern Europe	LT	**0,66**	▲ 0,07	▲ 0,04	▲ 0,09	**0,87**	0,20
Central and Eastern Europe	SI	**0,67**	▲ 0,08	▲ 0,03	▲ 0,08	**0,85**	0,19
Central and Eastern Europe	PL	**0,61**	▲ 0,03	▲ 0,08	▲ 0,13	**0,85**	0,24
Central and Eastern Europe	CZ	**0,67**	▼ -0,02	▲ 0,00	▲ 0,17	**0,81**	0,14
Central and Eastern Europe	BG	**0,57**	▲ 0,04	▲ 0,02	▲ 0,16	**0,80**	0,23
Central and Eastern Europe	SK	**0,59**	▲ 0,04	▼ -0,04	▲ 0,19	**0,78**	0,19
Central and Eastern Europe	LV	**0,59**	▲ 0,07	▲ 0,02	▲ 0,10	**0,78**	0,19
Central and Eastern Europe	HR	**0,56**	▲ 0,17	▼ -0,02	▲ 0,06	**0,77**	0,21
Central and Eastern Europe	HU	**0,65**	▲ 0,07	▼ -0,05	▲ 0,10	**0,77**	0,13
Central and Eastern Europe	RO	**0,54**	▲ 0,07	▼ -0,04	▲ 0,20	**0,76**	0,22
Oceania	AU	**0,81**	▲ 0,03	▲ 0,08	▲ 0,03	**0,94**	0,13
Oceania	NZ	**0,74**	▲ 0,10	▲ 0,03	▲ 0,07	**0,93**	0,19
North America	US	**0,86**	▲ 0,00	▼ -0,03	▲ 0,09	**0,93**	0,07
North America	CA	**0,82**	▲ 0,03	▼ -0,01	▲ 0,01	**0,84**	0,02

Source: UN

3.5.3.2.2. Decarbonisation (green transformation)

As shown in Table A13 in the Annex, countries are subdivided into three categories: those with a medium–high level of sustainable procurement practices, those with a medium–low level and those with a low level. The former group is made up of countries located in different regions: western Europe (the Netherlands, Belgium and France), eastern Europe (Bulgaria, Lithuania and Latvia), southern Europe (Italy and Portugal) and North America (the US). At the other end of the scale there are some surprising results, as countries such as Finland, New Zealand and Canada, which for most indicators have some of the highest scores, are characterised by a limited use of sustainable public procurement practices.

3.5.3.3. Democracy

Openness, transparency and accessibility are key for input and throughput legitimacy for governments and administrations, which ought to be underpinned by democratic principles and values. Hence, instruments that ensure stakeholders and citizens have a chance to provide input, participate and be consulted are critical in the policy process. In this subsection, we examine data based on the e-participation index[15] and data from the sustainable governance indicators. Additionally, we focus on societal consultation on its own by looking at the societal consultation indicator[16].

3.5.3.3.1. E-participation

As shown in Table A14 in the Annex, there is clear evidence of the digital involvement of citizens increasing with all countries showing growing values in e-participation (apart from France with a slight decrease of 0.03%).

Since e-participation was less prevalent due to limited technological possibilities in 2008, nearly all countries have seen high increases with some countries going from almost zero to almost 1 (the full range of the indicator) in a little more than a decade, e.g. Cyprus with a value of 0.09 in 2008 and an increase of 0.86, and Bulgaria with a value of 0.05 in 2008 and an increase of 0.85. Some countries had instruments of e-participation in place in 2008 already – notably the US, Denmark, France, Australia, New Zealand and Estonia. Naturally, these countries show marginal increases given that their e-participation scores were already close to the highest score of 1. Notable exceptions are New Zealand and Estonia, which scored high in 2008 but nevertheless increased e-participation over the next 12 years bringing their scores to almost 1 in 2020.

There is significant variation among countries in terms of geographical distribution. Countries with the highest score are evenly spread across regions: western Europe (the Netherlands, the UK and Austria), northern Europe (Denmark and Finland), Oceania (Australia and New Zealand), North America (the US and Canada), central and eastern Europe (Poland and Estonia) and southern Europe (Cyprus). Countries with the lowest scores (under 0.75) are concentrated in eastern and western Europe: Latvia, Belgium, Hungary, Slovakia and Luxembourg.

3.5.3.3.2. Societal consultation

Three broad and similarly sized groups of countries can be identified in terms of their progress on stakeholder engagement with some improving, others remaining stable and a few worsening their performance (see Table A15 in the Annex).

The countries with the most sizeable increases in societal consultation activities in the period from 2014 to 2020 period took place in Ireland (+2) and the UK (+2). Both countries started from quite a low level in 2014, whereas the largest decreases are found in Poland (−4), the US (−3), Slovakia (−2) and Finland (−2). It is interesting to point out that the former three started with a high level of consultation in 2014 but their performance worsened, classifying them as relatively low level in 2020.

The three countries that are best at involving the relevant stakeholders in policymaking are Switzerland, Norway and Denmark, with the first two being the only ones achieving the top score of 10. The Netherlands is also performing very well in this domain, with a score of 8. On the other hand, the countries with the lowest scores are Greece, Romania, Poland and Hungary, not exceeding the value of 3. It is remarkable that Poland moved from the highest performing group in 2014 to the lowest in 2020. That is probably related to the victory of right-wing party Law and Justice in 2015, which has ruled the country ever since and directed it towards authoritarianism and an illiberal democracy (Markowski, 2019).

[15] The e-participation index is based on data from the UN e-government survey. It measures citizens' access to information and public services (e-information), their interaction with stakeholders (e-consultation) and their involvement in decision-making (e-decision making). The index ranges from 0 (lowest level of e-government development) to 1 (highest level of e-government development). Data available biennially from 2008 to 2020.

[16] The societal consultation indicator measures to what extent the government interacts with societal players such as trade unions, employers' associations, leading business associations, religious communities, and social and environmental organisations in its policymaking. Effective consultation is defined as an opinion and information exchange (from the first stages of policy development to policy implementation) that enhances the quality of government policies and encourages the support of societal players. The indicator ranges from 0 (lowest level of societal consultation) to 10 (highest level of societal consultation).

3.5.4. Anti-corruption policies

At the heart of political systems that are based on principles of good governance is the integrity of the public sector (see OECD 2020c, *Public integrity handbook*). In line with the OECD approach, public integrity can be defined as the 'consistent alignment of, and adherence to, shared ethical values, principles and norms for upholding and prioritising the public interest over private interests in the public sector'. One of the most pertinent risks to such integrity is corruption. Hence, effective anti-corruption policies are of utmost importance given that public integrity is strongly correlated with performance, and citizens' satisfaction and trust.

The notion of anti-corruption policies entails a number of measures to prevent policymakers and public officials from accepting bribes, e.g. auditing of state spending, regulation of party financing, citizen and media access to information, accountability of office holders (asset declarations, conflict of interest rules, codes of conduct), transparent public procurement systems and effective prosecution of corruption. This section draws on the sustainable governance indicator, which measures these policies ranging from low levels of corruption prevention to high levels of corruption prevention (with scores ranging from 0 to 10).

According to Table A16 in the Annex, there is significant variation in anti-corruption policies among countries, which correlates with geographical location to some extent. The countries with the highest levels of corruption prevention (scores 9 and 10) are almost exclusively located in northern Europe (with the exception of New Zealand and Switzerland). The Netherlands shows scores in line with the average (7) which have remained stable over time. On the other hand, countries with lower scores (3 and 4) are located in eastern Europe (as well as Cyprus and Iceland).

The majority of countries have maintained the same level of anti-corruption policies between 2014 and 2020, thus their performance neither improves nor deteriorates. However, it is noteworthy that countries with lower scores show deteriorating corruption prevention, whereas the countries that improved the most are situated in the middle of the classification (Spain, France and Italy).

3.6. GOOD GOVERNANCE

In line with the conceptual framework, we define output as the results of input which are processed through administrative activities. These results might be used immediately or in the future by citizens directly or indirectly. In the area of public administration, this output can be understood as the principles and procedures based on which political systems distribute monetary and non-monetary values and deliver public services. Moreover, in addition to such principles, which can be referred to as input and throughput legitimacy, well-functioning systems also deliver services of high quality (output legitimacy).
In short, these systems can be seen as systems of good governance.

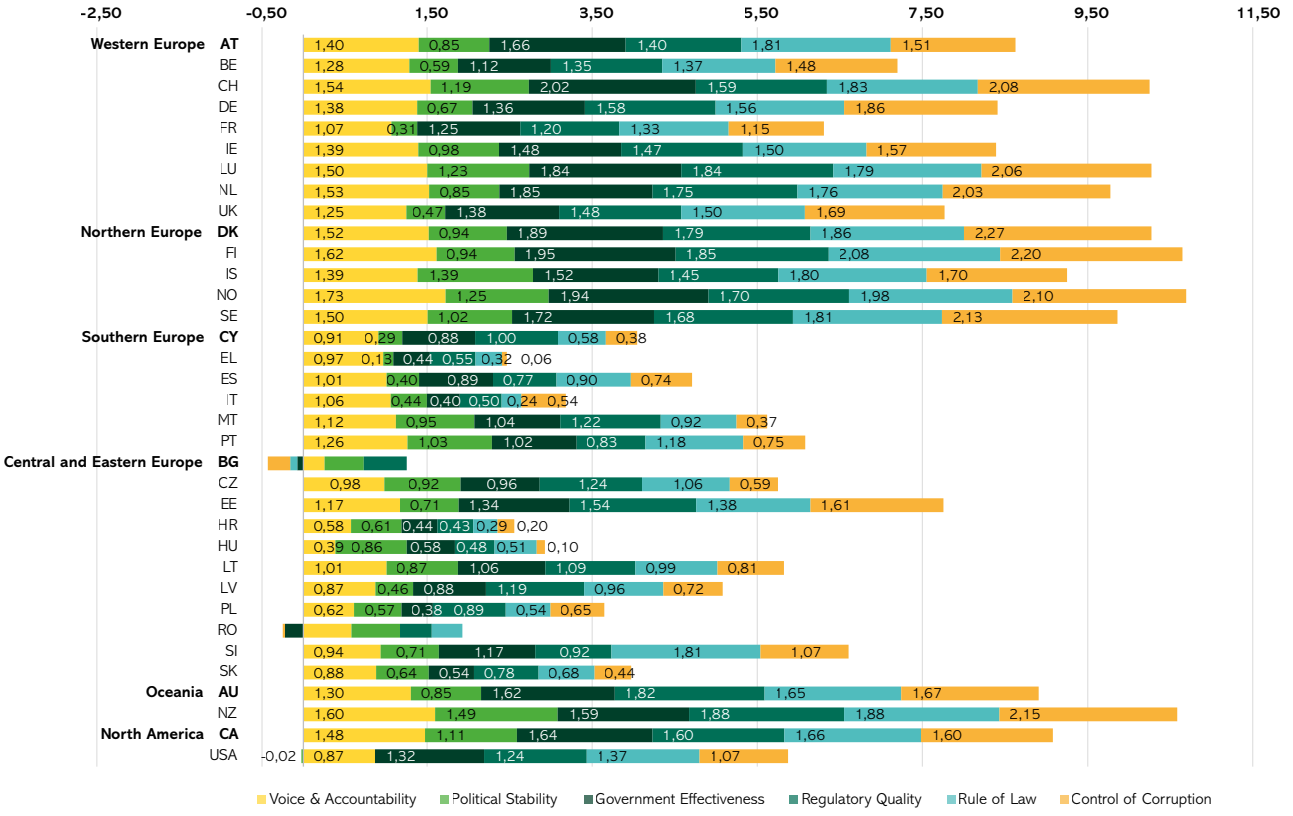
To measure the concept of good governance, we rely on the respective World Bank indicator. The indicator captures the concept with multiple dimensions and can thus be seen as a composite indicator (see Box 1). By combining these dimensions, the indicators score good governance within a range from −2.5, indicating weak performance, to 2.5, indicating a strong performance.

The World Bank good governance indicators

- **Voice and accountability:** Perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association and a free media.
- **Political stability and absence of violence:** Perceptions of the likelihood of political instability and politically-motivated violence, including terrorism.
- **Government effectiveness:** Perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.
- **Regulatory quality:** Perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.
- **Rule of law:** Perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police and the courts, as well as the likelihood of crime and violence.
- **Control of corruption:** Perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests.

In Figure 3 we display all dimensions of the indicator (voice and accountability, control of corruption, rule of law, government effectiveness, political stability and regulatory quality) for each country in comparison. In terms of overall performance, the lowest scores are to be found in eastern and southern Europe, while the best ones are in northern and western Europe, Oceania and North America. The Netherlands has one of the highest overall scores among all countries. As such, the Netherlands displays similar performance to several northern European countries (i.e. Denmark, Finland, Norway and Sweden). In western Europe, only Luxembourg and Switzerland have higher scores.

Figure 3: World Bank Good Governance Indicators



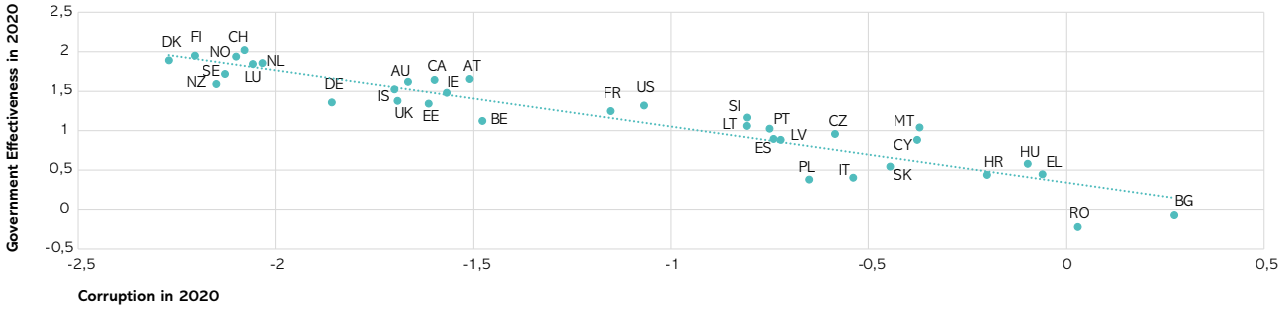
Source: World Bank

Note: The scores for each indicator are shown on the bars. They range from −2.5, indicating weak performance, to 2.5, indicating a strong performance.

To illustrate the composite nature of the good governance indicator, the dimensions can be linked to discover whether the scores on the respective dimensions are correlated. For instance, government effectiveness and corruption are linked by a very strong and negative correlation, i.e. a higher level of government effectiveness corresponds to a lower level of corruption[17] , as shown in Figure 4. This type of relationship has also been explored in the literature, for example by Zhao and Xu (2015) who similarly found that government effectiveness strongly decreases perceived corruption. However, also in this case it is important to point out that the causal direction is not entirely clear. It could be that a better-functioning government apparatus leads to having less need for resorting to corruption to, for example, obtain necessary construction permits (Fazekas, 2017). At the same time, it is also plausible that in a country were corruption practices are entrenched in the social and political system, the public administration system is dysfunctional in how it allocates resources, therefore leading to reduced effectiveness (Montes & Paschoal, 2016).

[17] The score is −0.929, which is significant at the 1% level. Note that in this part of the analysis, to facilitate the interpretation of results, we use a rescaled version of the control of corruption good governance indicator, ranging from −2.5 (indicating a very 'clean' country) to 2.5 (indicating a high level of perceived corruption).

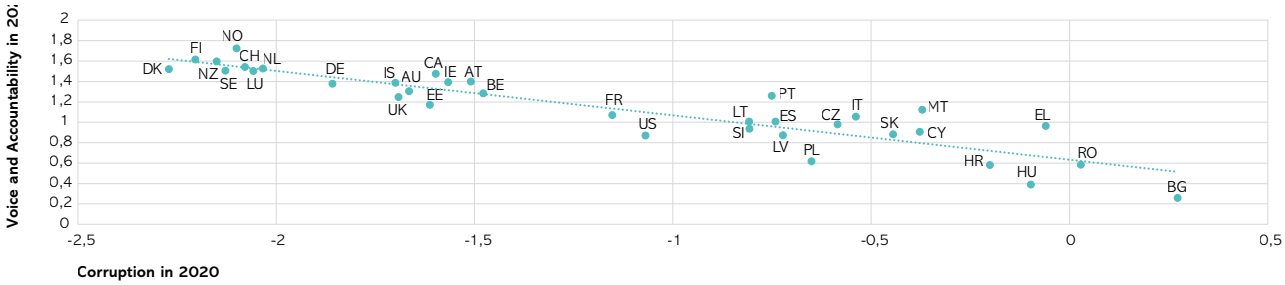
Figure 4: Correlation between government effectiveness and corruption, 2020



Source: World Bank

The relationship between corruption and voice and accountability is particularly interesting, as shown in the literature. For example, Relly (2012) found a negative correlation between the prevalence of corruption and indicators such as access to information, freedom of the media and the quality of the political process. The World Bank's voice and accountability indicator provides us with a comprehensive score based upon very similar measures. Figure 5 shows that there is a linear and negative relationship between the two indicators, which is characterised by a very high correlation coefficient (0.907, significant at the 1% level). This suggests that countries where important citizens' freedoms and democratic institutions are not particularly strong are also characterised by a high level of corruption perceptions.

Figure 5: Correlation between corruption and voice, and accountability, 2020

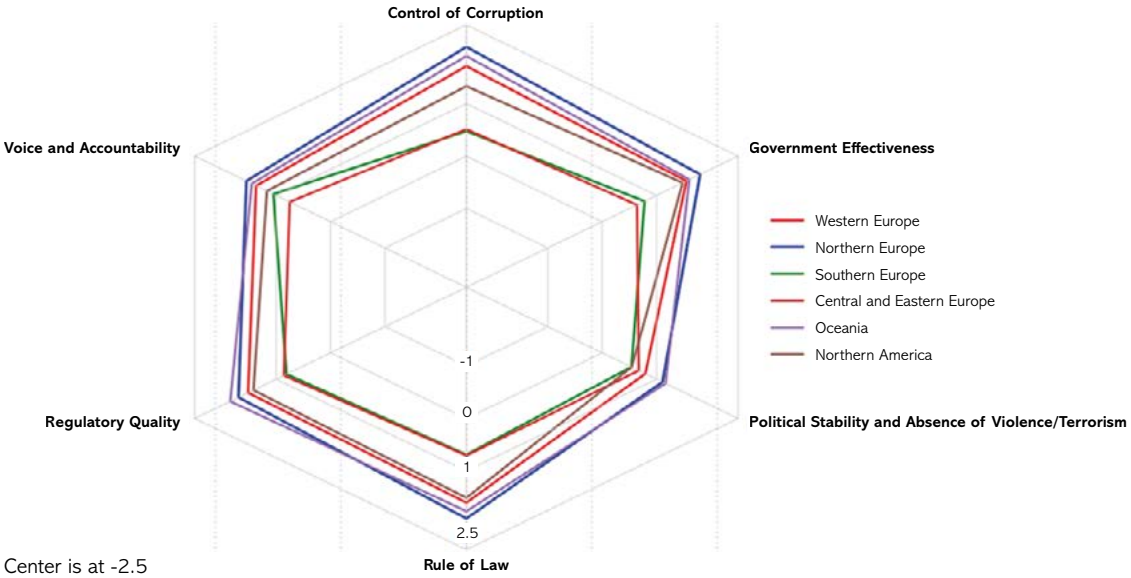


Source: World Bank

This is in line with the findings of Zhao and Xu (2015) and Tiwari (2012), who also describe a negative relationship between voice and accountability, and corruption. Brunetti and Weder (2003), who focus solely on the concept of freedom of the press, found that the freer the press is, the more likely a country is to have lower corruption. That is because free media effectively acts as a check on corrupt practices by increasing bureaucrats' chances of being uncovered and is also less likely to be involved in corruption schemes.

An alternative way of illustrating good governance scores is shown in the radial plot in Figure 6. The figure displays the spread of the respective indicators aggregated by region. It demonstrates that countries in southern Europe score higher, in proportion, in the voice and accountability indicator. In turn, countries in North America are subject to more violence and terrorism, and political instability (low scores on these dimensions). Moreover, it is interesting to note that a dimension which varies significantly from country to country is control of corruption (see Figure 3). Countries with an overall high score on good governance tend to have a very high score for control of corruption as well, whereas countries with low overall scores are also subject to corruption, in some cases even displaying negative scores (see Bulgaria and Romania). On the other hand, there is less variation in the voice and accountability indicator, meaning that countries are relatively homogeneous in that dimension, even though scores tend to be lower in eastern Europe.

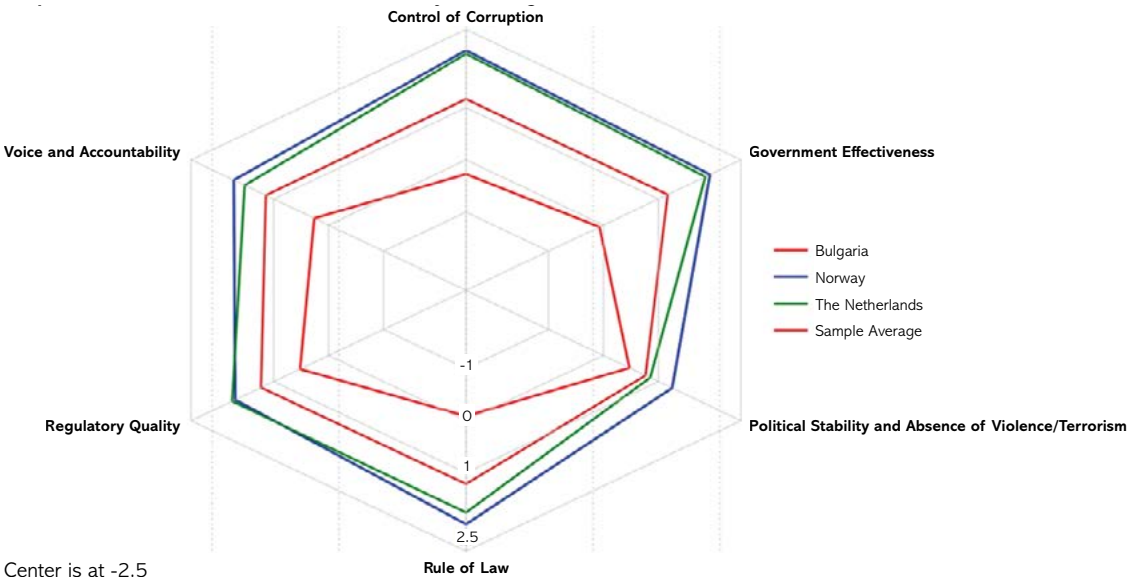
Figure 6: Radial plot showing the spread of all good governance indicator scores for each region



Source: World Bank

The multidimensional nature of the indicator invites further comparison of individual countries. Figure 7 shows the scores of each good governance indicator for Bulgaria and Norway; the two countries with the lowest and highest overall good governance score, respectively. This figure also includes the Netherlands. Looking at the shape of the hexagon for Bulgaria we see that it scores lower in rule of law and control of corruption than it does in the other good governance indicators. Norway on the other hand scores on average the same for each indicator (thus the shape of the hexagon is quite uniform). Although the size of the hexagon for the Netherlands is very similar to that of Norway, the shape itself shows that the Dutch scores for regulatory quality, effectiveness and control of corruption are higher in relation to their scores in rule of law political stability and absence of violence.

Figure 7: Radial plot showing the spread of all good governance indicator scores for Bulgaria, Norway and the Netherlands



Source: World Bank

3.6.1. Voice and accountability

Voice and accountability either increased or remained the same for roughly half of the countries, while it decreased for the rest (see Table A19 in the Annex). The largest decreases are found in some eastern European countries, but also in southern ones as well as the US. Northern Europe and the Netherlands continue to outperform the rest of Europe in voice and democratic accountability. Interestingly, countries ruled by right-wing populist governments at some point between 2007 and 2020 (see eastern Europe and the US) registered a sizeable deterioration.

The largest decreases have been in Poland (−0.26), Bulgaria (−0.43) and Hungary (−0.65). Significant decreases also happened in the US (−0.24) and in France (−0.19). This may be because Poland and Hungary have been under the spotlight for the illiberal measures adopted by their governments, constraining the freedom of the press, expression and the democratic process in general (Drinóczi & Bień-Kacała, 2019). The same applies for Bulgaria for the period under consideration (2007–2020; there was a change of government in 2021), during the premiership of Boyko Borisov. In the US, the low voice and accountability score coincides with Trump's presidency (Carey et al., 2019). In France there has been a small but constant decrease across the period, which is harder to explain.

Norway, Finland, New Zealand, Switzerland and the Netherlands have the highest scores for voice and accountability, and they have consistently improved from 2007 to 2020. In these countries, citizens are strongly involved in choosing their governments and there is a high level of freedom of expression and information. This is not surprising, as those countries also score very high in indicators related to democracy and freedoms. In contrast, Croatia, Hungary and Bulgaria, and more generally central and eastern Europe, seem to struggle with the quality of their democratic institutions and with the related civil liberties captured by this index.

3.6.2. Political stability and absence of violence and terrorism

As shown in Table A20 in the Annex, almost two-thirds (23 out of the 35) of countries considered show a negative trend, with a decrease of the score, signalling a decrease in the perceived political stability and an increase presence of political-related violence. This may have been due to the unfavourable economic situation, the rise of populist movements and mass immigration. Spain (+0.67), Romania (+0.39) and New Zealand (+0.24) show the most improvement in their score, while Finland (−0.54), Austria (−0.43), Greece (−0.4) and the US (−0.4) show a substantial deterioration in terms of perception of stability. New Zealand, Iceland and Norway score the highest in terms of political stability and absence of violence and terrorism. In these countries the perception of the likelihood of political instability and politically motivated violence (including terrorism) is low. These countries are well known for their political stability and 'social peace'. It is important to note, however, that in Norway there are far-right movements that have occasionally resorted to political violence and terrorism. Despite this, the perception of the political stability remains high. Cyprus, Greece and the US have the lowest political stability and absence of violence and terrorism scores, with the US clearly suffering from the Trump presidency. The Netherlands' performance is around the average of the sample (0.85), with a slight overall improvement between 2007 and 2020.

3.6.3. Government effectiveness

In this subsection, we examine government effectiveness.[18] Table 5 shows that when considering the overall change from 2007 to 2020, 25 out of 35 countries show a negative trend with a decrease in score, signalling a decrease of the perceived quality of public services. This could be, as in the case of the political stability and absence of violence indicator, as a result of a negative economic situation as well as of a lack of digitalisation of public services and the ageing of public servants. The countries with the greatest improvements are all located in central and eastern Europe: Estonia (0.4 increase), Lithuania (0.36) and Latvia (0.31). These countries show a stable uptrend if considering the four time intervals presented in Table 5. There are three countries with significant decreases in government effectiveness: Cyprus (0.54 decrease), Belgium (0.48) and Denmark (0.46). There is significant variation between regions in terms of government effectiveness. Whereas national scores remained rather stable in western, southern, central and eastern Europe, a decrease in effectiveness in northern Europe and even more so North America and Oceania can be observed.

[18] The World Bank government effectiveness indicator is perception-based. It measures the perception of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. The indicator ranges from −2.5 (weak) to 2.5 (strong) governance performance.

Table 5: Government effectiveness

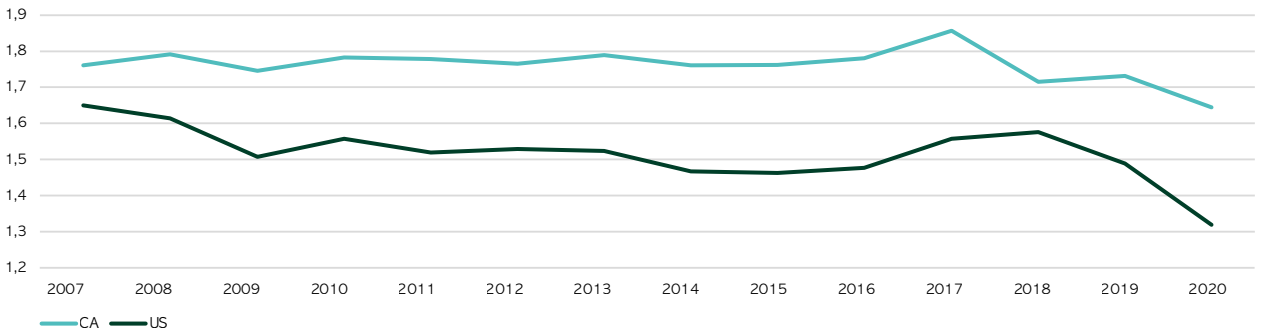
Region	Country	2007	2010	2013	2016	2019	2020	2020	Change
Western Europe	CH	**2,04**	-0,17	-0,05	0,18	-0,06	0,07	**2,02**	-0,02
Western Europe	NL	**1,73**	0,05	0,04	0,04	-0,05	0,05	**1,85**	0,13
Western Europe	LU	**1,59**	0,13	-0,09	0,06	0,04	0,11	**1,84**	0,25
Western Europe	AT	**1,87**	-0,05	-0,24	-0,07	0,02	0,13	**1,66**	-0,22
Western Europe	IE	**1,56**	-0,21	0,16	-0,15	-0,07	0,19	**1,48**	-0,08
Western Europe	UK	**1,65**	-0,03	-0,10	0,09	-0,13	-0,11	**1,38**	-0,27
Western Europe	DE	**1,64**	-0,12	0,00	0,18	-0,17	-0,17	**1,36**	-0,28
Western Europe	FR	**1,47**	0,00	0,02	-0,07	-0,04	-0,12	**1,25**	-0,22
Western Europe	BE	**1,61**	0,05	0,05	-0,28	-0,28	-0,02	**1,12**	-0,48
Northern Europe	FI	**1,97**	0,25	-0,04	-0,31	0,13	-0,06	**1,95**	-0,03
Northern Europe	NO	**2,02**	-0,15	0,01	-0,02	-0,01	0,07	**1,94**	-0,09
Northern Europe	DK	**2,35**	-0,25	-0,15	-0,09	0,05	-0,02	**1,89**	-0,46
Northern Europe	SE	**2,03**	-0,06	-0,17	-0,10	0,01	0,01	**1,72**	-0,31
Northern Europe	IS	**1,80**	-0,21	-0,10	-0,10	0,13	0,01	**1,52**	-0,27
Southern Europe	MT	**1,21**	-0,01	0,07	-0,30	-0,10	0,18	**1,04**	-0,17
Southern Europe	PT	**0,90**	0,09	0,21	-0,02	-0,01	-0,15	**1,02**	0,12
Southern Europe	ES	**0,99**	-0,05	0,23	-0,04	-0,13	-0,11	**0,89**	-0,10
Southern Europe	CY	**1,43**	0,10	-0,16	-0,41	0,03	-0,11	**0,88**	-0,54
Southern Europe	EL	**0,56**	-0,06	-0,14	-0,20	0,19	0,10	**0,44**	-0,11
Southern Europe	IT	**0,20**	0,27	0,06	0,04	-0,10	-0,08	**0,40**	0,20
Central and Eastern Europe	EE	**1,04**	0,05	-0,11	0,12	0,08	0,17	**1,34**	0,31
Central and Eastern Europe	SI	**0,94**	0,09	-0,01	0,11	-0,05	0,09	**1,17**	0,23
Central and Eastern Europe	LT	**0,70**	0,04	0,09	0,24	-0,03	0,02	**1,06**	0,36
Central and Eastern Europe	CZ	**0,90**	0,02	0,01	0,12	-0,09	0,00	**0,96**	0,06
Central and Eastern Europe	LV	**0,48**	0,23	0,18	0,12	0,10	-0,22	**0,88**	0,40
Central and Eastern Europe	HU	**0,71**	-0,05	0,03	-0,19	-0,01	0,08	**0,58**	-0,13
Central and Eastern Europe	SK	**0,73**	0,06	-0,06	0,10	-0,24	-0,04	**0,54**	-0,19
Central and Eastern Europe	HR	**0,47**	0,15	0,08	-0,20	-0,04	-0,02	**0,44**	-0,04
Central and Eastern Europe	PL	**0,39**	0,24	0,03	-0,01	-0,12	-0,16	**0,38**	-0,01
Central and Eastern Europe	BG	**-0,01**	0,05	0,03	0,14	0,05	-0,34	**-0,07**	-0,06
Central and Eastern Europe	RO	**-0,32**	0,18	0,24	-0,14	-0,12	-0,06	**-0,22**	0,10
Oceania	AU	**1,83**	-0,06	-0,13	-0,07	0,00	0,05	**1,62**	-0,21
Oceania	NZ	**1,66**	0,15	-0,06	0,08	-0,17	-0,08	**1,59**	-0,07
North America	CA	**1,76**	0,02	0,01	-0,01	-0,05	-0,09	**1,64**	-0,12
North America	US	**1,65**	-0,09	-0,03	-0,05	0,01	-0,17	**1,32**	-0,33

Source: World Bank

This is illustrated in more detail with the example of northern Europe, where governments are generally perceived to work effectively. However, in the timeframe under consideration, all countries have decreasing values with three of the five countries showing significant decreases: Denmark (0.46 decrease), Sweden (0.31) and Iceland (0.27).

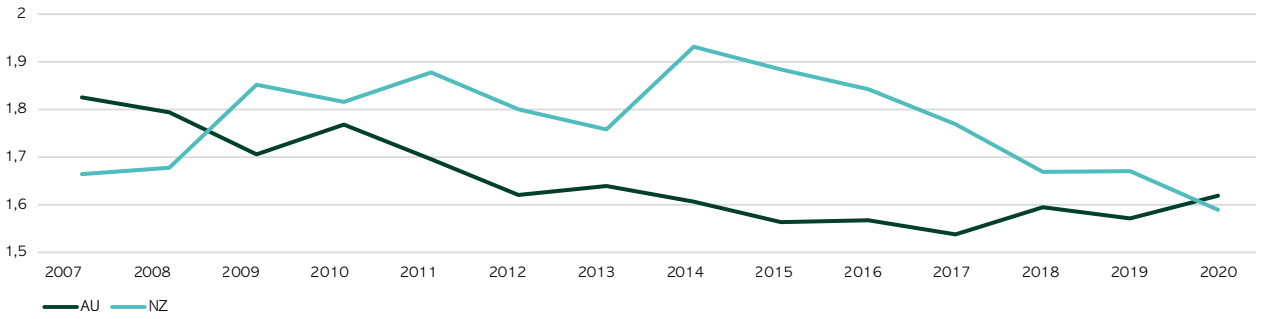
Similar trends can be observed in North America and Oceania (see Figures 8 and 9). In both regions, at certain points in time, the government effectiveness scores decreased significantly. Importantly, for North America, this decrease in government effectiveness occurred around 2017 and 2018 after a period of stability, whereas in the case of Oceania, significant drops are part of a long-term trend of decreasing government effectiveness.

Figure 8: Government effectiveness in North America



Source: World Bank

Figure 9: Government effectiveness in Oceania



Source: World Bank

The countries with the highest score in government effectiveness are located in western and northern Europe: Switzerland (2.0), Finland (1.95), Norway (1.94), Denmark (1.89), the Netherlands (1.85) and Luxembourg (1.84). It is noteworthy that while governments in northern Europe are perceived to be most effective, these countries also show an overall decrease – in some cases a significant decrease – in government effectiveness, whereas the Netherlands and Luxembourg improved on their performance.

In contrast, governments perceived to be the least effective are all located in central, eastern and southern Europe. There are two countries with negative scores: Romania (−0.22) and Bulgaria (−0.07). These two cases are indicative of a general picture in central and eastern Europe of low levels of government effectiveness and little to no (or negative) developments across the region.

3.6.4. Regulatory quality

According to Table A21 in the Annex, when considering the overall change in regulatory quality from 2007 to 2020, 22 out of 35 countries show a negative trend. This signals a decrease in the government's perceived ability to formulate and implement policies towards private sector development. Norway (+0.37), Finland (+0.31) and Czechia (+0.22) show the most improvement in their score. Finland is generally stable with minute and irrelevant fluctuations. Norway shows a consistent uptrend in the considered period. On the contrary, Italy (−0.44), Spain (−0.45) and Hungary (−0.71) show the largest decreases in regulatory quality scores. Italy, one of the countries with the lowest scores (0.5), shows a net downtrend in 2020, which is probably related to the large amount of bureaucratic red tape and the slow implementation of reforms needed to make the country more appealing for private investments. The countries with the best perceived regulatory quality are generally found in northern Europe, Oceania and western European countries such as Luxembourg (1.84) and the Netherlands (1.75), while the worst performers are concentrated in central, eastern and southern Europe.

3.6.5. Rule of law

When considering the overall change in the rule of law from 2007 to 2020 (see Table A22 in the Annex), 20 out of 35 countries show a negative trend, indicating a decrease in the extent to which agents have confidence in, and abide by, the rules of society, and in particular the quality of contract enforcement, property rights, the police and the courts, as well as the likelihood of crime and violence. Central and eastern European countries such as Romania (+0.46), Lithuania (+0.27), Estonia (+0.21) and Croatia (+0.21) show the most improvement in their score, with a consistent uptrend in the period considered. On the other hand, southern countries such as Malta (−0.71), Cyprus (−0.54) and Greece (−0.55) show the largest deterioration. Finland, Norway and New Zealand (followed closely by Denmark) have the highest rule of law scores. Interestingly, the scores of the top 19 countries are extremely close, showing little variation. After France, the country in 19th position, there is large variation between countries. Central, eastern and southern European countries underperform in this dimension. The Netherlands is performing well in terms of rule of law, with a score of 1.76 (with 2.5 being the maximum).

3.6.6. Control of corruption

Looking at control of corruption from 2007 to 2020 (see Table A23 in the Annex), 22 out of 35 countries show an overall negative trend in the perception of the extent to which the government manages to control corruption. That is, there was an increase in the perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests.

The three Baltic states (Lithuania, Estonia and Latvia) show the most improvement in their score. They show a consistent uptrend in the period considered. With the exception of Estonia (with a score of 1.61), which 'is considered the least corrupt country in central and eastern Europe and one of the most competitive new EU Member States' (GAN Integrity, 2020), Latvia (0.72) and Lithuania (0.81) still have an overall low score despite the uptrend. Denmark (2.27), Finland (2.2) and New Zealand (2.15) are the countries perceived to have the most control of corruption. The Netherlands is within the top 10 performers, with a score of 2.03. Countries are very close to each other with small gaps up to the 17th position of Belgium, where the gap becomes bigger. It should be noted that of the first 19 countries, 14 of them have experienced a decrease between 2007 and 2020, in various degrees, of the perception of control of corruption. Finally, at the very bottom, Greece (0.06), Romania (−0.03) and Bulgaria (−0.27) have the lowest scores for control of corruption, along with other southern, central and eastern European countries.

3.7. PUBLIC SECTOR PERFORMANCE AND EFFICIENCY

In this section, we will look at composite indicators to examine the performance and efficiency of the public sector in the 35 countries subject to this study. As suggested by Afonso et al. (2003), the first step is to combine administrative performance indicators, such as level of corruption and red tape, with economic indicators related to the overall economic performance and the distribution of wealth. This combination allows for a comprehensive view on public sector performance. The second step consists of relating such performance to the financial resources employed for the functioning of government, which yields a measure of public sector efficiency.

3.7.1. Public sector performance

To examine public sector performance (PSP), we constructed an indicator based on the model designed by Afonso and Kazemi (2016). Since 2016 is the latest year for which complete data is available for each country in this study, we focus on the period from 2007 to 2016. The indicator consists of two main components: opportunity indicators and economic indicators. Regarding the opportunity indicators, unlike Afonso and Kazemi, we only consider the administrative subindicators (corruption, red tape, judicial independence, property rights and the shadow economy), given the specific focus of this chapter on public administration in general (and not the administration of particular policy areas).
The entire set of economic indicators is included: Gini index, coefficient of variation of GDP growth, standard deviation of inflation, GDP per capita, GDP growth and unemployment. For more details on how this indicator was constructed, see Section 1.2 in the Annex.

The calculation of public sector performance based on this indicator yields a wide range between the countries with the highest and lowest overall performance. As depicted in Table 6, the country with the highest overall performance is Australia (1.86); the country with the lowest overall performance is Greece (0.4). Other countries with high levels of performance are Luxembourg (1.52), Switzerland (1.4), Iceland (1.39), New Zealand (1.37), Malta (1.34) and Poland (1.31). The Netherlands has a score of 1.24. Overall, 21 out of 35 countries can be considered to be showing good performance given that they score above 1, which is proposed by Afonso and Kazemi as the threshold. However, it is also noteworthy that only seven countries achieved a net increase in their performance scores between 2007 and 2016.

The countries with the lowest performance scores, in addition to Greece (0.4) are Italy (0.7) and Latvia (0.76). Apart from a few outliers, the countries with higher scores are generally located in Oceania, North America, and western and northern Europe; countries with lower scores are generally located in southern, central and eastern Europe.

Table 6: Public sector performance indicator

Region	Country	2007	2010		2013		2016		2016	Change
Western Europe	LU	**1,68**	▼	-0,24	▼	-0,07	▲	0,14	**1,52**	-0,16
Western Europe	CH	**1,51**	▼	-0,06	▼	-0,07	▲	0,02	**1,40**	-0,11
Western Europe	NL	**1,34**	▼	-0,15	▼	-0,10	▲	0,16	**1,24**	-0,10
Western Europe	DE	**1,17**	▲	0,10	▼	-0,19	▲	0,15	**1,23**	0,06
Western Europe	AT	**1,30**	▼	-0,10	▼	-0,13	▲	0,12	**1,19**	-0,12
Western Europe	UK	**1,13**	▼	-0,05	▲	0,02	▲	0,08	**1,18**	0,05
Western Europe	BE	**1,17**	▼	-0,04	▼	-0,13	▲	0,08	**1,08**	-0,09
Western Europe	IE	**1,21**	▼	-0,30	▼	-0,02	▲	0,15	**1,04**	-0,18
Western Europe	FR	**1,09**	▼	-0,06	▼	-0,11	▲	0,05	**0,97**	-0,13
Northern Europe	IS	**1,56**	▼	-0,82	▲	0,46	▲	0,19	**1,39**	-0,17
Northern Europe	NO	**1,47**	▼	-0,19	▲	0,03	▼	-0,07	**1,25**	-0,23
Northern Europe	DK	**1,13**	▼	-0,03	▼	-0,08	▲	0,17	**1,19**	0,07
Northern Europe	SE	**1,20**	▲	0,14	▼	-0,29	▲	0,06	**1,12**	-0,08
Northern Europe	FI	**1,21**	▼	-0,13	▼	-0,22	▲	0,21	**1,07**	-0,14
Southern Europe	MT	**1,34**	▲	0,05	▲	0,02	▼	-0,08	**1,34**	-0,01
Southern Europe	CY	**1,11**	▼	-0,22	▼	-0,61	▲	0,79	**1,07**	-0,04
Southern Europe	ES	**0,95**	▼	-0,26	▼	-0,11	▲	0,27	**0,85**	-0,10
Southern Europe	PT	**0,85**	▼	-0,08	▼	-0,19	▲	0,21	**0,80**	-0,05
Southern Europe	IT	**0,78**	▼	-0,04	▼	-0,22	▲	0,19	**0,70**	-0,08
Southern Europe	EL	**0,70**	▼	-0,56	▲	0,12	▲	0,14	**0,40**	-0,30
Central and Eastern Europe	PL	**1,43**	▼	-0,16	▼	-0,14	▲	0,18	**1,31**	-0,12
Central and Eastern Europe	CZ	**1,22**	▼	-0,22	▼	-0,14	▲	0,26	**1,12**	-0,10
Central and Eastern Europe	SI	**1,27**	▼	-0,36	▼	-0,20	▲	0,28	**0,99**	-0,28
Central and Eastern Europe	SK	**1,51**	▼	-0,30	▼	-0,34	▲	0,13	**0,99**	-0,52
Central and Eastern Europe	RO	**1,09**	▼	-0,63	▲	0,40	▲	0,11	**0,98**	-0,11
Central and Eastern Europe	EE	**1,19**	▼	-0,39	▼	-0,04	▲	0,15	**0,92**	-0,27
Central and Eastern Europe	HU	**0,75**	▼	-0,01	▲	0,03	▲	0,09	**0,86**	0,11
Central and Eastern Europe	BG	**1,05**	▼	-0,31	▼	-0,13	▲	0,23	**0,84**	-0,21
Central and Eastern Europe	HR	**0,65**	▼	-0,12	▲	0,04	▲	0,25	**0,82**	0,17
Central and Eastern Europe	LT	**1,35**	▼	-0,64	▲	0,13	▼	-0,04	**0,81**	-0,54
Central and Eastern Europe	LV	**1,18**	▼	-0,89	▲	0,41	▲	0,06	**0,76**	-0,42
Oceania	AU	**1,71**	▲	0,12	▲	0,01	▲	0,02	**1,86**	0,16
Oceania	NZ	**1,11**	▲	0,10	▲	0,09	▲	0,07	**1,37**	0,26
North America	CA	**1,50**	▼	-0,23	▼	-0,03	▼	-0,06	**1,18**	-0,32
North America	US	**1,18**	▼	-0,03	▼	-0,03	▲	0,00	**1,12**	-0,06

Source: Own calculation

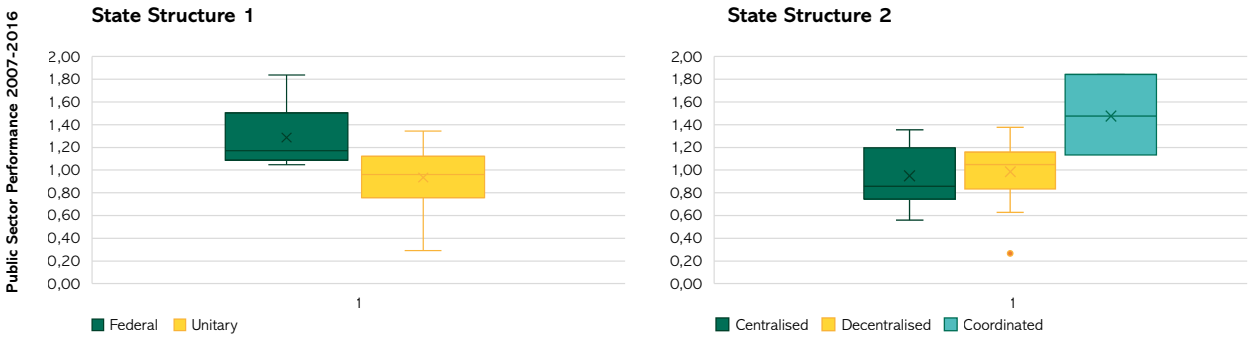
In Section 3.2, the characteristics of the 35 countries' public administration systems were described with five dimensions: state structure, executive government, relations between government and civil service, administrative culture and diversity of policy advice. In the remainder of this section we further examine public sector performance by relating these system characteristics with performance scores. In doing so, we can determine whether specific characteristics are associated with public sector performance.

State structure

The structure of the state has two dimensions: a vertical dimension referring to the distribution of power between different levels of government and a horizontal dimension referring to patterns of coordination at the central government level. As regards distribution of power along the vertical dimension, countries can be categorised as federal or unitary, and as centralised, decentralised or coordinated.

The relation between state structure and public sector performance is represented in Figure 10. The figure shows that federal countries, in general, have higher performance scores.[19] Moreover, it appears that countries in which the distribution of power is coordinated have significantly higher performance scores. It should be noted, however, that according to the classification by Pollitt and Bouckaert (2017), only two countries (Australia and Germany) have a coordinated structure. Hence, for the remaining countries with centralised and decentralised structures, no significant difference can be detected.

Figure 10: Box plots on public sector performance and state structure



Source: Pollitt and Bouckaert (2017) and own calculation

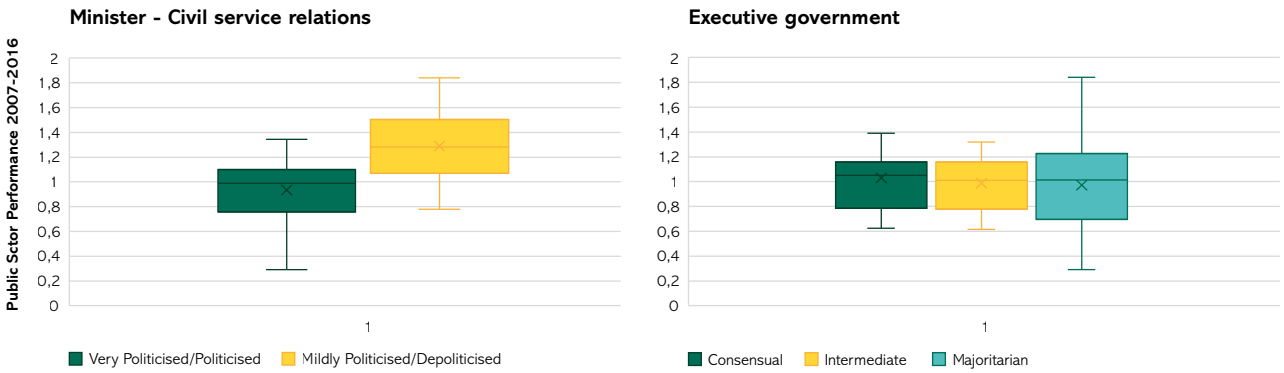
Minister–civil service relations and executive government

The nature of the government and minister–civil service relations are key dimensions for the functioning of countries' executives. As regards governments, a distinction can be made between majoritarian and consensual governments as well as intermediate systems. For the relations between government and the civil service, the level of politicisation is most important.

The relation between dimensions of the executive government and public sector performance is represented in Figure 11. As the figure shows, countries in which there is more separation between the political power and the appointment of civil servants are characterised by higher performance scores.[20] At the same time, regarding the nature of government, no significant difference between majoritarian, consensual and intermediate systems can be detected.

[19] Countries categorised as federal: Australia, Belgium, Canada, Germany, Switzerland, US.
[20] Countries categorised as depoliticised/mildly politicised: Australia, Canada, Cyprus, Malta, the Netherlands, Switzerland.

Figure 11: Box plots on public sector performance, minister–civil service relations and type of executive government



Source: Pollitt and Bouckaert (2017) and own calculation

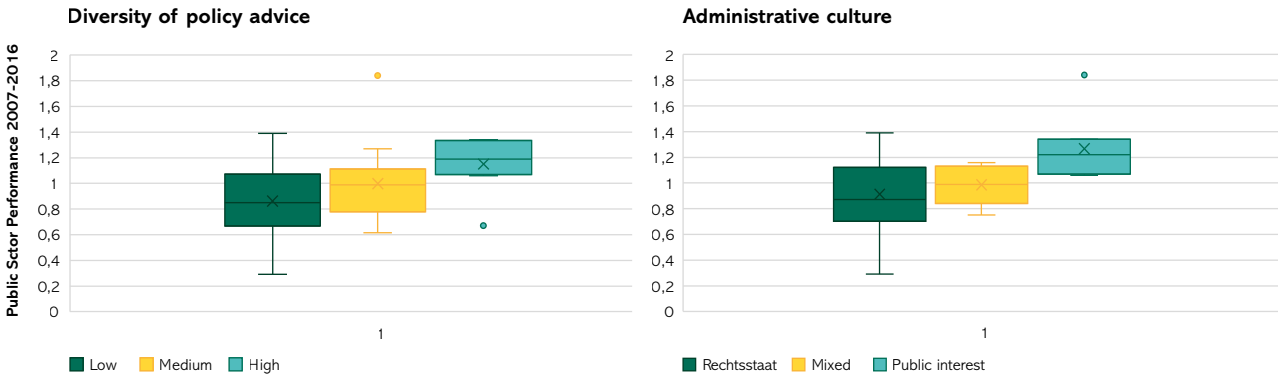
Note: For ease of representation, the 'Very politicised' category (which is the US only) has been grouped into the 'Very politicised/Politicised' category, and the 'Depoliticised' category (which includes CH and CY) has been grouped into the 'Mildly politicised/Depoliticised' category.

Administrative culture and diversity of policy advice

The notion of administrative culture refers to the values, beliefs and habits that characterise public administration, which includes the diversity of policy advice. Here, a distinction can be made between two ideal-types: the *Rechtsstaat* model and the 'public interest' model.

The relation between these administrative dimensions and public sector performance is represented in Figure 12. The figure shows that the public interest model is associated with higher performance scores.[21] Moreover, countries that have taken steps to reform their *Rechtsstaat*-based public administrations introducing some of the features that are typical of the public interest model, perform marginally better than countries that are based on a pure *Rechtsstaat* system. Finally, it appears that the more countries diversify the sources of policy advice, the better their public sectors perform, underscoring the need to rely on a wide range of voices when it comes to policymaking, as opposed to exclusively relying on the civil service.

Figure 12: Box plots on public sector performance, administrative culture and diversity of policy advice



Source: Pollitt and Bouckaert (2017) and own calculation

[21] Countries categorised as public interest: Australia, Canada, Ireland, Malta, New Zealand, the UK, US.

3.7.2. Public sector efficiency

To analyse the relationship between performance and cost, we replicate (with a few adjustments) the Public Sector Efficiency (PSE) indicator introduced by Afonso and Kazemi (2016). As with the PSP indicator, we focus on the period from 2007 to 2016, given the described data availability reasons. Also in this case, we only consider the administrative subindicators (corruption, red tape, judicial independence, property rights and the shadow economy), while employing all the economic indicators, including the reciprocal value of the Gini coefficient. The PSE indicator is concerned with efficiency, intended as the ability to obtain the best possible performance (outcome) with the least possible amount of resources (input). For more details on how this indicator was constructed, see Section 1.3 in the Annex.

When considering the overall change from 2007 to 2016 most countries show a negative trend, with a decrease in score (see Table A24 in the Annex). This signals a decrease in public administrations' ability to perform well with the financial resources at their disposal. Although most countries registered a decrease in their PSE score, Lithuania, Slovakia and Latvia saw a significant reduction. On the other hand, the few countries whose score improved did not experience particularly sizeable changes, as in the case of Denmark, Germany and Hungary but not for Croatia). PSE scores are wide-ranging and the two best performing countries, Australia and Switzerland, have particularly high scores exceeding the value of 2. The third best performer, Luxembourg, has a lower score of 1.63. At the other end of the scale, France, Italy and Greece are the three worst performers, with the latter having a particularly low score (0.34). The best performers are generally located in Oceania, North America and – in a few cases, perhaps surprisingly – in central and eastern Europe (in particular Poland, Romania and Czechia). In contrast, many of the countries characterised by an inefficient public sector are generally located in southern, central and eastern Europe, but there are some interesting outliers from northern Europe (for example Finland). In contrast to what we observe about Finland with regard to other indicators, in the case of PSE it seems to underperform compared with the other countries. In this case the Netherlands has a score in line with the average (1.14).

3.8. ECONOMIC AND SOCIAL OUTCOMES

In the conceptual framework, outcomes are defined as the societal, economic and political effects relevant to a policy area. Hence, outcomes can be seen as the results of a governance system which affect citizens and societies at large. To capture these effects, in this section we examine several indicators related to economic and social performance.
Since these indicators are indicative for the good functioning of the public sector, this is an essential part of the analysis. To provide an overview of countries' performance in comparison and over time, we examine first the respective values of key indicators in a descriptive manner (first-level analysis). The second level of analysis entails linking specific indicators to detect patterns in the relationship between good governance (output) and these outcomes.

3.8.1. Economic indicators

In this subsection, we focus on two indicators related to economic performance: overall performance measured by gross domestic product (GDP) per capita and the level of wealth inequality measured through the Gini coefficient. The benchmarking study will include a substudy on economy, infrastructure and science, and technology and innovation, in which more in-depth economic analysis will be conducted. However, due to the importance of the public sector for economic performance, we briefly examine these key indicators in this subsection on public administration outcomes.

3.8.1.1. Overall performance

As shown in Table A17 in the Annex, all countries, with the exception of Greece, have experienced an increase in their GDP per capita in the period from 2007 to 2020. There are, however, significant differences among countries regarding the magnitude of this increase as well as the direction of change throughout this period.

There are some countries (e.g. Ireland, Luxembourg, Denmark, Switzerland and Lithuania) that show significant increases. These countries are located in western, northern, central and eastern Europe. The Netherlands is located in the middle in terms of absolute change of GDP per capita over time: from USD 43 939.1 in 2007 to 59 266.9 in 2020. However, since it is difficult to compare absolute changes between countries with different starting positions, we refrain from further analysis and refer to the 2023 substudy.

Nonetheless, the variation among countries in terms of direction of change over time is noteworthy. In 2010, in the aftermath of the financial crisis, several countries show only marginal increases whereas six countries show a decrease. In 2013, most of these countries had recovered whereas two countries show a decrease. The countries which were most affected by the financial crisis are located in southern, central and eastern Europe, with the exception of Ireland and Iceland which, due to macroeconomic features, were particularly exposed to disruptions on the financial market. The only country that shows decreases in 2010 and 2013 is Greece, which was also most affected by austerity policies in the context of the EU's response to the crisis.

The Covid-19 pandemic left an even bigger imprint on economic performance. In 2020, 24 out of 35 countries registered a decrease in GDP per capita. The remaining countries, by and large, show only marginal increases. The Netherlands is among the latter countries with a marginal increase of USD 262.59 in 2020. Hence, it can be deduced that the Netherlands was able to cope well with the economic and social crisis induced by the pandemic (see OECD 2021d). The OECD report concludes that effective economic support and the presence of digital skills in the Dutch workforce proved decisive in this respect. With a view to ongoing policy responses, the OECD recommends expanding the digital transformation, to address the issue of an ageing population, to continue supporting the workforce in upskilling and to mainstream sustainability in the economy.[22] These recommendations are very much in line with the parameters informing the EU Recovery and Resilience Facility (RRF).

The RRF entails a target of 37% of national spending on climate action and 20% on digital transformation. The disbursement of EU funding is linked to these targets and Member States have to demonstrate their plans on spending these funds in national recovery and resilience. The national plans are being assessed by the European Commission and, based on the Commission's recommendation, the Council of Ministers of the EU decides on the disbursement. Due to the long-lasting coalition negotiations of the current government, the Dutch national recovery and resilience plan was the last to be submitted to the European Commission (formal submission in July 2022). However, in line with the OECD recommendations, the plan entails a number of measures geared towards green and digital transformation, which also exceeds the targets set by the EU; the Dutch national plan consists of climate-related measures making up 48% of the total expenditure and measures related to digital, making up 26% of the total expenditure. The main challenge in the coming months will be to develop interministerial structures and administrative capacities to design, carry out and evaluate the implementation of the respective projects.

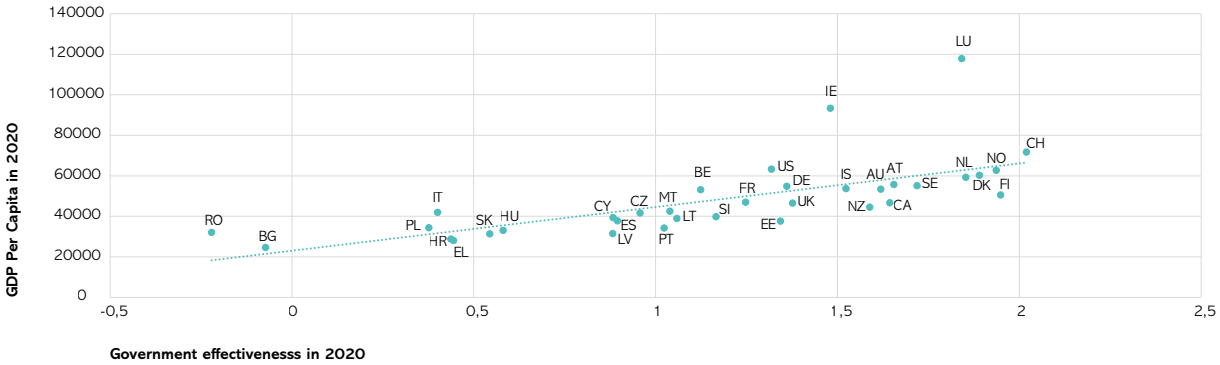
3.8.1.2. How does good governance affect GDP?

The GDP (or GDP per capita) is a key indicator of countries' economic performance and one of the main dependent variables in macroeconomics. Extensive research has been carried out to statistically investigate the determinants of GDP focusing on multiple economic and non-economic variables such as regional location, institutional characteristics and education as explanatory factors (e.g. Barro, 1997; Ciccone & Jarociński, 2010; Cuaresma et al., 2014). Following the descriptive examination of these indicators, the second level of analysis entails linking specific indicators to detect patterns in the relationship between good governance (output) and these outcomes. To this end, we examine several correlations between dimensions of good governance and outcome indicators as the first step towards explanatory analysis of public sector performance.

Although it is not generally accepted in the literature that governments have a significant effect on economic performance, the effectiveness of governments is one of the non-economic factors which can be assumed to have significant effects. Hence, we correlate the good governance indicator for government effectiveness (see Section 3.6.3) with countries' GDP per capita (see Figure 13). Recall that in terms of GDP, it was shown above that almost all countries, albeit with regional variation, have experienced an increase in their GDP per capita in the 2007–2020 period (see Section 3.8.1.1). The result displayed in Figure 13 suggests that countries with high levels of government effectiveness tend to have better economic performance. This is corroborated by the correlation coefficient (0.679, which is significant at the 1% level) of the relationship between government effectiveness in 2020 and GDP per capita in 2020, which suggests a positive linear relationship. Hence, there is a strong suggestion that countries with effective governments also experience higher levels of GDP.

[22] Additional recommendations concern primarily housing and environmental protection. These issues are dealt with in the specific chapters of the benchmarking study.

Figure 13: Correlation between government effectiveness and GDP, 2020



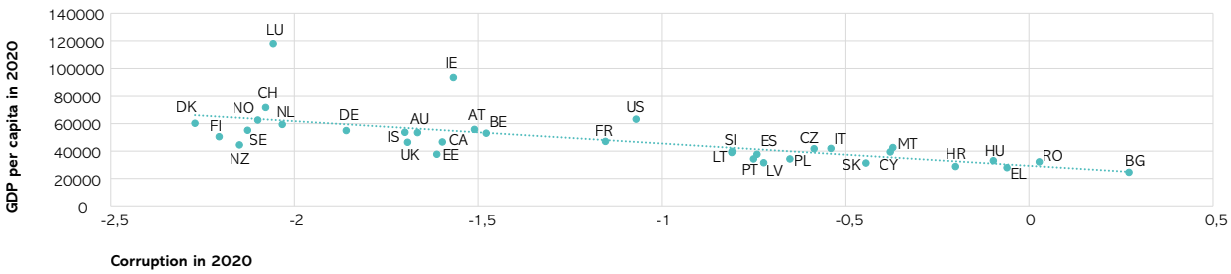
Source: World Bank

This correlation is in line with the results of the previous iteration of this study, which found that most of the good governance indicators are positively correlated with GDP per capita (SCP, 2015). However, correlations of two variables do not say anything about the direction of causality. Accordingly, the authors of the SCP study suggest that the relationship goes in two directions: wealth enables the good functioning of the public administration apparatus which, in turn, is an essential enabler of economic activity.

While more explanatory research is needed to determine the effect of government effectiveness on economic performance, this positive correlation is nevertheless relevant to further extend the discussion on the two single indicators (see Sections 3.8.1.1 and 3.6.3). While almost all countries have experienced an increase in their GDP per capita in the 2007–2020 period, all countries were affected by the economic downturn resulting from the Great Recession of 2008–2009, which hampered their administrative capacities to deliver services (Lee, 2018). Moreover, in terms of government effectiveness, 25 out of 35 countries show a negative trend of perceived quality of public services. Given the dual causality of effectiveness and GDP, this is a concerning trend because decreasing effectiveness might affect economic growth, which then further undermines effectiveness and thus public-sector performance.

In general, public-sector integrity is crucial for building and maintaining trust in governments and public administrations (see Macaulay, 2018). Hence, the control of corruption is another good governance dimension which is politically salient, given the detrimental effects of lacking integrity on public sector performance and trust. To examine this relationship, we correlate countries' GDP per capita with the level of corruption[23] (see Figure 14). As the figure demonstrates, corruption and GDP per capita are negatively correlated (0.668, significant at the 1% level). This corroborates the findings of the existing literature (Zhao & Xu (2015). Due to the salience of corruption, we will return to this issue in Section 3.9 with a more sophisticated regression analysis.

Figure 14: Correlation between corruption and GDP



Source: World Bank

[23] Note that in this part of the analysis, to facilitate the interpretation of results we use a rescaled version of the control of corruption good governance indicator, ranging from −2.5 (indicating a very 'clean' country) to 2.5 (indicating a high level of perceived corruption).

3.8.1.3. Distribution of wealth

Table A18 in the Annex suggests that, in general, countries show variation of wealth inequality ranging from values of 23.2 (Slovakia) to 41.5 (US); the Gini coefficient ranges from 0 (full equality) to 100 (full inequality). There are no clear geographical patterns as equal and less equal countries are located in the same regions. For instance, in North America, the US (with 41.5, the highest overall value) and Canada (32.7) show very different values. Likewise, countries in central and eastern European show very different values with Slovakia (23.2), Slovenia (24.4), Czechia (25.3) being more equal than Bulgaria (40.3), Lithuania (35.3), Romania (34.8) and Latvia (34.5).

One-third of the countries have managed to reduce inequality while another third registers an increase in inequality; the remaining third is stagnating. There is also no indication that there is a trend for any particular region – in fact, the changes (improvement, stagnation or reduction) are distributed evenly across regions. Bulgaria, Luxembourg and New Zealand registered an increase in inequality, while Croatia, Poland and Portugal registered a decrease in inequality.

Overall, the Netherlands is among the countries with more equal wealth distribution (29.2). In western Europe, the Netherlands is the country with the second most equal income distribution, after Belgium; as regards the value of the Gini coefficient, it is at a similar position to countries in northern Europe, e.g. Sweden (29.3), Denmark (27.7), Norway (27.7) and Finland (27.7).

3.8.2. Social indicators

In this section, we focus on the role of citizens in relation to public sector performance. In line with the theoretical framework, citizens can be seen as the end users of public services. As such, citizens' perceptions of such services are important for two reasons. On the one hand, citizens' perceptions are important and relevant to the quality of public services. Citizens are seen as the consumers of services, and satisfaction with such services is an important indicator of public sector performance (see van de Walle, 2018). On the other hand, citizens are the political subjects, the sovereign from which the states' political bodies derive legitimacy and to whom these bodies are ultimately accountable. Hence, citizens' perception of the public sector and service delivery goes beyond consumer satisfaction. To capture this dual perspective on the role of citizens, we examine in this subsection indicators on citizen satisfaction and trust. The latter can be defined as the belief of citizens in the ability of public sector organisations to deliver services and to achieve desirable objectives. As such, trust can be seen as the result of effective service delivery, but levels of trust also affect policy environments more broadly, and thus how policy objectives are formulated and pursued. In short, citizens' trust in the political system and its ability to achieve results feeds back into the loop of input, activity and output (good governance).

Finally, an additional indicator from a citizen perspective is the level of happiness in a country. In recent years, extensive research has been carried out on the link between the performance of the public sector and happiness. This topic is very interesting and warrants further analysis. Section 3.8.2.3 compares this dimension across countries and reflects on the positive correlation between happiness and government effectiveness.

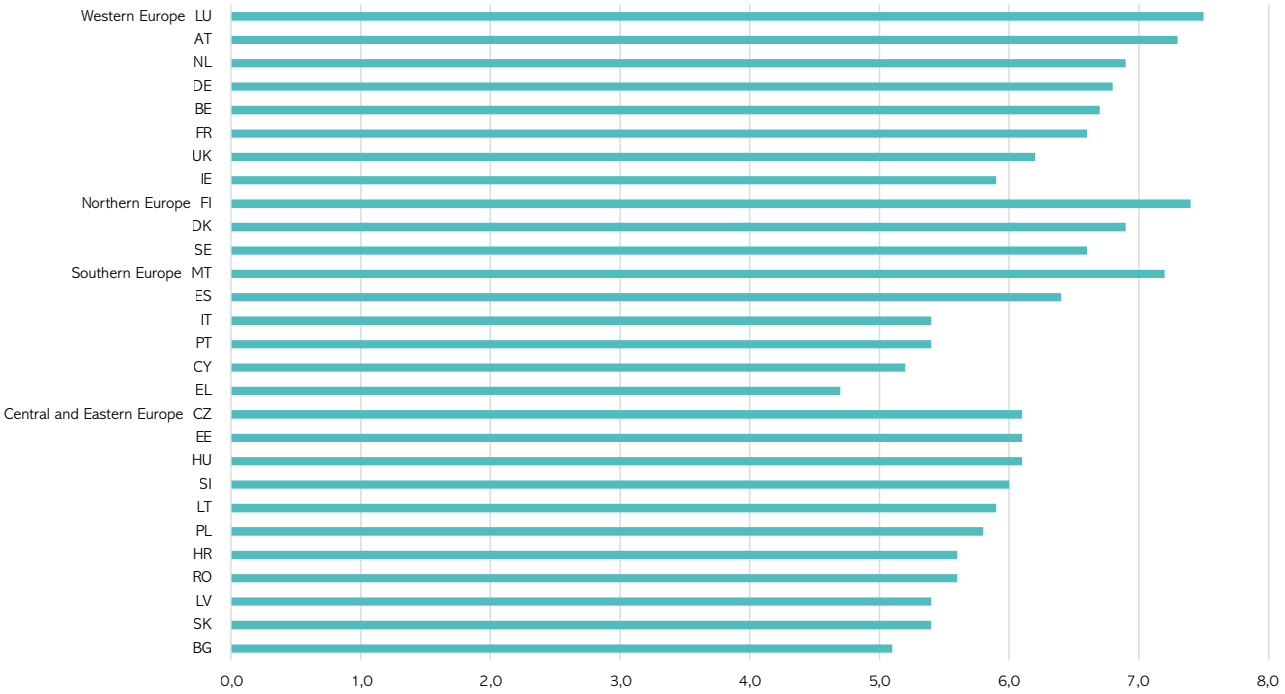
3.8.2.1. Satisfaction

Since we defined citizens as consumers of public services, we will now present an indicator[24] measuring their level of satisfaction across countries.

As shown in Figure 15, countries with the highest level of satisfaction with public services are mostly located in northern and western Europe, whereas those with the lowest level are predominantly to be found in southern, central and eastern Europe. There are some notable exceptions, such as Malta, a southern country, which is characterised by a very high level of satisfaction (7.2) and, on the contrary, Ireland, a western country, where the level of satisfaction equals just 5.9.
Luxembourg is the country in which citizens are the most satisfied about public services (7.5), followed by Finland (7.4) and Austria (7.3). A very high level of satisfaction is also reached in the Netherlands (6.9). In contrast, citizens are scarcely satisfied with public service delivery in Cyprus (5.2), Bulgaria (5.1) and Greece (4.7).

[24] The indicator is based upon the European Quality of Life Survey 2016 (the most recent), whose respondents are residents of EU Member States aged 18 or older. It measures the mean value of survey respondents to questions about the satisfaction with public services. The indicator ranges from 0 (extreme dissatisfaction) to 10 (extreme satisfaction).

Figure 15: Satisfaction with public services index



Source: European Quality of Life Survey

3.8.2.2. Trust

In general, trust is an essential ingredient of any functioning social relationship, and it is of particular importance for open and democratic systems of governance (see Ariely, 2013). In line with the conceptual framework, trust is – among other factors – the result of public sector activity, output and outcome. At the same time, trust can be seen as input to the policy environment in which policy objectives are being defined and pursued through such activities.

As shown in Table A25 in the Annex, the countries with the highest levels of trust are all located in northern and western Europe: Switzerland (84.6), Norway (82.9), Finland (80.9), the Netherlands (78.1) and Luxembourg (78.02). With the exception of Belgium, the countries with the lowest level of trust are all located in central and eastern Europe: Poland (27.3), Belgium (29.5), Latvia (30.7), Slovakia (30.7) and Czechia (31.9).

In the timeframe from 2007 to 2020, 24 out of 30 countries show an increase in the level of trust.[25] Around half of these experienced significant increases (in double digits), while the remaining half showed more moderate improvements (single digits). The countries with the highest increases in the level of trust are Portugal (36.98), Lithuania (35.95), Finland (34.68) and Iceland (33.51).

There are six countries in which the level trust was decreasing and four of those display significant decreases: Australia (−16.33) and the UK (−15.65) show large decreases, while Poland (−8.25) and Belgium (−4.17) show moderate levels of decrease.

The numbers reveal interesting developments at the regional level. All northern European countries display increases of trust since 2019. Despite having lower levels of trust overall, central and eastern European countries show a steady increase in the level of trust. Although several countries experience sharp decreases and increases in specific years, 6 out of 8 countries for which data are available, show an overall increase from 2007 to 2020, with four countries having notable values: Lithuania (35.95 increase), Latvia (19.96), Slovenia (12.11) and Hungary (17.72).

[25] The population for this indicator is 30 countries because in 5 countries the response rate to the survey was not high enough to produce reliable data.

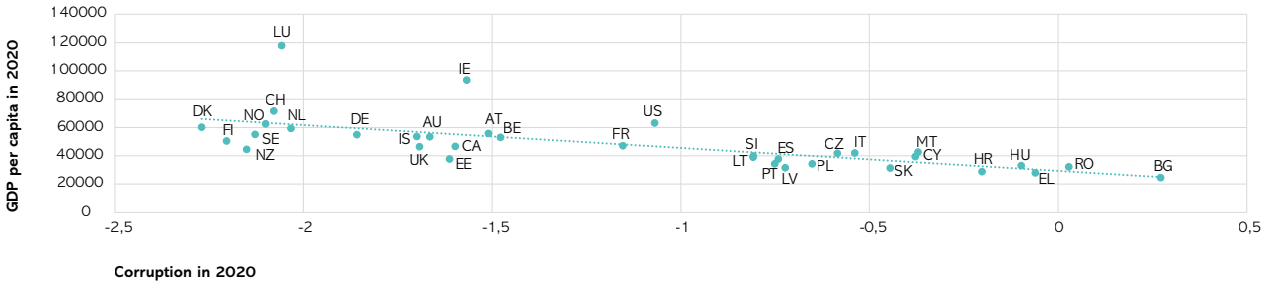
Nevertheless, while overall trends can be discerned from the data several regions, apart from northern Europe, display significant variation in the level of trust among countries. In western Europe, for instance, values range from 84.6 in Switzerland to 29.5 in Belgium. Moreover, in the same timeframe, some countries experience sharp increases, while others experience decreases in their trust scores. For instance, Greece saw a sharp decrease in trust during the years after the financial crisis and only recovered years later, whereas Portugal has continued to grow after initial decrease in the early 2010s. The result is that starting from similar positions in 2010 (Portugal 24.5, Greece 23.7), both countries have now very different levels of trust (Portugal 61.5, Greece 39.7). A similar situation can be observed in the Oceanic region, where Australia and New Zealand started from similar positions in 2010 (New Zealand 63.9, Australia 61.0). Yet, while trust remained stable in New Zealand, it dropped by 16.33 in Australia to 44.6. This drop occurred in the context of a sharp decrease from 2010 to 2012 and levels of trust have not recovered since.

These numbers indicate two important points. First, despite some regional similarities, there are significant variations in the levels of trust in general and over specific periods of time in which values increase for one country whereas they decrease in another country. Second, even though some countries experience sharp drops they manage to recover, while other countries remain at low levels of trust after experiencing such drops. This highlights the importance of maintaining trust, given the difficulty in regaining it. To uncover the mechanism of such variations requires additional case studies at the country level, which will provide additional opportunities of mutual learning by comparing these cases accordingly.

The link between public sector performance and trust seems intuitive but conceptualising and analysing this link is more challenging. Most importantly, several factors at the macro level (e.g. GDP) and micro level (e.g. citizens' expectations or perception of government performance), and the public sector in general, affect this link (see Bouckaert et al., 2002). These factors are subsumed under two dimensions of performance: a process dimension which focuses on how results are produced, and an outcome dimension which focuses on the results themselves (Van Ryzin, 2011).

There seems to be a close relationship between perceptions of the degree to which public power is exercised for private gain and how confident citizens are in their governments (see Figure 16). The Pearson correlation coefficient for the relationship between corruption[26] in 2020 and trust government in 2020 is statistically significant at the 1% level and is strongly negative (−0.750). This indicates that countries with a higher level of corruption are more likely to have a lower level of trust in government in 2020.

Figure 16: Correlation between corruption and trust in government, 2020



Source: World Bank

These findings are consistent with those of Houston et al. (2016) and Van Ryzin (2011), who observe a positive and significant correlation between control of corruption and trust in government (or, since we rescaled the indicator, a negative correlation between corruption and trust in government). Van Ryzin (2021) emphasises that, when evaluating the performance of public administration, the honesty and professionalism of public servants is even more important in the eyes of citizens than outcomes themselves. In other words, the public process is even more salient than its results, which in turn are likely to be affected by the public process. Therefore, public administrations experiencing high levels of corruption and dishonest practices are not well positioned to deliver quality public services.

[26] Note that in this part of the analysis, to facilitate the interpretation of results we use a rescaled version of the control of corruption good governance indicator, ranging from −2.5 (indicating a very 'clean' country) to 2.5 (indicating a high level of perceived corruption).

Additionally, how well the public sector performs seems to be related to the public's trust in it (see Figure 17). Focusing on the relationship between the public sector performance scores in 2016 and trust in government in 2010, we observe a strong positive linear relationship (0.75, which is significant at the 1% level). In other words, the higher PSP score a country had in 2016, the more likely it is that that country had a higher level of trust in government in 2010. Although the data included (years 2010 and 2016) is somewhat outdated, it still provides interesting information. That is, it provides insight into the potential relationship between these indicators and concepts.

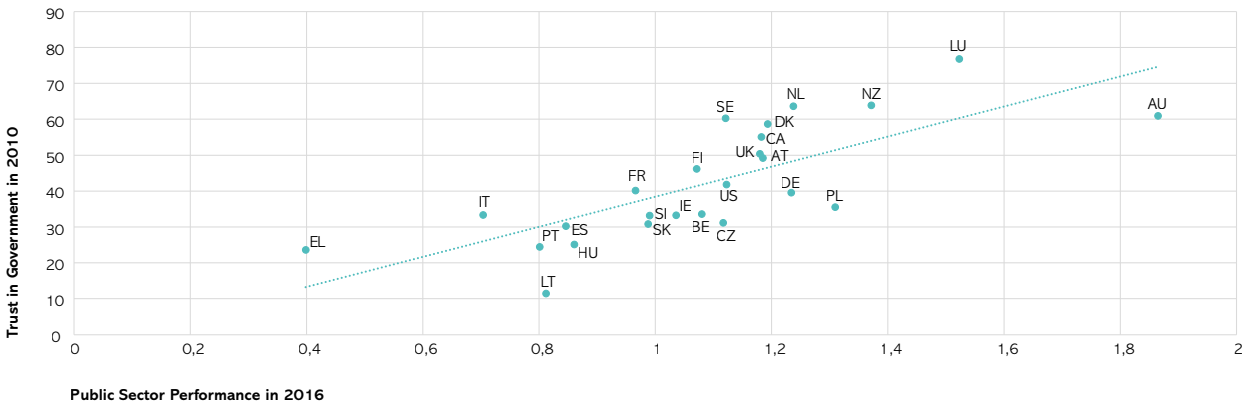
Figure 17: Correlation between public sector performance in 2016 and trust in government in 2020

Source: Own calculation and OECD

Van de Walle and Bouckaert (2003) and Van Ryzin (2007) point out that we should be careful about analysing this correlation. While it could be suggested that a better-functioning public sector leads to citizens having more trust in it, it could also be that the pre-existing degree of trust in government might influence their evaluations on performance. Therefore, it could be the case that in a country where there has been a history of low confidence towards government, citizens tend to evaluate its performance negatively even though in reality, public services function well. We should note, however, that the measure of public sector performance from Afonso and Kazemi (2016) we use is not based upon subjective perceptions, as it is made up of a series of indicators about countries' economic and administrative situations. On the other hand, indicators such as the one on government effectiveness from the good governance indicators, since they are based on perceptions, are more subject to this issue.

For the sake of completeness, we have also analysed the correlation between the public sector performance scores in 2016 and trust in government in 2020. In this case, we look at the relationship the other way around: how performance in a previous year affects trust in a later year. As shown in Figure 18, in this case there is also a positive linear correlation, albeit a weaker one (the coefficient equals 0.349, significant only at the 10% level). Nevertheless, this suggests that the better a country's public sector performed in 2016, the more citizens trusted their government in 2020. This holds true for most countries, even though there are some interesting outliers such as Australia, which has the highest PSP score of all countries in 2016 while at the same time registering a level of trust below 50% in 2020.

Figure 18: Correlation between public sector performance in 2016 and trust in government in 2010



Source: Own calculation and OECD

3.8.2.3. Happiness

In relation to social outcomes, the notion of happiness might seem unrelated to the field of public administration. However, this notion is perhaps the broadest indicator on social well-being, which in turn can be attributed, at least partly, to the effects over time of public policy. Happiness of citizens, arguably, can be seen as the ultimate outcome of their government's policies and activities. Accordingly, the study of happiness has received considerable attention from academics and practitioners alike. For instance, a growing body of literature has been studying the relationship between government performance and life satisfaction (see for example Helliwell & Huang, 2008; Helliwell et al., 2014; Ott, 2011; Bjørnskov et al. 2010).

The measurement of happiness applied in this study comes from the World Happiness Report, which publishes a score for each country. The indicator is based on data from the Gallup World Poll, which includes a life evaluation survey question on a scale from 1 to 10. As shown in Table 7, the countries with the highest happiness scores are all located in western and northern Europe; the countries with the highest scores are: Finland (7.84), Denmark (7.62), Switzerland (7.57), Iceland (7.55) and the Netherlands (7.46). The countries with the lowest happiness scores are all located in southern, central and eastern Europe; the three countries with the lowest score are Bulgaria (5.27), Greece (5.72) and Croatia (5.88).

Table 7: Happiness indicator

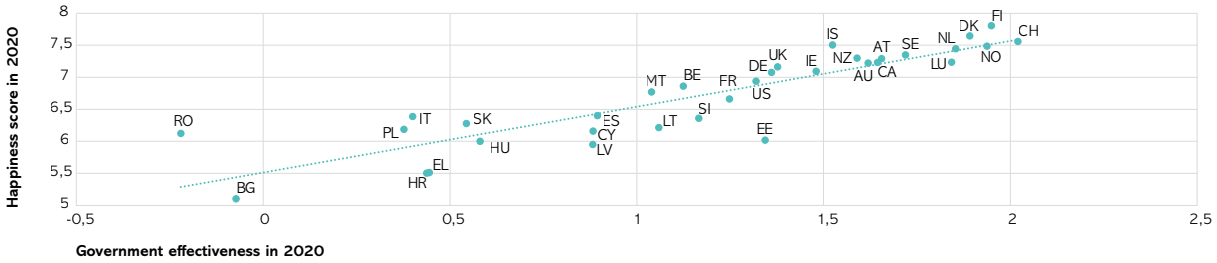
Region	Country	2015	2017		2019		2021		2021	Change
Western Europe	CH	**7,59**	▼	-0,09	▼	-0,01	▲	0,09	**7,57**	-0,02
Western Europe	NL	**7,38**	▲	0,00	▲	0,11	▼	-0,02	**7,46**	0,09
Western Europe	LU	**6,95**	▼	-0,08	▲	0,23	▲	0,23	**7,32**	0,38
Western Europe	AT	**7,20**	▼	-0,19	▲	0,24	▲	0,02	**7,27**	0,07
Western Europe	DE	**6,75**	▲	0,20	▲	0,03	▲	0,17	**7,16**	0,41
Western Europe	IE	**6,94**	▲	0,04	▲	0,04	▲	0,06	**7,09**	0,14
Western Europe	UK	**6,87**	▼	-0,15	▲	0,34	▲	0,01	**7,06**	0,20
Western Europe	BE	**6,94**	▼	-0,05	▲	0,03	▼	-0,09	**6,83**	-0,10
Western Europe	FR	**6,57**	▼	-0,13	▲	0,15	▲	0,10	**6,69**	0,12
Northern Europe	FI	**7,41**	▲	0,06	▲	0,30	▲	0,07	**7,84**	0,44
Northern Europe	DK	**7,53**	▼	-0,01	▲	0,08	▲	0,02	**7,62**	0,09
Northern Europe	IS	**7,56**	▼	-0,06	▼	-0,01	▲	0,06	**7,55**	-0,01
Northern Europe	NO	**7,52**	▲	0,02	▲	0,02	▼	-0,16	**7,39**	-0,13
Northern Europe	SE	**7,36**	▼	-0,08	▲	0,06	▲	0,02	**7,36**	0,00
Southern Europe	PT	**.**		.		.		.	**.**	0,00
Southern Europe	MT	**6,30**	▲	0,22	▲	0,20	▼	-0,12	**6,60**	0,30
Southern Europe	ES	**6,33**	▲	0,07	▼	-0,05	▲	0,14	**6,49**	0,16
Southern Europe	IT	**5,95**	▲	0,02	▲	0,26	▲	0,26	**6,48**	0,53
Southern Europe	CY	**5,69**	▼	-0,07	▲	0,43	▲	0,18	**6,22**	0,53
Southern Europe	EL	**4,86**	▲	0,37	▲	0,06	▲	0,44	**5,72**	0,87
Central and Eastern Europe	CZ	**.**		.		.		.	**.**	0,00
Central and Eastern Europe	SI	**5,85**	▼	-0,09	▲	0,36	▲	0,34	**6,46**	0,61
Central and Eastern Europe	SK	**5,99**	▲	0,10	▲	0,10	▲	0,13	**6,33**	0,34
Central and Eastern Europe	LT	**5,83**	▲	0,07	▲	0,25	▲	0,11	**6,26**	0,42
Central and Eastern Europe	EE	**5,43**	▲	0,18	▲	0,28	▲	0,30	**6,19**	0,76
Central and Eastern Europe	PL	**5,79**	▲	0,18	▲	0,21	▼	-0,02	**6,17**	0,38
Central and Eastern Europe	RO	**5,12**	▲	0,70	▲	0,25	▲	0,07	**6,14**	1,02
Central and Eastern Europe	LV	**5,10**	▲	0,75	▲	0,09	▲	0,09	**6,03**	0,93
Central and Eastern Europe	HU	**4,80**	▲	0,52	▲	0,43	▲	0,23	**5,99**	1,19
Central and Eastern Europe	HR	**5,76**	▼	-0,47	▲	0,14	▲	0,45	**5,88**	0,12
Central and Eastern Europe	BG	**4,22**	▲	0,50	▲	0,30	▲	0,25	**5,27**	1,05
Oceania	NZ	**7,29**	▲	0,03	▼	-0,01	▼	-0,03	**7,28**	-0,01
Oceania	AU	**7,28**	▲	0,00	▼	-0,06	▼	-0,05	**7,18**	-0,10
North America	CA	**7,43**	▼	-0,11	▼	-0,04	▼	-0,17	**7,10**	-0,32
North America	US	**7,12**	▼	-0,13	▼	-0,10	▲	0,06	**6,95**	-0,17

Source: World Happiness Report

Over time, there has been, with some exceptions, a general increasing trend in happiness scores for countries between 2015 and 2021 (the period the data is available for). In this period, only nine (out of 35) countries show a decrease (with the highest decrease in Canada and the US; −0.324 and −0.168 respectively). The largest increases happened mostly in southern, central and eastern European countries (with Romania, Latvia and Greece with the highest increase). Although these countries have increased their values from an initially low level of happiness, this is nevertheless an encouraging development.

To extend on the descriptive analysis, we correlate happiness with government effectiveness as one of the good governance indicators. As Figure 19 shows, there is a strong and positive correlation between countries' government effectiveness and their happiness scores (the correlation coefficient equals 0.883 and is significant at the 1% level). There is ample support for this correlation in the literature.

Figure 19: Correlation between happiness and government effectiveness, 2020



Source: World Happiness Report and World Bank

For instance, Helliwell and Huang (2006) found that the correlation holds both in rich and developing countries, which is echoed by Helliwell et al. (2014), who add that quality of government holds more explanatory power than the regime type (democracy or autocracy). Moreover, Ott (2011) points out that citizens' happiness also influences the quality of service delivery, given that it encourages civic participation and adherence to rules. This suggests that the direction of causality may not only run from the well-functioning of governments to satisfaction and well-being, but also in the other direction. As mentioned before in relation to trust, happiness can also be seen as input to the policy environment in which policy objectives are being defined and pursued through such activities.

3.9. ANALYSIS: EXPLAINING PERFORMANCE

Following the descriptive statistics and the specific correlations, in this section we extend the analysis to more sophisticated statistical tools. To this end, we conduct regression analysis focusing on three dependent variables which are essential for good governance: corruption and government effectiveness.[27] Moreover, due to the salience of trust for open and democratic systems of governance, we also analyse how varying levels of trust can be explained. The aim of this analysis is to offer explanations of which explanatory factors (independent variables) result in key dimensions of public sector performance.

3.9.1. Explaining corruption

In the literature, several factors are found to be positively correlated with corruption, i.e. the presence of these factors is associated with the absence of corruption: e-government, government effectiveness, trust in government, size of government (small governments) and demographic factors (populations with high female ratios) (see Zhao & Xu, 2015; Van Ryzin, 2011; Houston et al., 2016; OECD 2022 , Trust survey; van de Walle & Migchelbrink, 2022). In Section 3.8.1.2 we examined the correlation between GDP per capita and the level of corruption. Building on these initial findings, we extend the analysis in this subsection by applying multivariate analysis. The results are shown in Table A3 in the Annex.

In model specification[28] (1), there are four coefficients that are statistically significant:
- corruption prevention
- government transparency
- the natural logarithm of population
- the share of the population with at least secondary education.

[27] More details on the regression model are provided in Section 2 in the Annex.
[28] A model 'specification' is a specific iteration of the regression, including certain variables and excluding others.

In the following paragraphs, we look at the related explanatory factors (independent variables) in more detail.

The corruption prevention coefficient, which equals −0.048 and is significant at the 1% level, can be interpreted as follows: the more mechanisms and practices are put in place to discourage civil servants and politicians from engaging in corruption, the lower the level of perceived corruption recorded in a country. This is a very interesting finding that suggests a set of best practices that should be implemented by public administrations to prevent corruption and promote integrity, as they are measured by the sustainable governance indicator employed in this regression. Similar practices are also echoed by the literature on the subject, in particular by Graycar and Masters (2018). Section 3.5.4 presented the corruption prevention indicator and compared the performance of these countries. The best performers in that regard are generally northern European countries, accompanied by New Zealand and Switzerland. The Netherlands' performance is in line with the average score of all countries. Even if that score equals 7 – which is quite high – there is still room for improvement, for example by further expanding and improving practices such as making information more accessible for citizens and the media, increasing accountability, making public procurement more transparent and ensuring that corruption is effectively sanctioned.

Government transparency is also associated with a lower level of corruption, as highlighted by Chen and Ganapati (2021), although we found that in the countries examined here (our sample) the coefficient is much smaller and only significant at the 5% level.

The natural logarithm of countries' population has a very sizeable coefficient and is positively correlated with the level of corruption. This is in line with the findings of Fisman and Gatti (2002:5), who point out that '[i]f large countries exploit economies of scale in the provision of public services […], and therefore have a low ratio of public service outlets per population, individuals might revert to bribes *to get ahead of the queue*'. Therefore, it seems that larger countries are more prone to experience higher levels of corruption, given the difficulty of providing public services to more extended populations.

Finally, the regression also suggests a positive correlation between the level of secondary education attainment and corruption, which is in contrast with the findings of Chen and Neshkova (2020), who point out that better education should act as a check on corrupt practices.

The results from specification (2) are similar, the only exception being the coefficient for government transparency, which loses its statistical significance.

Environmental factors can affect the relationship between some of the explanatory variables and corruption. Exploratory analysis into whether any of the environmental factors (discussed in Section 3.2) could moderate these relationships found that the relationship between ministers and the civil service could play a role. For further details on the interpretation of interaction terms, see Section 2 in the Annex.

Specification (3) shows that corruption prevention measures in countries where the minister–civil service relationship is politicised are less likely to be effective than in countries where the minister–civil service relationship is depoliticised. This suggests that anti-corruption measures in the public sector are likely to work better in countries such as Cyprus and Switzerland, which are characterised by a civil service that is less affected by the political power or, to a lesser extent, Australia, Canada and Malta, where the relationship between ministers and civil servants is only mildly politicised. This hypothesis finds support in the literature, as Meyer-Sahling and Mikkelsen (2016) have pointed out that politicising civil service appointments is correlated with higher levels of corruption, while carrying out appointments on the basis of meritocratic criteria leads to less corruption, which has also been highlighted by Dahlström and Lapuente (2017).

3.9.2. Explaining government effectiveness

According to the literature, government effectiveness can be explained by several independent variables: income, the digitalisation of public administration, trust in government, decentralisation, educational attainment, low corruption and good governance in general (Garcia-Sanchez et al., 2013; Lee & Whitford, 2009; Dobrolyubova et al., 2019; Waheduzzaman & Khandaker 2022; Dahan & Strawczynski, 2020; Montes & Paschoal, 2016; Brewer et al., 2007).

As discussed in Section 3.6.3, government effectiveness is one of the good governance indicators. This indicator is highly relevant to our analysis, as it can be considered a measure of how well public administrations deliver public services. The other variable measuring this is the public sector performance indicator presented in Section 3.7.1,

yet it is available only until 2016 and it is constructed on the basis of some of the variables included in the regression presented later. Therefore, we have focused on using measures of government effectiveness as the dependent variable. The regression model also expands on the correlations presented in Section 3.8 exploring the relationship between government effectiveness and GDP, corruption and happiness. More details on the regression model are provided in Section 2 in the Annex.

Table A4 in the Annex shows the fixed effects estimation of the model trying to explain the relationship between selected explanatory variables and government effectiveness. Included in model specification (1) is an indicator for fiscal decentralisation, which is excluded from specification (2) because it is only available for EU countries.

In the model specifications , there are three coefficients that are statistically significant:
- mean age of public employees
- fiscal decentralisation (specification (1) only as it is excluded from specification (2))
- voice and accountability.

In the following paragraphs, we look at the related explanatory factors (independent variables) in more detail.

By looking at the results of (1), it appears that the coefficient estimating the effect of mean age of public employees on government effectiveness is positive and statistically significant at the 1% level. This suggests that the older the average age of employees. the more likely the government is to be effective, which may sound counterintuitive. Nevertheless, this echoes the findings of Leisink and Steijn (2009), who, in a Netherlands-based study uncovered a positive correlation between the age of public employees and the level of public service motivation (PSM), which is defined by Vandenabeele (2007:3) as 'the belief, values and attitudes that go beyond self-interest and organisational interest, that concern the interest of a larger political entity and which induce through public interaction motivation for targeted action'. In other words, it measures the extent to which public employees act having the collective welfare of society as an objective, rather than more personal and organisation-specific objectives. Therefore, our analysis reinforces the suggestion that older civil servants are to a greater extent driven by more profound and overarching goals, instead of, for example, career ambitions and more short-term targets.

These findings underscore the importance of transferring knowledge and expertise from more senior civil servants to their younger colleagues. This represents a great complement to what younger civil servants can bring in terms of innovation, for example in the fields of digitalisation and sustainability of service delivery. In other words, before leaving service older cohorts should ideally transmit values, best practices and insights to younger cohorts, who, in turn, should push for innovative solutions while keeping in mind the teachings of experienced professionals.

The coefficient for fiscal decentralisation is also significant and denotes a negative relationship with government effectiveness. This goes in the opposite direction of the research by Dahan and Strawczynski (2020), who pointed out that budget centralisation is actually detrimental to government effectiveness. Finally, there appears to be a strong and positive correlation between government effectiveness and the voice and accountability indicator, suggesting that countries in which democratic institutions are healthier and the press is freer have better performing governments. This has also been emphasised by Isham et al. (1997), who used the economic rate of return of government projects as a proxy for government effectiveness and uncovered a positive relationship between that variable and civil liberties such as freedom of speech, the press, association and dissent. These are important determinants of citizens' ability to become aware of the lack of effectiveness in the public sector and to hold their government accountable. It emerges therefore that governments should enhance the ways in which citizens can be informed about government activities, have a say in the decision-making process and be able to hold their government to account when it falls short of expectations. As explained in Section 3.6.1, there are considerable differences between how well countries perform in this regard, with northern European countries in general and the Netherlands doing very well, and central and eastern Europe consistently underperforming, in some cases even worsening their performance between 2007 and 2020.

Exploratory analysis into the moderating effect of environmental factors (discussed in Section 3.2) on the relationship between the explanatory variables and government effectiveness found that the administrative culture plays a role. These findings expand on the analysis of public sector performance in relation to key features of politico-administrative systems presented in Section 3.7, where certain system characteristics were found to be associated with better performance. For further details on the interpretation of interaction terms, see Section 2 in the Annex. Specification (3) shows that the negative relationship between fiscal decentralisation and government effectiveness is reduced in countries that have a mixed administrative culture, as defined in Section 3.2. Therefore, in those countries, efforts to

decentralise service delivery have less negative effects on how well such services are provided. One of the countries characterised by an administrative culture that is in between the *Rechtsstaat* and public interest traditions is the Netherlands, as explained in Section 3.2. These findings echo those of Ivanova and Negashev (2018) that suggest a relationship between successful new public management reforms and government effectiveness, when examining select European countries.

3.9.3. Explaining trust in government

The performance of governments and citizens' trust in the public sector are related such that trust is essential for people to comply with civic duties (e.g. paying taxes), which is indispensable for the acquisition of the necessary resources, i.e. inputs, to deliver services and to achieve policy objectives, i.e. outputs and outcomes. Low or decreasing trust jeopardises the government acquisition of inputs and thus the effective delivery of outputs, which negatively affects the perception of government performance, whereas high or increasing trust affects inputs, outputs and performance perception positively (see Yang & Holzer, 2006). These crucial mechanisms informed the decision to carry out the final regression analysis using trust as the dependent variable.
Table A5 in the Annex shows the fixed effect estimation of the model trying to explain the relationship between selected variables and trust in government. (More details on the regression model are provided in Section 2 in the Annex.)

In this model, there are three coefficients that are statistically significant:
- government effectiveness
- unemployment rate
- secondary educational attainment.

In the following paragraphs, we look at the related explanatory factors (independent variables) in more detail.

Government effectiveness appears to be strongly and positively associated with trust in government. In other words, the more effective a government is, the more likely it is that there is more trust. This echoes the correlations presented in this in Section 3.8.2.2 (even though those are based on the public sector performance indicator) and the findings of several authors (Aitalieva, 2018; Houston et al., 2016; Gilley, 2006; van de Walle & Bouckaert, 2003; Yang & Holzer, 2006). Thus, improving the quality of public service delivery appears to be a very important driver of citizens' confidence in the provider of those services – that is, the government. The unemployment rate is negatively correlated with trust in government, as pointed out by Houston et al. (2016). Finally, there is a positive relationship between secondary educational attainment and trust in government (albeit with significance only at the 10% level), not unlike the findings of Christensen and Lægreid (2005).

The environmental factors mentioned in Section 3.2 seem to have some moderating effects on the relationship between the selected variables and trust in government. The relationship between ministers and the civil service may moderate the relationship between government effectiveness and trust. For further details on the interpretation of interaction terms, see Section 2 in the Annex. The findings from specification (2) suggest that when the minister–civil service relationship is mildly politicised the positive relationship between government effectiveness and trust is amplified. In contrast, for countries characterised by a politicised system the coefficient is much lower and statistically insignificant, suggesting a diminishing effect as the degree of politicisation increases.

These results would suggest that making the civil service more independent from the political power positively influences the relationship between well-functioning service delivery and citizens' resulting trust in government. This argument is supported by the literature. For example, according to Peters and Pierre (2004), partisan institutions are generally perceived more negatively than the bureaucratic apparatus, therefore politicising the civil service leads to a lower level of trust in the eyes of citizens, regardless of how well it performs.

Therefore, a takeaway from these regressions is that the three chosen indicators to be modelled are highly salient concerning public sector performance. Corruption is likely to be discouraged by the introduction of several best practices and regulations in different areas of the public sphere. Government effectiveness is closely related with citizens' freedoms, access to information and ability to hold public servants to account. Trust, which is an important complement to governments' ability to function, is positively related with government effectiveness. Finally, it emerged that many of these correlations are influenced by environmental factors. In particular, they are amplified in countries where the civil service is less politicised and that have transitioned away from purely legalistic administrative systems towards more service-oriented ones.

3.10. COVID

As mentioned earlier, the environment in which public administrations develop and deliver services has been subject to radical change, with governments engaging in public sector reform to cope with structural and imminent challenges due to a series of crisis (see Sections 3.2 and 3.3). These crises challenge established structures and procedures but, at the same time, also provide impetus for further innovation and reform.

The Covid-19 pandemic is a case in point in relation to digital transformation. In the wake of the pandemic, comparative indicators and measurements have proliferated with reporting on hospitalisation, casualties, vaccination rates etc. having become the day-to-day reference points for policymaking and public debate. However, in most countries issues of measurement and availability of data became salient issues for without robust data, the relationship between evidence and informed policymaking is spurious.

These issues are even bigger problems when countries aim to develop joint responses and problem-solving capabilities. Here, the EU can serve as a useful example of rather well-functioning measures, e.g. joint procurement and purchasing of vaccines and treatments. Yet, at the same time, the pandemic has demonstrated the limits of a joint response with many Member States adopting measures unilaterally. As a result, in the wake of the pandemic, the EU has embarked on strengthening its response capabilities and providing reinforced structures and procedures with a view to effective responses to future crises. The effectiveness of these reforms will have to be subject to future research.

Ultimately, the aim of academic and practical research is to answer the question of how to analyse and interpret country performance in response to the pandemic (see George et al., 2020). As such, the pandemic encapsulates the two key questions driving performance assessment – to identify variation in countries' performance, and to explain such variation. These explanations can then serve as good practices to facilitate policy learning.

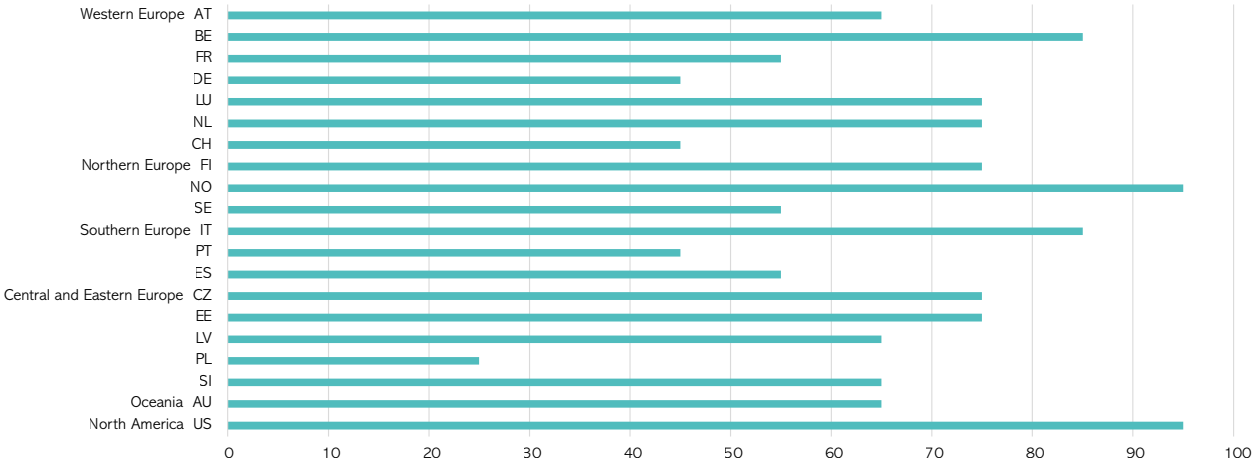
At the same time, however, the pandemic also magnifies the conceptual and methodological challenges of comparing policy responses, interventions and public sector performance. This holds for researchers as much as for policymakers. For instance, the available data, as of now, provides evidence related to overall policy responses by governments, for example in the area of public health. This is the case for the Oxford Covid-19 Government. Response Tracker that collected data on these policy areas:

- containment and closure policies that record information on containment such as lockdowns and restrictions in movement;
- economic such as income support to citizens or provision of foreign aid;
- health system policies such as testing regime, emergency investments in healthcare and most recently, vaccination policies;
- vaccine policies such as country's prioritisation list, eligible groups, cost of vaccination to the individual and the presence of a vaccine mandate.

In various sections of this benchmarking study, we have linked the Covid-19 pandemic to several indicators related to government spending and economic performance. Additional evidence regarding the effects of the pandemic on the public sector remains scarce however. The only data specific for public administration stems from the OECD Special Covid-19 module of the Public Service Leadership and Capability Survey. In particular, we focus on the share of the central/federal administration workforce who worked remotely during the first wave of the Covid-19 crisis.[29]

[29] The indicator measures the highest percentage of employees working remotely between March and July 2020.

Figure 20: Share of government workers working remotely

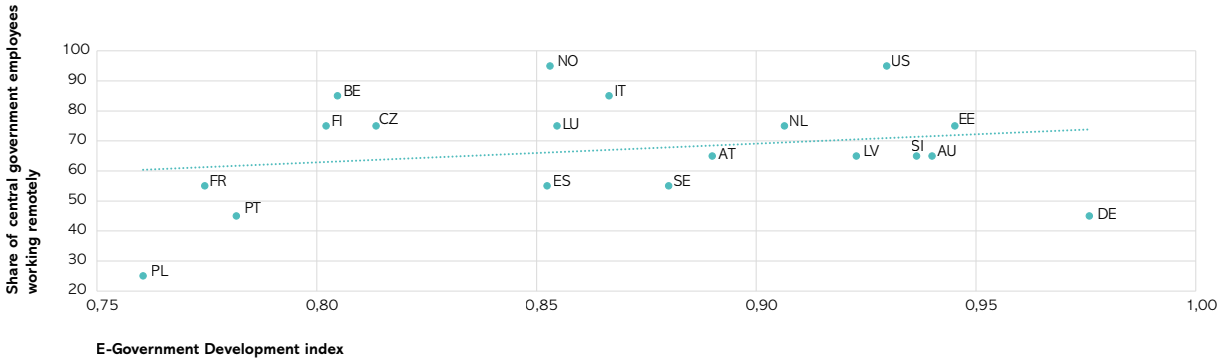


Source: OECD

As shown in Figure 20, public administrations have responded in different ways to the Covid-19 crisis. During the first wave of the pandemic in 2020, central government employees in some countries have almost exclusively worked remotely, as is the case in the US and Norway. On the other hand, public administrations in countries such as Poland resorted much less to working from home. The Netherlands is among the countries whose public administrations adopted more extensive remote working, with a share between 70% and 80%.

To expand on this, we correlate the percentage of government employees working remotely with countries' e-government development index (see Figure 21). The rationale behind this correlation is the assumption that countries that have extensive digital measures in place in relation to e-government have a higher propensity to adopt policies of remote working, which are based on and rely on a capable digital infrastructure.

Figure 21: Correlation between e-government index in 2020 and the share of central government workers working remotely in 2020



Source: UN and OECD

As can be seen in Figure 21, there appears to be a positive correlation between countries' level of provision of online public services and quality of IT infrastructure, and the percentage of central government employees who worked from home during the first wave of the Covid 19 pandemic in 2020. The correlation coefficient equals 0.23, although it is not statistically significant. This correlation, albeit it does not meet the threshold of statistical significance, is intuitive and finds support in the literature. Iwaniuk et al. (2021) carried out a qualitative study on the obstacles to the well-functioning of remote working in Polish local administrations. This is particularly interesting, considering that Poland is the country with the lowest share of remote government workers according to the data just presented as well as with the lowest score for e-government. The authors highlight that the biggest obstacle is related to ICT infrastructural deficiencies, i.e. the unavailability of necessary software and hardware, followed by the lack of an adequate range of e-services

for citizens and businesses, which forced employees to go to the workplace. Finally, they mention an insufficient level of digital training and experience with remote working. These are all aspects that are measured by the e-government index, which at least partly explains why Poland is the worst performer in terms of adopting working from home in the government sector and why countries with better e-government scores were more likely to work remotely.
At this point, the conceptual and empirical reflections regarding the effects of the Covid-19 pandemic on public services is primarily of an exploratory nature. Yet, this section provides the starting point for further investigation once more data becomes available. Based on such data, we will then be able to shed more light on the long-term effects in relation to the 5Ds and in particular, the twin green and digital transformation.

CONCLUSIONS

The EIPA Benchmarking Study analyses the performance of 35 countries in 10 policy areas. In this chapter, we examined the policy environment, objectives, input and activities of public administrations. As public administration refers to all those activities related to the design and delivery of policies and services, we then analysed the output of these activities, i.e. good governance as well as economic and social outcomes.

The chapter pursued three goals: to provide an overview of public administrations' system characteristics, to investigate possible links between inputs, outputs and outcomes to provide insights or explanation of countries' performance. In doing so, it lays the foundation for the subsequent thematic chapters in this benchmarking study on the different policy areas. A particular emphasis in this chapter was placed on current challenges of public administrations (the 5Ds), on how administrations respond to these challenges, and how administrations' activities and output affect social outcomes, i.e. citizens' satisfaction with public services as well as trust and happiness.

In conclusion, this chapter identifies several trends and patterns which seem to suggest that the public sector in the 35 countries, by and large, is facing significant challenges and that the recent crises have disrupted service delivery and continue to change public administrations.

While the majority of countries have increased government spending, they have also decreased the share of public employees. These input factors are contingent on external events and crises. In line with the demographic trend, public sectors are in general characterised by an ageing workforce. While the share of female employees is rising, significant regional variation remains. There is also a mixed record as regards the twin green and digital transformation as well as democracy.

In terms of good governance, public sector performance and efficiency, there is an overall trend of decreasing quality. In terms of economic outcomes, similar to input factors, almost all countries have experienced an increase in GDP per capita in the period, yet increases and decreases are highly contingent on external events. On the other hand, there is significant correlation between countries' regional location and distribution of wealth. In terms of social outcomes, almost all countries have experienced an increase in the levels of trust in government as well as happiness in the period (albeit with significant variation between regions and other governance indicators).

The various regression models suggest strong correlations between specific factors and desirable outcomes in terms of public performance. However, these correlations appear to be contingent on the system characteristics of the respective countries. This is turn affects possible recommendations on promising interventions to improve performance.

Although the chapter aimed to provide an overview of the 35 countries in comparison and over time, a specific focus was on the performance of the Netherlands. The Netherlands' government expenditure measured as the share of GDP is slightly below average. Together with Germany and Switzerland, the Netherlands has the lowest share of government employees. As regards the demographics of the public sector, the Netherlands has a share of employees at the age of 55+ of around one-third of the workforce. As regards the share of female employees, the Netherlands still lags behind other western European countries, even though there has been an increase in recent years.

For the response to new challenges, the Netherlands scores slightly above average on public management, i.e. interventions taking place at the organisational level of administration. Together with northern European countries, among others, the Netherlands has the highest scores in terms of digital transformation, including e-participation and sustainability. In terms of stakeholder participation, the Netherlands performs well (with scores almost as high as the top performers). In anti-corruption policies, the Netherlands shows scores in line with the average.

For good governance, the Netherlands has one of the highest overall scores among all countries (with a similar performance to several northern European countries). In comparison with other countries, the scores for regulatory quality, effectiveness and control of corruption are higher in relation to their scores in rule of law political stability and absence of violence. In terms of public sector performance, the Netherlands displays good performance; in terms of efficiency, the Netherlands scores in line with the average.

In general, the Netherlands performs well on economic and social indicators. The country has a high GDP per capita and managed to increase it over time despite the challenges of the financial crisis and the Covid-19 pandemic. Moreover, the Netherlands is among the countries with more equal distribution of wealth distribution. In terms of satisfaction, the Netherlands displays a high level of citizens' satisfaction with public services. Likewise, the Netherlands is also among the countries with the highest levels of trust and happiness.

Two interrelated, concluding remarks seem in order following the comparative study of public administrations conducted in this chapter.

First, based on the methods applied, we were able to derive generalisable results for the population of countries subject to the study. Based on these results, possible ways forward regarding public sector reform and innovation were suggested with a view to increasing performance. To this end, additional research on in-depth case studies seems warranted to further engage in the reflection of possible ways forward and to identify opportunities for mutual policy learning.

Second, the exploratory analysis of public administrations' response to the challenges of the Covid-19 pandemic has revealed interesting patterns. However, this exploratory analysis should be extended with a more elaborate research design once additional data are available. The key question, arguably, in this respect is to what extent short-term responses will be internalised and thus change the public sector in a significant and more permanent manner.

REFERENCES

Afonso, A., & Kazemi, M. (2016). ***Assessing public spending efficiency in 20 OECD countries.*** WP12/2016/DE/UECE. Lisbon School of Economics and Management, Universidade de Lisboa.

Aitalieva N. R. (2018). Bureaucracy and public trust. In: A. Farazmand (Ed.), ***Global encyclopedia of public administration, public policy, and governance*** (pp. 1-6). Springer International Publishing https://doi.org/10.1007/978-3-319-31816-5_633-1

Ariely, G. (2013). Public administration and citizen satisfaction with democracy: Cross-national evidence. ***International Review of Administrative Sciences, 79***(4), 747-766. https://doi.org/10.1177/0020852313501432

Barro, R. J. (1997). ***Determinants of economic growth: A cross-country empirical study***. MIT Press.

Bishu, S. G., & Headley, A. M. (2020). Equal employment opportunity: Women bureaucrats in male-dominated professions. ***Public Administration Review, 80***, 1063-1074. https://doi.org/10.1111/puar.13178

Blondel, J. (1982). The organization of governments: A comparative analysis of governmental structures. Sage.
Bouckaert, G., Van de Walle, S., Maddens, B., & Kampen, J. K. (2002). ***Identity vs. performance: An overview of theories explaining trust in government***. Katholieke University Leuven, Instituut voor de Overheid.

Brewer, G. A., Choi, Y., & Walker, R. M. (2007). Accountability, corruption and government effectiveness in Asia: An exploration of World Bank governance indicators. ***International Public Management Review, 8***(2), 204-225.

Brezzi, M., González, S., Nguyen, D., & Prats, M. (2021). ***An updated OECD framework on drivers of trust in public institutions to meet current and future challenges***. OECD Working Papers on Public Governance, No 48, OECD Publishing. https://doi.org/10.1787/b6c5478c-en

Brunetti, A., & Weder, B. (2003). A free press is bad news for corruption. ***Journal of Public Economics, 87***(7-8), 1801-1824.

Carey, J. M., Helmke, G., Nyhan, B., Sanders, M., & Stokes, S. (2019). Searching for bright lines in the Trump presidency. ***Perspectives on Politics, 17***(3), 699-718.

Chen, C., & Ganapati, S. (2021). Do transparency mechanisms reduce government corruption? A meta-analysis. ***International Review of Administrative Sciences***. https://doi.org/10.1177/00208523211033236

Chen, C., & Neshkova, M. I. (2020). The effect of fiscal transparency on corruption: A panel cross-country analysis. ***Public Administration, 98***(1), 226-243.

Christensen, T., & Lægreid, P. (2005). Trust in government: The relative importance of service satisfaction, political factors, and demography. ***Public Performance & Management Review, 28***(4), 487-511.

Ciccone, A., & Jarociński, M. (2010). Determinants of economic growth: will data tell? ***American Economic Journal: Macroeconomics, 2***(4), 222-46.

Cuaresma, J. C., Doppelhofer, G., & Feldkircher, M. (2014). The determinants of economic growth in European regions. ***Regional Studies, 48***(1), 44-67.

Dahan, M., & Strawczynski, M. (2020). Budget institutions and government effectiveness. ***Journal of Public Budgeting, Accounting & Financial Management, 32***(2), 217-246.

Dahlström, C., & Lapuente, V. (2010). Explaining cross-country differences in performance-related pay in the public sector. ***Journal of Public Administration Research and Theory, 20***(3), 577-600. https://doi.org/10.1093/jopart/mup021

Dahlström, C., & Lapuente, V. (2017). ***Organizing leviathan: Politicians, bureaucrats, and the making of good government.*** Cambridge University Press.

Demmke, C., & Moilanen, T. (2010). C***ivil services in the EU of 27: Reform outcomes and the future of the civil service.*** Peter Lang.

Dobrolyubova, E., Klochkova, E., & Alexandrov, O. (2019). Digitalization and effective government: What is the cause and what is the effect? In: D. A. Alexandrov, A. V. Boukhanovsky, A. V. Chugunov, Y. Kabanov, O. Koltsova, I Musabirov, S. Pashakhin (Eds.), ***Proceedings of the 6th International conference on digital transformation and global society*** St. Petersburg, Russia, June 23–25 (pp. 55-67). Springer.

Drinóczi, T., & Bień-Kacała, A. (2019). Illiberal constitutionalism: The case of Hungary and Poland. ***German Law Journal, 20***(8), 1140-1166.

European Commission, Directorate-General for Employment, Social Affairs and Inclusion, Palaric, E., Thijs, N., & Hammerschmid, G. (2018). ***A comparative overview of public administration characteristics and performance in EU28***. Publications Office. https://data.europa.eu/doi/10.2767/13319

European Commission (2019). ***The EU forced Ireland into a bailout programme***. Factsheet, available at: https://ireland.representation.ec.europa.eu/news-and-events/news/circumstances-behind-irelands-bailout-late-naughties-2019-04-06_en

Fazekas, M. (2017). Red tape, bribery and government favouritism: Evidence from Europe. ***Crime, Law and Social Change, 68***(4), 403-429.

Finkel, M., Hughes, M. M. & Hill, J. (2021). ***Gender Equality in Public Administration***. UNDP and University of Pittsburgh.

GAN Integrity (2020). ***Estonia Corruption Report***. https://www.ganintegrity.com/portal/country-profiles/estonia/

Garcia-Sanchez, I. M., Cuadrado-Ballesteros, B., & Frias-Aceituno, J. (2013). Determinants of government effectiveness. ***International Journal of Public Administration, 36***(8), 567-577. https://doi.org/10.1080/01900692.2013.772630

Gębczyńska, A., & Brajer-Marczak, R. (2020). Review of Selected Performance Measurement Models Used in Public Administration. ***Administrative Sciences, 10***(4), 99. https://doi.org/10.3390/admsci10040099

George, B., Verschuere, B., Wayenberg, E., & Zaki, B. L. (2020), A Guide to Benchmarking COVID-19 Performance Data. ***Public Administration Review***, 80, 696-700. https://doi.org/10.1111/puar.13255

Gilley, B. (2006). The determinants of state legitimacy: Results for 72 countries. ***International political Science Review, 27***(1), 47-71.

Goldfinch, S., & Wallis, J. L. (Eds.) (2009). ***International Handbook of Public Management Reform***. Edward Elgar Publishing.

Gottschall, K., Kittel, B., Briken, K., Heuer, J.-O., Hils, S., Streb, S., & Tepe, M. (Eds.) (2015). ***Public sector employment regimes: transformations of the state as an employer***. Palgrave MacMillan.

Helliwell, J. F., & Huang, H. (2008). How's your government? International evidence linking good government and well-being. ***British Journal of Political Science, 38***(4), 595-619.

Helliwell, J. F., Huang, H., Grover, S., & Wang, S. (2014). ***Good governance and national well-being: What are the linkages?*** (No 25). OECD Publishing.

Hood, C., & Lodge, M. (2006). ***The politics of public service bargains***. Oxford University Press.

Houston, D.J., Aitalieva, N.R., Morelock, A.R., & Shults, C.A. (2016). Citizen trust in civil servants: A cross-national examination. ***International Journal of Public Administration, 39***(14), 1203-1214. DOI: 10.1080/01900692.2016.1156696

Isham, J., Kaufmann, D., & Pritchett, L. H. (1997). Civil liberties, democracy, and the performance of government projects. ***The World Bank Economic Review, 11***(2), 219-242.

Ivanova, M., & Negashev, D. (2019). ***The ongoing professional education of civil servants in Russia and other countries: A comparative analysis. In: Proceedings of the European Conference on Knowledge Management.*** Academic Conferences International Limited.

Iwaniuk, A., Hawrysz, L., Bulińska-Stangrecka, H., & Huras, P. (2021). ***Barriers to the effectiveness of teleworking in public administration***. Scientific Papers of Silesian 19 University of Technology – Organization and Management Series, 153, 165-178.

Ladner, A. (2019). The characteristics of public administration in Switzerland. In: A. Ladner, N. Soguel, Y. Emery, S. Weerts, & S. Nahrath (Eds.), ***Swiss public administration. Governance and public management***. Palgrave Macmillan. https://doi.org/10.1007/978-3-319-92381-9_3

Lægreid, P. (2017). Nordic administrative traditions. In: P. Nedergaard, & A. Wivel (Eds.), ***The Routledge handbook of Scandinavian politics***. Routledge.

Lee, Y. (2018). The Great Recession, government performance, and citizen trust. ***Journal of International and Area Studies, 25***(1), 57-70.

Lee, Y., & Whitford, A. B. (2009). Government effectiveness in comparative perspective. ***Journal of Comparative Policy Analysis, 11***(2), 249-281. https://doi.org/10.1080/13876980902888111

Leisink, P., & Steijn, B. (2009). Public service motivation and job performance of public sector employees in the Netherlands. ***International Review of Administrative Sciences, 75***(1), 35-52.

Lijphart, A. (1984). ***Democracies. Patterns of majoritarian and consensus government in twenty-one countries.*** Yale University Press.

Markowski, R. (2019). Creating authoritarian clientelism: Poland after 2015. ***Hague Journal on the Rule of Law, 11***(1), 111-132.

Meyer-Sahling, J. H., & Mikkelsen, K. S. (2016). Civil service laws, merit, politicization, and corruption: The perspective of public officials from five East European countries. ***Public Administration, 94***(4), 1105-1123.

Montes, G. C., & Paschoal, P. C. (2016). Corruption: what are the effects on government effectiveness? Empirical evidence considering developed and developing countries. ***Applied Economics Letters, 23***(2), 146-150. https://doi.org/10.1080/13504851.2015.1058900

Nolan-Flecha, N. (2019). ***Next generation diversity and inclusion policies in the public service: Ensuring public services reflect the societies they serve.*** OECD Working Papers on Public Governance, No 34, OECD Publishing. https://doi.org/10.1787/51691451-en

OECD (2020a). ***Digital Government Index: 2019 results***. OECD Public Governance Policy Papers, No 03, OECD Publishing. https://doi.org/10.1787/4de9f5bb-en

OECD (2020b), ***Social Expenditure (SOCX) Update 2020: Social spending makes up 20% of OECD GDP***, OECD Publishing. http://www.oecd.org/social/expenditure.htm

OECD. (2020c). ***OECD Public Integrity Handbook***, OECD Publishing. _

OECD. (2021a). ***Ageing and talent management in European public administrations.*** OECD Publishing.

OECD. (2021b). ***Government at a Glance 2021***. OECD Publishing. https://doi.org/10.1787/1c258f55-en

OECD. (2021c). ***Subnational governments in OECD countries: Key data (brochure)***, OECD Publishing. www.oecd.org/regional/regional-policy Database: http://dx.doi.org/10.1787/region-data-en

OECD. (2021d). ***OECD Economic Surverys: Netherlands 2021***, OECD Publishing. https://doi.org/10.1787/dd476bd3-en

Ott, J. C. (2011). Government and happiness in 130 nations: Good governance fosters higher level and more equality of happiness. ***Social Indicators Research, 102***(1), 3-22.

Painter, M., & Peters, B. G. (2010). Administrative traditions in comparative perspective: Families, groups and hybrids. In: Painter, M., Peters, B. G. (Eds) ***Tradition and Public Administration***. Palgrave Macmillan. https://doi.org/10.1057/9780230289635_2

Peters, B. G. (1992). Comparative perspectives on bureaucracy in the policy process. In: L. B. Hill. (Ed.), ***The state of public bureaucracy***. M. E. Sharpe.

Peters, B. G. & Pierre, J. (Eds.). (2004). ***Politicisation of the civil service in comparative perspective***. Routledge.
Pierre, J. (Ed.) (1995). Bureaucracy in the modern state: an introduction to comparative public administration. Edward Elgar.

Pierre, J. (2009). We are all customers now: ***Understanding the influence of economic theory on public administration***. QoG Working Paper Series 2009:6, pp. 1-31. The Quality of Government Institute.

Pollitt, C., & Bouckaert, G. (2017). ***Public management reform, a comparative analysis – into the age of austerity.*** Oxford University Press.

Raadschelders, J.C.N., & Vigoda-Gadot, E. (2015). ***Global dimensions of public administration and governance. A comparative voyage.*** Jossey-Bass Publishing.

Relly, J. E. (2012). Examining a model of vertical accountability: A cross-national study of the influence of information access on the control of corruption. ***Government Information Quarterly, 29***(3), 335-345.

SCP (The Netherlands Institute for Social Research) (2015). ***Public sector achievement in 36 countries. A comparative assessment of inputs, outputs and outcomes***. SCP: The Hague.

Shafritz, J. M. Jr., (Ed.). (2000). ***Defining public administration. Selections from the international encyclopedia of public policy administration.*** Routledge.

Shittu, A. K. (2020). Public service and service delivery. In: Farazmand A. (Ed.). ***Global Encyclopedia of Public Administration, Public Policy, and Governance***. S pringer. https://doi.org/10.1007/978-3-319-31816-5_4005-1

Schulz, M., Bressers, D., van Twist, M., & van der Steen, M. (2015). ***Internal advisory systems in different political-administrative regimes. Exploring the fit of configuration, administration and composition of internal advisory systems in France, Germany, Sweden, the Netherlands and the United Kingdom.*** Paper for International Conference on Public Policy (ICPP) T08P06 – Comparing policy advisory systems. Catholic University of Sacro Cuore, Milan, 1-4 July, 2015. Erasmus University Rotterdam.

Tiwari, A. K. (2012). Corruption, democracy and bureaucracy. ***Theoretical and Applied Economics, 9***(9), 17.

Vandenabeele, W. (2007). Toward a public administration theory of public service motivation: An institutional approach. ***Public Management Review, 9***(4), 545-556.

Van Dooren, W., Bouckaert, G., & Halligan, J. (2015). ***Performance management in the public sector***. Routledge.

Van Dooren, W., De Caluwe, C., & Lonti, Z. (2012). How to measure public administration performance. ***Public Performance & Management Review, 35***(3), 489-508. https://doi.org/10.2753/PMR1530-9576350306

Van de Walle, S. (2008). Comparing the performance of national public sectors: Conceptual problems. ***International Journal of Productivity and Performance Management, 57***(4), 329-338. https://doi.org/10.1108/17410400810867535

Van de Walle, S. (2009). International comparisons of public sector performance. ***Public Management Review, 11***(1), 39-56. DOI: 10.1080/14719030802493254

Van de Walle, S., & Bouckaert, G. (2003). Public service performance and trust in government: The problem of causality. ***International Journal of Public Administration, 26***(8-9), 891-913. DOI: 10.1081/PAD-120019352

Van de Walle, S., & Migchelbrink, K. (2022). Institutional quality, corruption, and impartiality: The role of process and outcome for citizen trust in public administration in 173 European regions. ***Journal of Economic Policy Reform, 25***(1), 9-27. https://doi.org/10.1080/17487870.2020.1719103

Van Ryzin, G. G. (2007). Pieces of a puzzle: Linking government performance, citizen satisfaction, and trust. ***Public Performance & Management Review, 30***(4), 521-535, DOI: 10.2753/PMR1530-9576300403

Van Ryzin, G. G. (2011). Outcomes, process, and trust of civil servants. ***Journal of Public Administration Research and Theory, 21***(4), 745-760. https://doi.org/10.1093/jopart/muq092

Waheduzzaman, W., & Khandaker, S. (2022). E-participation for combating corruption, increasing voice and accountability, and developing government effectiveness: A cross-country data analysis. ***Australian Journal of Public Administration***. https://doi.org/10.1111/1467-8500.12544

Yang, K., & Holzer, M. (2006). The performance–trust link: Implications for performance measurement. ***Public Administration Review, 66***(1), 114-126. https://doi.org/10.1111/j.1540-6210.2006.00560.x

Zhao, X., & Xu, H. D. (2015). E-government and corruption: A longitudinal analysis of countries. ***International Journal of Public Administration, 38***(6), 410-421. https://doi.org/10.1080/01900692.2014.942736

ANNEX

TABLE OF CONTENTS

List of tables

List of figures

1. Data

1.1. Missing data

Given the wide range of sources we use and the presence of countries located in different geographic areas, we experienced the issue of several indicators having missing values for some countries or being available for a limited time. Considering the loss of statistical power caused by missing data we decided to correct, where necessary, the issue by means of linear interpolation. This consists of replacing missing values of variables in our dataset by forecasting values given the trend observed for the values that we do have.

1.2. Public sector performance (PSP) indicator

Given the specific focus of our chapter, unlike Afonso and Kazemi (2016) regarding the first component – opportunity costs, we only consider administrative subindicators (corruption, red tape, judicial independence, property rights and the shadow economy). We do include all the economic indicators (Gini index, coefficient of variation of GDP growth, standard deviation of inflation, GDP per capita, GDP growth and unemployment). However, when constructing the indicator, we introduced a slight variation from Afonso and Kazemi. They use the reciprocal values of indicators for which higher values do not signal 'better' scores. That is the case for the size of the shadow economy, the coefficient of variation of GDP growth (because a higher value signals more economic instability), the standard deviation of inflation (for similar reasons) and unemployment. We decided to also use the reciprocal value of the Gini index, since a higher coefficient stands for more inequality, which is not a desirable outcome. Table 2 provides an overview of the PSP indicator. We focus on the period from 2007 to 2016, as that is the latest year for which we have complete data for each country.

Table A 1: Components of the public sector performance indicator

Public sector performance		
Administrative indicators	**Economic indicators**	
Corruption	**Distribution**	Gini index
Red tape	**Stability**	Coefficient of variation of GDP growth
Judicial independence		
Property rights		Standard deviation of inflation
Informal economy	**Performance**	GDP per capita
		GDP growth
		Unemployment

1.3. Public sector efficiency (PSE) indicator

Similarly to what we did with the PSP indicator, we focus on the period from 2007 to 2016, given the described data availability reasons. Also in this case, we only consider the administrative subindicators (corruption, red tape, judicial independence, property rights and the shadow economy), while employing all the economic indicators, including the reciprocal value of the Gini coefficient. The PSE indicator is designed to capture efficiency – a public administration's ability to obtain the best possible performance (outcome) with the least possible amount of resources (input). Thus, we divide the PSP values for the four dimensions we consider (administrative, distribution, stability, performance) by the expenditure categories indicated by Afonso and Kazemi (see Table 3).

Table A 2: Expenditure categories for the PSE indicator

Sub-indicator	Expenditure categories
Administrative	General government final consumption expenditure (% of GDP)
Distribution	General government expenditure on social protection (% of GDP)
Stability	Total general government expenditure (% of GDP)
Economic performance	Total general government expenditure (% of GDP)

2. Methodology

As mentioned in the data section (4.2.1.), where available, we use panel data for all 35 countries and for the timeframe of 2007–2020. Employing a repeated cross-section is crucial when trying to analyse a small selection of countries as it expands the quantity of data. Using our panel data to analyse our relationships of interest ensures that we can control for individual unobserved heterogeneity and better study the dynamics of change, and track changes in the dependent variables over time. Moreover, panel data provides us with 'more informative data, more variability, less collinearity among variables, more degrees of freedom and more efficiency' (Baltagi, 2008). Therefore, we use panel data analysis to enhance the quality and quantity of data.

The models described below are fixed-effects models. The decision to use this type of model was informed by the results of the Hausman test, which was executed after running both the fixed-effects model and the random effects model using the same dependent and independent variables. The Hausman test confirmed that the fixed-effects model is preferred. Moreover, it best captures the time-varying nature of our independent variables and the different countries under consideration.

All regressions have been run with clustered standard errors at the country level. This is a common procedure when dealing with panel data (Cameron & Miller, 2015), since repeating observations over time for each group (in this case countries) may lead to the country-level error term being serially correlated. In other words, the standard errors of the estimations could be inaccurate and lead to incorrect conclusions. Clustering errors at the country level addresses this by taking into account the nature of panel data, where observations are repeated in each year and for each group.

Model 1 *concerning corruption as a dependent variable.*

$$\begin{aligned} \boldsymbol{C}_{it} = {} & \beta_0 + \beta_1 \boldsymbol{eGov}_{it} + \beta_2 \boldsymbol{ePar}_{it} + \beta_3 \boldsymbol{corrprev}_{it} + \beta_4 \boldsymbol{socc}_{it} + \beta_5 \boldsymbol{size}_{it} + \beta_6 \boldsymbol{transp}_{it} \\ & + \beta_7 \boldsymbol{red}_{it} + \beta_8 \boldsymbol{fpress}_{it} + \beta_9 \boldsymbol{pop}_{it} + \beta_{10} \boldsymbol{rule}_{it} + \beta_{10} \boldsymbol{edu}_{it} + \beta_{11} \boldsymbol{GDP}_{it} + \gamma \boldsymbol{Z}_{it} \\ & + \boldsymbol{a}_i + \boldsymbol{\varepsilon}_{it} \quad (1) \end{aligned}$$

where:

$\boldsymbol{C}_{it}$	Corruption
$\boldsymbol{eGov}_{it}$	E-government development index
$\boldsymbol{ePar}_{it}$	E-participation
$\boldsymbol{corrprev}_{it}$	Corruption prevention
$\boldsymbol{socc}_{it}$	Societal consultation
$\boldsymbol{size}_{it}$	Size of government (measured as total general government expenditure)
$\boldsymbol{transp}_{it}$	Government transparency
$\boldsymbol{red}_{it}$	Red tape (burden of government regulation)
$\boldsymbol{fpress}_{it}$	Press freedom index
$\boldsymbol{pop}_{it}$	Population
$\boldsymbol{rule}_{it}$	Rule of law
$\boldsymbol{edu}_{it}$	Education (measured as upper secondary attainment)
$\boldsymbol{GDP}_{it}$	GDP per capita
$\boldsymbol{a}_i$	Unobserved heterogeneity/effect
$\boldsymbol{\varepsilon}_{it}$	Idiosyncratic error/time-varying error

This regression model is estimated and presented in Section 9.1.1; however, for societal consultation and corruption prevention data are only available from 2014 to 2020. This limits our dataset and limits the number of observations significantly. Therefore, the model is estimated both with and without those variables.

Model 2 *concerning government effectiveness as dependent variable.*

$$GE_{it} = \beta_0 + \beta_1\, eGov_{it} + \beta_2\, ePar_{it} + \beta_3\, agepub_{it} + \beta_4\, fem_{it} + \beta_5\, edu_{it} + \beta_6\, size_{it} + \beta_7\, GDP_{it} + \beta_8\, fdec_{it} + \beta_9\, trust_{it} + \beta_{10}\, voice_{it} + a_i + \varepsilon_{it} \quad (2)$$

where:

GE_{it}	Government effectiveness
$eGov_{it}$	E-government development index
$ePar_{it}$	E-participation
$agepub_{it}$	Mean age of public paid employees
fem_{it}	Percentage of women employed in public administration and defence
edu_{it}	Education (measured as upper secondary attainment)
$size_{it}$	Size of government (measured as total general government expenditure)
GDP_{it}	GDP per capita
$fdec_{it}$	Fiscal decentralisation
$trust_{it}$	Trust in government
$voice_{it}$	Voice and accountability
a_i	Unobserved heterogeneity/effect
ε_{it}	Idiosyncratic error/time-varying error

Similar to regression model 1, this model is estimated and presented in Section 9.1.2. However, for fiscal decentralisation, data are only available for EU countries. This limits our dataset and limits the number of observations significantly. Therefore, the model is also estimated without that variable.

Model 3 *concerning trust in government as dependent variable (see Section 9.2).*

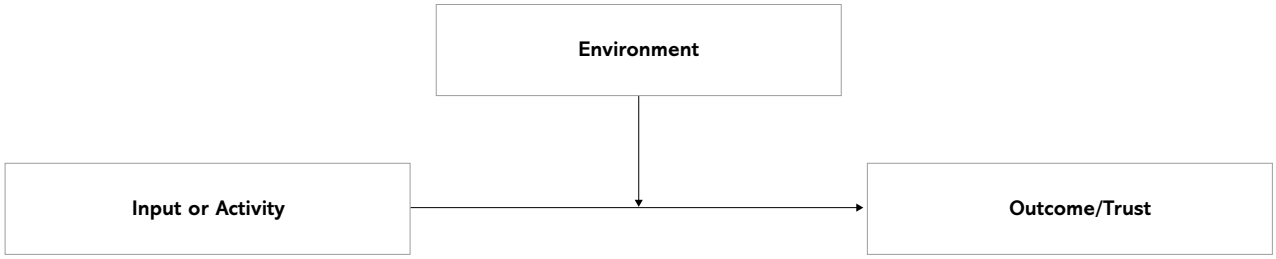
$$trust_{it} = \beta_0 + \beta_1\, ePar_{it} + \beta_2\, corr_{it} + \beta_3\, GE_{it} + \beta_4\, unemp_{it} + \beta_5\, edu_{it} + \beta_6\, agepop_{it} + \beta_7\, gini_{it} + \gamma Z_{it} + a_i + \varepsilon_{it} \quad (3)$$

where:

$trust_{it}$	Trust in government
$ePar_{it}$	E-participation
$corr_{it}$	Corruption
GE_{it}	Government effectiveness
$unemp_{it}$	Unemployment
edu_{it}	Education (measured as upper secondary attainment)
$agepop_{it}$	Median age of the population
$gini_{it}$	Gini index
a_i	Unobserved heterogeneity/effect
ε_{it}	Idiosyncratic error/time-varying error

We are also interested in the effect of the different environmental factors on certain relationships between inputs/activities and outcomes/trust. In other words, we are interested in the moderating effect of an environmental factor (see Figure A1). For example, taking model 1, we are interested in if or how state structure (very coordinated or very decentralised) affects the relationship (direction or magnitude) between size of government and control of corruption.

Figure A 1: The moderating effect of the environmental factor on the relationship between input/activity and outcome/trust



This is modelled using an interaction term, which in our case is the environmental factor. For example, model 1 is constructed as follows:

$$C_{it} = \beta_0 + \beta_1 \mathbf{eGov}_{it} + \beta_2 \mathbf{ePar}_{it} + \beta_3 \mathbf{corrprev}_{it} + \beta_4 \mathbf{socc}_{it} + \beta_5 \mathbf{size}_{it} + \delta\mathbf{(size\ x\ ENV)}_{it} + \theta\mathbf{ENV}_{it} + \beta_6 \mathbf{fdec}_{it} + \beta_7 \mathbf{red}_{it} + \beta_8 \mathbf{fpress}_{it} + \beta_9 \mathbf{pop}_{it} + \beta_{10} \mathbf{rule}_{it} + \gamma \mathbf{Z}_{it} + \mathbf{a}_i + \boldsymbol{\varepsilon}_{it} \quad (4)$$

Where $\mathbf{ENV}_{it}$ is the moderating variable representing the following environment variables:

- level of GDP
- state structure
- type of executive government
- administrative culture
- diversity of policy advice

The coefficient of the interaction term (δ) is interpreted as the increment to the effect of corruption as a result of a unit change in $\mathbf{ENV}_{it}$. That is, the increment to the effect of size of government (measured as total general government expenditure) on control of corruption that happens as a result of having, for example, a more coordinated state structure. When the coefficient of the individual explanatory variables (β) is positive and the coefficient of the interaction term (δ) is negative, the positive effect of that explanatory variable on the dependent variable (in this case C_{it}) is reduced. When the coefficient of the individual explanatory variables (β) is negative and the coefficient of the interaction term (δ) is positive, the negative effect of that explanatory variable on the dependent variable (in this case C_{it}) is reduced. This is because, as long as the interaction term coefficient has the opposite sign from that of the explanatory variable, it will decrease the magnitude of the latter. Conversely, when it has the same sign as that of the explanatory variable, it will amplify the magnitude of the effect.

3. Regression results

Table A 3: Regression results for Model 1

	1 Corruption	2 Corruption	3 Corruption
E-government	0,008	-0,102	-0,09
	-0,424	-0,314	-0,441
E-participation	-0,011	0,037	-0,002
	-0,132	-0,117	-0,135
Corruption Prevention	-.048***		-.159**
	-0,016		-0,061
Societal Consultation	0,009		0,007
	-0,011		-0,012
Government Expenditure	0,001	0,003	0,001
	-0,004	-0,004	-0,004
Red tape	-0,029	-0,028	-0,021
	-0,044	-0,058	-0,043
GDP per capita	0	0	0
	0	0	0
Government transparency	-.003**	-0,003	-.003**
	-0,002	-0,002	-0,002
Press Freedom	0,001	-0,002	0,001
	-0,004	-0,004	-0,004
Population	2.39***	2.436***	2.394***
	-0,694	-0,545	-0,788
Rule of Law	-0,037	-0,154	-0,031
	-0,094	-0,101	-0,091
Secondary education	.015**	.012**	.016**
	-0,006	-0,005	-0,006
Minister-civil service relations:			
• Mildly Politicised			0,091
			-0,124
• Politicised			.115*
			-0,064
Constant	-39.787***	-40.341***	-39.791***
	-10,854	-8,605	-12,442
Observations	168	197	168
R-squared	0,39	0,335	0,4

Standard errors are in parentheses

**** p<.01, ** p<.05, * p<.1*

Table A 4: Regression results for Model 2

	1 Government effectiveness	2 Government effectiveness	3 Government effectiveness
E-government	-0,311	-0,409	-0,504
	-0,353	-0,306	-0,316
E-participation	-0,063	-0,027	-0,068
	-0,083	-0,078	-0,083
Mean age of public paid employees	.059**	.064**	.069***
	-0,022	-0,025	-0,021
Percentage of female employees in public administration	0	0,003	0,001
	-0,007	-0,008	-0,007
GDP per capita	0	0	0
	0	0	0
Fiscal decentralisation	-.022**		-.056***
	-0,008		-0,016
Trust in government	0	0,001	0,001
	-0,001	-0,001	-0,001
Secondary education	-0,003	-0,005	-0,001
	-0,006	-0,005	-0,005
Government Expenditure	0,004	0,001	.009***
	-0,003	-0,003	-0,003
Voice and Accountability	.814***	.544***	.586***
	-0,166	-0,109	-0,149
Administrative culture:			
• Mixed			.052***
			-0,016
• *Rechtsstaat*			0,026
			-0,017
Constant	-1,514	-1,785	-1.826*
	-0,926	-1,091	-0,939
Observations	146	174	146
R-squared	0,409	0,225	0,461

Standard errors are in parentheses

**** p<.01, ** p<.05, * p<.1*

Table A 5: Regression results for Model 3

	1 Trust in government	2 Trust in government
E-participation	3,232	3,355
	-3,979	-4,064
Corruption	-8,713	-7,92
	-6,211	-6,373
Government effectiveness	11.889**	2,254
	-5,018	-5,09
Unemployment rate	-.944**	-.952**
	-0,393	-0,395
Secondary education	.454**	.497**
	-0,218	-0,209
Median age of population	0,354	0,238
	-1,352	-1,384
Gini index	-0,637	-0,655
	-0,575	-0,587
Minister-civil service relations:		
• Mildly Politicised		63.408***
		-11,063
• Politicised		8,797
		-7,274
• Very Politicised		35.335***[1]
		-6,873
Constant	-6,837	-9,312
	-64,245	-65,146
Observations	252	252
R-squared	0,29	0,3

Standard errors are in parentheses

**** p<.01, ** p<.05, * p<.1*

[1] *Even though the coefficient related to very politicised countries is significant, we caution against giving weight to this result as it is based only on one country, the United States.*

Tables

How to read tables

We present here a guide on how to read tables in this Annex (this applies to tables from A7 onwards). The presented data is about the period from 2007 to 2020. If data for 2007 is not available, we use the closest available year thereafter (e.g. 2008). If data is not available for 2020, we report data for the most recent year (e.g. 2019). We calculated the net increase or decrease in countries' performance from the earliest available year to the last available year, which is shown in the very last column of the tables. We also show the marginal change at certain intervals within the 2007–2020 timeframe.

Table A 6: List of indicators with definition

Indicator	Definition	Source
General government expenditure	General government sector expenditure as a percentage of GDP. It is defined in ESA 2010 (paragraph 2.111) as including "institutional units which are non-market producers whose output is intended for individual and collective consumption, and are financed by compulsory payments made by units belonging to other sectors, and institutional units principally engaged in the redistribution of national income and wealth".	Eurostat
Employment in general government as a percentage of total employment	General government employment covers employment in all levels of government (central, state, local and social security funds) and includes core ministries, agencies, departments and non-profit institutions that are controlled by public authorities. Data represents the total number of persons employed directly by those institutions. Total employment covers all persons engaged in productive activity that falls within the production boundary of the national accounts. The employed comprise all individuals who, during a specified brief period, were in the following categories: paid employment or self-employment.	OECD
Percentage of women employed in Public Administration and Defence	For AU, CA, NZ and US the source is the Gender Parity in the Civil Service (Gen-PaCS) Dataset from the University of Pittsburgh. While the Eurostat data may consider also military personnel in the defence category, for these countries only civilian personnel is considered.	Eurostat/ University of Pittsburgh
Share of central government employees between the ages of 18 and 34 and 55+	Data in central government by positions and gender were collected through the 2020 OECD Survey on the Composition of the Workforce in Central/Federal Governments and refer to the situation on 1 January 2020. Most respondents were senior officials in central government human resource management (HRM) departments, and the data refer to HRM practices in central government. There are considerable variations in the definitions of public service as well as the organisations governed at the central level of government, which should be considered when making comparisons.	OECD
E-Government Development Index	The EGDI is a composite indicator that consists of three indices (online service index, telecommunication index and human capital index) that are equally weighted. It ranges from 0 to 1. The EGDI is based on a comprehensive Survey of the online presence of all 193 United Nations Member States, which assesses national websites and how e-government policies and strategies are applied in general and in specific sectors for delivery of essential services. The assessment rates the e-government performance of countries relative to one another as opposed to being an absolute measurement. The results are tabulated and combined with a set of indicators embodying a country's capacity to participate in the information society, without which e-government development efforts are of limited immediate use. Mathematically, the EGDI is a weighted average of three normalized scores on three most important dimensions of e-government, namely: (1) scope and quality of online services (Online Service Index, OSI), (2) development status of telecommunication infrastructure (Telecommunication Infrastructure Index, TII), and (3) inherent human capital (Human Capital Index, HCI).	UN
E-Participation Index	The E-Participation Index assesses, on a 0-to-1 (best) scale, the quality, relevance, and usefulness of government websites in providing online information and participatory tools and services to their citizens. As the EPI is a qualitative assessment based on the availability and relevance of participatory services available on government websites, the comparative ranking of countries is for illustrative purposes and only serves as an indicator of the broad trends in promoting citizen engagement. As with the EGDI, the EPI is not intended as an absolute measurement of e-participation, but rather, as an attempt to capture the e-participation performance of counties relative to one another at a point in time. Mathematically, the EPI is normalized by taking the total score value for a given country, subtracting the lowest total score for any country in the Survey and dividing by the range of total score values for all countries.	UN
Societal consultation	This question assesses how successfully the government consults with societal actors such as trade unions, employers' associations, leading business associations, religious communities, and social and environmental interest groups in preparing its policy. Successful consultation is conceived here as an exchange of views and information (beginning at an early stage of policy development and continuing through to policy implementation) that improves the quality of government policies and induces societal actors to support them. In the Sustainable Governance Indicators (also in this table: the corruption prevention indicator), the "objectivity" of quantitative data from official statistical sources (in particular those provided by the OECD and EU entities) is complemented by experts' (political scientists and economists and a regional coordinator) context-sensitive qualitative assessments.	Sustainable governance indicators
GDP per capita	GDP per capita in current USD.	World Bank
Gini coefficient	The coefficient ranges from 0 to 100, with 0 representing perfect income equality and 100 representing perfect income inequality).	World Bank
Voice and accountability	Perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. The indicator ranges from -2.5 (weak) to 2.5 (strong) governance performance. All good governance indicators (voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, corruption) are based on perceptions-based governance data sources, from a wide range of respondents, including: individuals or domestic firms with first-hand knowledge of the governance situation in the country, country analysts at major multilateral development agencies, nongovernmental organizations and commercial business information providers.	World Bank
Political stability	Perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism. The indicator ranges from -2.5 (weak) to 2.5 (strong) governance performance.	World Bank

Indicator	Definition	Source
Government effectiveness	Perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. The indicator ranges from -2.5 (weak) to 2.5 (strong) governance performance.	World Bank
Regulatory quality	Perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. The indicator ranges from -2.5 (weak) to 2.5 (strong) governance performance.	World Bank
Rule of law	Perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. The indicator ranges from -2.5 (weak) to 2.5 (strong) governance performance.	World Bank
Corruption	Perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. The rescaled indicator ranges from -2.5 (low level of corruption) to 2.5 (high level of corruption).	World Bank
Happiness score	The happiness scores and rankings use data from the Gallup World Poll. The scores are based on answers to the main life evaluation question asked in the poll. This question, known as the Cantril ladder, asks respondents to think of a ladder with the best possible life for them being a 10 and the worst possible life being a 0 and to rate their own current lives on that scale. The scores are from nationally representative samples for the years 2013-2016 and use the Gallup weights to make the estimates representative. The columns following the happiness score estimate the extent to which each of six factors – economic production, social support, life expectancy, freedom, absence of corruption, and generosity – contribute to making life evaluations higher in each country than they are in Dystopia, a hypothetical country that has values equal to the world's lowest national averages for each of the six factors. They have no impact on the total score reported for each country, but they do explain why some countries rank higher than others.	World Happiness Report
Trust in government	Share of respondents answering "yes" (the other response categories being "no", and "don't know") to the survey question: "In this country, do you have confidence in the national government?".	OECD
Burden of government regulation	Response to the survey question "In your country, how burdensome is it for companies to comply with public administration's requirements (e.g. permits, regulations, reporting)?" [1 = extremely burdensome; 7 = not burdensome at all] from the Executive Opinion Survey, whose respondents are business leaders.	World Economic Forum
Press freedom	The report is partly based on a questionnaire using seven general criteria: pluralism (measures the degree of representation of opinions in the media space), media independence, environment and self-censorship, legislative framework, transparency, infrastructure, and abuses. The questionnaire takes account of the legal framework for the media (including penalties for press offences, the existence of a state monopoly for certain kinds of media and how the media are regulated) and the level of independence of the public media. It also includes violations of the free flow of information on the Internet.	Reporters Without Borders
Population	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. The values shown are midyear estimates.	World Bank
Mean age of public employees	The mean age of public paid employees in healthcare, education, and public administration industries are calculated to provide an age profile for public sector employees within each industry.	World Bank
Unemployment	Unemployment rate as % of the total labour force.	World Bank
Secondary education	The percentage of population ages 25 and over that attained or completed upper secondary education.	OECD
Corruption prevention	The indicator addresses how the state and society prevent public servants and politicians from accepting bribes by applying mechanisms to guarantee the integrity of officeholders: auditing of state spending; regulation of party financing; citizen and media access to information; accountability of officeholders (asset declarations, conflict of interest rules, codes of conduct); transparent public procurement systems; effective prosecution of corruption.	Sustainable Governance Indicators
Fiscal decentralisation	Assuming that revenue equals expenditure (i.e. excluding borrowing for simplicity), the indicator measures the share of spending taking place at the sub-national level (using all resources available, except borrowing) relative to total expenditure of the general government (using all resources available). Understanding: the relative importance of overall subnational expenditure for the total government expenditure. A higher ratio would indicate higher degree of decentralisation.	European Committee of the Regions
Median age of the population	Age that divides the population in two parts of equal size, that is, there are as many persons with ages above the median as there are with ages below the median. It is expressed as years.	UN
Sustainable public procurement	The index measures the level of implementation of sustainable public procurement (SPP). It covers 8 sub-themes assessing (i) the existence of SPP policies and/or SPP legislation, (ii) the efforts and means dedicated by countries towards the implementation of SPP policies (process indicators), (iii) the outputs developed through these policies (outputs indicators) and (iv) the results achieved by these policies (outcome indicators). The index has the following categories: 1 (low level of SPP implementation), 2 (medium-low level of SPP implementation), 3 (medium-high level of SPP implementation).	UNEP
Satisfaction with public services index	The index is based upon the European Quality of Life Survey 2016 (the most recent), whose respondents are residents of EU Member States aged 18 or older. It measures the mean value of survey respondents to questions about the satisfaction with public services. The indicator ranges from 0 (extreme dissatisfaction) to 10 (extreme satisfaction).	EQLS

Table A 7: General government sector expenditure as a percentage of GDP

Region	Country	2010	2013	2016	2019	2020	2020	Change
Western Europe	UK	.	.	.	.	.	.	.
Western Europe	FR	**56,9**	▲ 0,30	▼ -0,50	▼ -1,30	▲ 6,00	**61,4**	4,50
Western Europe	BE	**53,9**	▲ 2,20	▼ -3,00	▼ -1,20	▲ 7,30	**59,2**	5,30
Western Europe	AT	**52,8**	▼ -1,20	▼ -1,50	▼ -1,50	▲ 8,40	**57**	4,20
Western Europe	DE	**48,1**	▼ -3,20	▼ -0,50	▲ 0,60	▲ 5,80	**50,8**	2,70
Western Europe	NL	**47,9**	▼ -1,30	▼ -3,00	▼ -1,60	▲ 5,60	**47,6**	-0,30
Western Europe	LU	**42**	▼ -0,80	▼ -1,20	▲ 2,90	▲ 4,30	**47,2**	5,20
Western Europe	CH	**32,1**	▲ 1,20	▬ 0	▼ -0,50	▲ 5,00	**37,8**	5,70
Western Europe	IE	**64,9**	▼ -24,30	▼ -12,50	▼ -3,90	▲ 3,10	**27,3**	-37,60
Northern Europe	NO	**45,4**	▼ -1,00	▲ 7,10	▲ 0,10	▲ 6,90	**58,5**	13,10
Northern Europe	FI	**53,9**	▲ 2,90	▼ -1,20	▼ -2,30	▲ 3,80	**57,1**	3,20
Northern Europe	DK	**56,7**	▼ -0,90	▼ -3,30	▼ -3,00	▲ 3,90	**53,4**	-3,30
Northern Europe	SE	**50,4**	▲ 1,20	▼ -1,90	▼ -0,60	▲ 3,50	**52,6**	2,20
Northern Europe	IS	**48,8**	▼ -2,80	▲ 0,40	▼ -3,00	▲ 7,30	**50,7**	1,90
Southern Europe	EL	**53**	▲ 9,80	▼ -12,90	▼ -2,00	▲ 12,00	**59,9**	6,90
Southern Europe	IT	**49,9**	▲ 1,10	▼ -1,90	▼ -0,60	▲ 8,50	**57**	7,10
Southern Europe	ES	**46**	▲ 0,40	▼ -3,90	▼ -0,20	▲ 9,50	**51,8**	5,80
Southern Europe	PT	**51,9**	▼ -2,00	▼ -5,10	▼ -2,30	▲ 6,80	**49,3**	-2,60
Southern Europe	MT	**40,2**	▲ 0,60	▼ -4,40	▼ -0,30	▲ 10,20	**46,3**	6,10
Southern Europe	CY	**41,8**	▲ 1,20	▼ -5,50	▲ 0,90	▲ 6,70	**45,1**	3,30
Central and Eastern Europe	HR	**48,5**	▼ -0,20	▼ -1,40	▼ -0,80	▲ 8,40	**54,5**	6,00
Central and Eastern Europe	SI	**50,2**	▲ 10,10	▼ -14,10	▼ -2,90	▲ 8,00	**51,3**	1,10
Central and Eastern Europe	HU	**48,8**	▲ 1,20	▼ -3,20	▼ -0,80	▲ 5,20	**51,2**	2,40
Central and Eastern Europe	PL	**45,8**	▼ -2,80	▼ -1,90	▲ 0,70	▲ 6,40	**48,2**	2,40
Central and Eastern Europe	CZ	**43,6**	▼ -0,90	▼ -2,90	▲ 1,30	▲ 6,20	**47,3**	3,70
Central and Eastern Europe	EE	**40,3**	▼ -1,90	▲ 1,00	▬ 0	▲ 6,50	**45,9**	5,60
Central and Eastern Europe	SK	**42,3**	▲ 0,30	▲ 0,10	▼ -2,00	▲ 4,60	**45,3**	3,00
Central and Eastern Europe	LV	**45,8**	▼ -7,30	▼ -1,00	▲ 0,70	▲ 5,10	**43,3**	-2,50
Central and Eastern Europe	LT	**42,4**	▼ -6,80	▼ -1,40	▲ 0,60	▲ 8,10	**42,9**	0,50
Central and Eastern Europe	BG	**36,1**	▲ 1,70	▼ -3,00	▲ 1,50	▲ 5,70	**42**	5,90
Central and Eastern Europe	RO	**40**	▼ -4,40	▼ -1,00	▲ 1,60	▲ 5,80	**42**	2,00
Oceania	AU	.	.	.	.	.	.	.
Oceania	NZ	.	.	.	.	.	.	.
North America	CA	.	.	.	.	.	.	.
North America	US	.	.	.	.	.	.	.

Source: Eurostat

Table A 8: Employment in general government as a percentage of total employment

Region	Country	2007	2010	2013	2016	2019	2019	Change
Western Europe	FR	**22,35**	▲ 0,27	▼ -0,56	▲ 0,03	▼ -0,62	**21,47**	-1,12
Western Europe	BE	**18,49**	▲ 0,43	▼ -0,16	▼ -0,10	▼ -0,25	**18,41**	-0,20
Western Europe	AT	**16,92**	▲ 0,21	▼ -0,35	▲ 0,18	▼ -0,21	**16,75**	-0,25
Western Europe	UK	**19,27**	▲ 0,36	▼ -2,24	▼ -1,16	▼ -0,27	**15,96**	-3,29
Western Europe	IE	**14,61**	▲ 1,87	▼ -1,00	▼ -0,60	▲ 0,06	**14,94**	0,30
Western Europe	LU	**11,12**	▲ 1,20	▲ 0,22	▼ -0,30	▼ -0,03	**12,21**	1,09
Western Europe	NL	**12,81**	▲ 0,54	▼ -0,53	▼ -0,56	▼ -0,52	**11,74**	-1,10
Western Europe	DE	**11,42**	▲ 0,02	▼ -0,66	▼ -0,20	▼ -0,01	**10,57**	-0,79
Western Europe	CH	**.**	.	**9,89**	▲ 0,23	▲ 0,03	**10,15**	0,30
Northern Europe	NO	**29,62**	▲ 0,65	▲ 0,08	▲ 0,48	▼ -0,14	**30,69**	1,07
Northern Europe	SE	**30,41**	▼ -1,21	▼ -0,54	▲ 0,42	▼ -0,40	**28,68**	-1,75
Northern Europe	DK	**28,33**	▲ 2,09	▼ -0,63	▼ -1,32	▼ -0,69	**27,78**	-0,72
Northern Europe	FI	**24,47**	▲ 0,56	▼ -0,08	▼ -0,67	▼ -0,22	**24,06**	-0,23
Northern Europe	IS	**.**	**27,38**	▼ -0,58	▼ -2,42	▼ -0,39	**23,99**	-0,04
Southern Europe	CY	**.**	.	.	.	.	**.**	.
Southern Europe	MT	**.**	.	.	.	.	**.**	.
Southern Europe	EL	**17,99**	▲ 0,17	▼ -0,86	▼ -0,83	▲ 0,16	**16,63**	-1,34
Southern Europe	ES	**13,43**	▲ 1,88	▲ 1,42	▼ -0,78	▼ -0,30	**15,65**	2,15
Southern Europe	PT	**14,49**	▲ 0,70	▲ 0,43	▼ -0,89	▼ -0,65	**14,08**	-0,42
Southern Europe	IT	**14,53**	▼ -0,16	▼ -0,39	▼ -0,30	▼ -0,41	**13,27**	-1,32
Central and Eastern Europe	BG	**.**	.	.	.	.	**.**	.
Central and Eastern Europe	HR	**.**	.	.	.	.	**.**	.
Central and Eastern Europe	LT	**23,26**	▲ 2,49	▼ -1,33	▼ -1,72	▼ -0,55	**22,15**	-1,34
Central and Eastern Europe	EE	**20,73**	▲ 3,72	▼ -0,84	▼ -0,82	▼ -0,74	**22,05**	1,97
Central and Eastern Europe	HU	**19,18**	▲ 2,03	▲ 0,10	▲ 0,15	▼ -1,79	**19,67**	-0,32
Central and Eastern Europe	LV	**19,47**	▲ 2,26	▼ -0,31	▼ -1,61	▼ -0,15	**19,66**	0,14
Central and Eastern Europe	SK	**19,38**	▲ 0,16	▲ 0,04	▼ -0,58	▼ -0,51	**18,49**	-0,86
Central and Eastern Europe	PL	**17,43**	▼ -1,42	▲ 0,86	▼ -0,15	▲ 0,49	**17,21**	-0,18
Central and Eastern Europe	SI	**15,56**	▲ 1,18	▲ 0,93	▼ -0,34	▼ -0,39	**16,94**	1,18
Central and Eastern Europe	CZ	**16,2**	▲ 0,11	▼ -0,13	▬ 0	▲ 0,36	**16,54**	0,37
Central and Eastern Europe	RO	**16,12**	▲ 2,02	▼ -1,65	▼ -0,12	▼ -0,28	**16,09**	0,26
Oceania	AU	**.**	.	.	.	.	**.**	.
Oceania	NZ	**.**	.	.	.	.	**.**	.
North America	CA	**19,36**	▲ 0,67	▼ -0,47	▲ 0,11	▲ 0,10	**19,77**	0,51
North America	US	**.**	**17,07**	▼ -1,14	▼ -0,66	▼ -0,28	**14,99**	-0,98

Source: OECD

Table A 9: Share of central government employees aged 55+

Region	Country	2015	2020		2020	Change
Western Europe	AT	**26,1**	▲	9,0	**35,2**	9,03
Western Europe	NL	**30,3**	▲	2,0	**32,3**	2,01
Western Europe	DE	**20,1**	▲	9,3	**29,4**	9,31
Western Europe	BE	**27,6**	▲	1,2	**28,8**	1,22
Western Europe	FR	**23,9**	▲	3,8	**27,7**	3,78
Western Europe	IE	**26,7**	▲	0,1	**26,8**	0,11
Western Europe	CH	**22,3**	▲	3,2	**25,5**	3,15
Western Europe	UK	**22,1**	▲	2,4	**24,6**	2,44
Western Europe	LU	**.**		.	**10,5**	.
Northern Europe	IS	**.**		.	**.**	.
Northern Europe	FI	**30,9**	▲	0,4	**31,2**	0,37
Northern Europe	NO	**24,6**	▲	1,9	**26,5**	1,92
Northern Europe	DK	**23,5**	▲	0,6	**24,1**	0,6
Northern Europe	SE	**24,0**	▼	-0,2	**23,8**	-0,24
Southern Europe	CY	**.**		.	**.**	.
Southern Europe	MT	**.**		.	**.**	.
Southern Europe	IT	**45,4**	▲	3,1	**48,5**	3,13
Southern Europe	ES	**35,4**	▲	11,2	**46,6**	11,18
Southern Europe	EL	**27,1**	▲	9,5	**36,6**	9,54
Southern Europe	PT	**19,6**	▲	16,9	**36,5**	16,93
Central and Eastern Europe	BG	**.**		.	**.**	.
Central and Eastern Europe	HR	**.**		.	**.**	.
Central and Eastern Europe	PL	**32,9**	▼	-0,7	**32,3**	-0,67
Central and Eastern Europe	LT	**23,7**	▲	7,9	**31,5**	7,87
Central and Eastern Europe	CZ	**.**		.	**26,8**	.
Central and Eastern Europe	LV	**19,8**	▲	6,8	**26,6**	6,8
Central and Eastern Europe	EE	**23,0**	▲	2,3	**25,3**	2,31
Central and Eastern Europe	SI	**18,0**	▲	6,9	**24,9**	6,91
Central and Eastern Europe	SK	**23,3**	▼	-0,5	**22,8**	-0,52
Central and Eastern Europe	RO	**.**		.	**21,3**	.
Central and Eastern Europe	HU	**12,6**	▼	-0,8	**11,8**	-0,79
Oceania	NZ	**.**		.	**24,1**	.
Oceania	AU	**17,0**	▲	2,4	**19,5**	2,43
North America	US	**27,8**	▲	3,2	**31,0**	3,2
North America	CA	**19,7**	▲	0,2	**19,9**	0,24

Source: OECD

Table A 10: Share of central government employees aged 18–34

Region	Country	2015	2020		2020	Change
Western Europe	LU	.		.	**28,9**	.
Western Europe	UK	**20,2**	▲	4,5	**24,8**	4,54
Western Europe	NL	**14,0**	▲	4,5	**18,5**	4,46
Western Europe	BE	**17,0**	▲	0,9	**18,0**	0,91
Western Europe	CH	**18,9**	▼	-1,0	**17,9**	-1,01
Western Europe	FR	**21,2**	▼	-4,4	**16,9**	-4,35
Western Europe	DE	**30,0**	▼	-13,4	**16,6**	-13,4
Western Europe	AT	**14,7**	▲	1,2	**15,9**	1,2
Western Europe	IE	**12,7**	▲	2,9	**15,6**	2,89
Northern Europe	IS	.		.	.	.
Northern Europe	DK	**18,8**	▲	10,7	**29,5**	10,68
Northern Europe	SE	**21,7**	▲	1,0	**22,7**	0,96
Northern Europe	FI	**15,1**	▲	1,5	**16,6**	1,47
Northern Europe	NO	**18,9**	▼	-3,1	**15,8**	-3,05
Southern Europe	CY	.		.	.	.
Southern Europe	MT	.		.	.	.
Southern Europe	PT	**12,6**	▼	-5,0	**7,5**	-5,03
Southern Europe	ES	**5,0**	▲	0,4	**5,4**	0,39
Southern Europe	IT	**2,2**	▲	0,2	**2,5**	0,23
Southern Europe	EL	**4,0**	▼	-2,2	**1,8**	-2,24
Central and Eastern Europe	BG	.		.	.	.
Central and Eastern Europe	HR	.		.	.	.
Central and Eastern Europe	HU	**31,2**	▼	-0,6	**30,6**	-0,61
Central and Eastern Europe	EE	**27,4**	▼	-4,3	**23,1**	-4,32
Central and Eastern Europe	SK	**21,2**	▲	1,0	**22,2**	1
Central and Eastern Europe	LV	**30,2**	▼	-8,9	**21,4**	-8,86
Central and Eastern Europe	CZ	.		.	**15,9**	.
Central and Eastern Europe	LT	**25,9**	▼	-10,4	**15,5**	-10,39
Central and Eastern Europe	RO	.		.	**9,6**	.
Central and Eastern Europe	SI	**11,3**	▼	-3,3	**8,0**	-3,3
Central and Eastern Europe	PL	**6,2**	▲	1,3	**7,5**	1,3
Oceania	NZ	.		.	**28,3**	.
Oceania	AU	**26,4**	▼	-2,8	**23,7**	-2,77
North America	CA	**20,6**	▲	4,4	**25,0**	4,36
North America	US	**16,9**	▼	-5,7	**11,2**	-5,72

Source: OECD

Table A 11: Percentage of women employed in public administration and defence

Region	Country	2008	2011	2014	2017	2018	2019	2020	2021	2021	Change
Western Europe	UK	**49,7**	▲ 0,6	▼ -1,0	**52,5**	.	.	.	.	.	2,8
Western Europe	IE	**47,6**	▼ -1,7	▲ 0,2	▲ 3,6	.	.	▲ 5,8	▲ 2,5	**54,4**	6,7
Western Europe	DE	**46,7**	▲ 1,0	▲ 1,4	▲ 1,2	.	.	▲ 4,3	▲ 0,2	**53,7**	7,0
Western Europe	FR	**51,9**	▼ -0,7	▼ -0,5	▲ 2,6	.	.	▲ 3,2	▼ -0,5	**53,3**	1,5
Western Europe	AT	**44,2**	▼ -0,2	▲ 3,2	▼ -0,1	.	.	▲ 2,8	▲ 0,1	**50,1**	5,9
Western Europe	BE	**46,8**	▲ 1,1	▲ 1,9	▼ -2,4	.	.	▼ -1,4	▲ 1,4	**49,8**	3,0
Western Europe	CH	**45,3**	▲ 0,5	▲ 1,7	▲ 0,8	.	.	▲ 0,9	▲ 0,6	**48,8**	3,5
Western Europe	NL	**40,5**	▼ -1,5	▲ 1,8	▲ 3,1	.	.	▲ 4,4	▲ 0,9	**46,0**	5,5
Western Europe	LU	**33,6**	▲ 1,5	▲ 4,3	▼ -0,7	.	.	▲ 5,5	▼ -4,0	**40,9**	7,3
Northern Europe	IS	**49,5**	▲ 4,3	▼ -3,7	▲ 5,7	.	.	▲ 11,0	▲ 0,7	**61,6**	12,2
Northern Europe	SE	**55,1**	▲ 0,0	▼ -0,3	▲ 1,5	.	.	▲ 5,6	▼ -1,8	**58,5**	3,5
Northern Europe	FI	**56,1**	▼ -2,2	▲ 1,3	▲ 0,9	.	.	▲ 0,6	▲ 2,2	**58,0**	2,0
Northern Europe	DK	**51,3**	▲ 2,6	▼ -3,1	▼ -0,4	.	.	▲ 1,9	▲ 4,4	**57,0**	5,8
Northern Europe	NO	**48,6**	▲ 0,3	▲ 2,2	▲ 0,5	.	.	▲ 0,1	▲ 1,6	**52,9**	4,2
Southern Europe	ES	**41,0**	▲ 1,3	▼ -1,5	▲ 0,8	.	.	▲ 2,1	▲ 1,4	**44,3**	3,3
Southern Europe	CY	**38,9**	▲ 1,7	▲ 0,9	▲ 0,9	.	.	▲ 2,2	▼ -0,2	**43,5**	4,6
Southern Europe	PT	**36,2**	▲ 2,0	▲ 3,1	▼ -2,3	.	.	▼ -0,2	▲ 0,9	**42,0**	5,8
Southern Europe	EL	**38,0**	▼ -2,6	▲ 1,6	▼ -1,0	.	.	▲ 0,4	▲ 1,3	**38,7**	0,7
Southern Europe	IT	**34,5**	▼ -0,3	▲ 0,2	▲ 0,1	.	.	▲ 0,7	▲ 0,3	**35,3**	0,8
Southern Europe	MT	**32,8**	▼ -0,2	▲ 0,0	▲ 3,0	.	.	▲ 3,7	▼ -1,2	**35,2**	2,4
Central and Eastern Europe	LV	**52,0**	▲ 5,4	▼ -1,3	▼ -4,6	.	.	▲ 0,7	▲ 2,3	**59,1**	7,1
Central and Eastern Europe	HU	**49,9**	▼ -0,8	▼ -0,2	▲ 2,7	.	.	▲ 7,0	▲ 1,3	**57,1**	7,2
Central and Eastern Europe	SK	**51,0**	▲ 0,5	▼ -3,2	▲ 4,5	.	.	▲ 3,8	▲ 2,1	**54,2**	3,2
Central and Eastern Europe	SI	**50,1**	▼ -0,5	▲ 0,8	▲ 5,5	.	.	▲ 3,8	▼ -1,6	**52,6**	2,5
Central and Eastern Europe	EE	**55,5**	▼ -2,4	▲ 1,9	▲ 4,0	.	.	▼ -0,8	▼ -1,9	**52,3**	-3,2
Central and Eastern Europe	PL	**49,9**	▲ 0,0	▲ 0,3	▲ 1,9	.	.	▲ 1,4	▲ 0,5	**52,1**	2,3
Central and Eastern Europe	LT	**49,0**	▲ 2,4	▲ 3,2	▲ 0,8	.	.	▼ -4,8	▲ 1,0	**50,8**	1,8
Central and Eastern Europe	CZ	**47,5**	▲ 0,2	▲ 0,4	▲ 1,6	.	.	▼ -1,6	▲ 4,0	**50,6**	3,1
Central and Eastern Europe	HR	**44,8**	▼ -0,4	▲ 5,1	▼ -4,0	.	.	▼ -3,2	▼ -0,2	**46,1**	1,3
Central and Eastern Europe	BG	**40,1**	▲ 4,5	▲ 1,0	▲ 2,1	.	.	▲ 0,0	▲ 0,4	**46,0**	5,9
Central and Eastern Europe	RO	**36,9**	▲ 1,5	▼ -2,4	▲ 2,7	.	.	▼ -1,7	▲ 2,4	**36,8**	-0,2
Oceania	AU*	**58,0**	▼ -0,4	▲ 0,4	▲ 0,9	.	**59,7**	.	.	.	1,7
Oceania	NZ*	**59,0**	▲ 0,1	▲ 1,1	▲ 0,3	.	**61,1**	.	.	.	2,1
North America	CA*	**54,4**	▲ 0,4	▼ -0,7	▲ 0,7	**54,8**	.	.	.	.	0,4
North America	US*	**44,4**	▼ -0,6	▼ -0,3	▲ 0,1	.	**43,6**	.	.	.	-0,8

Source: Eurostat and University of Pittsburgh

Table A 12: Management of senior level public servants

Region	Country	2020
Western Europe	UK	0,82
Western Europe	IE	0,62
Western Europe	FR	0,62
Western Europe	NL	0,60
Western Europe	BE	0,52
Western Europe	LU	0,45
Western Europe	AT	0,45
Western Europe	CH	0,36
Western Europe	DE	0,29
Northern Europe	IS	.
Northern Europe	SE	0,58
Northern Europe	FI	0,45
Northern Europe	DK	0,37
Northern Europe	NO	0,35
Southern Europe	CY	.
Southern Europe	MT	.
Southern Europe	EL	0,66
Southern Europe	IT	0,52
Southern Europe	PT	0,52
Southern Europe	ES	0,30
Central and Eastern Europe	BG	.
Central and Eastern Europe	HR	.
Central and Eastern Europe	RO	.
Central and Eastern Europe	SK	.
Central and Eastern Europe	LV	0,63
Central and Eastern Europe	LT	0,52
Central and Eastern Europe	EE	0,48
Central and Eastern Europe	CZ	0,39
Central and Eastern Europe	HU	0,33
Central and Eastern Europe	SI	0,25
Central and Eastern Europe	PL	0,23
Oceania	NZ	0,54
Oceania	AU	0,49
North America	CA	0,84
North America	US	0,42

Source: OECD

Table A 13: Sustainable public procurement index

Region	Country	2020
Western Europe	AT	.
Western Europe	CH	.
Western Europe	LU	.
Western Europe	UK	.
Western Europe	BE	3
Western Europe	FR	3
Western Europe	NL	3
Western Europe	DE	2
Western Europe	IE	1
Northern Europe	IS	.
Northern Europe	DK	2
Northern Europe	NO	2
Northern Europe	SE	2
Northern Europe	SI	2
Northern Europe	FI	1
Southern Europe	EL	.
Southern Europe	ES	.
Southern Europe	MT	.
Southern Europe	IT	3
Southern Europe	PT	3
Southern Europe	CY	1
Central and Eastern Europe	EE	.
Central and Eastern Europe	HU	.
Central and Eastern Europe	RO	.
Central and Eastern Europe	SK	.
Central and Eastern Europe	BG	3
Central and Eastern Europe	LT	3
Central and Eastern Europe	LV	3
Central and Eastern Europe	HR	2
Central and Eastern Europe	PL	2
Central and Eastern Europe	CZ	1
Oceania	AU	.
Oceania	NZ	1
North America	US	3
North America	CA	1

Source: UNEP

Table A 14: E-participation index

Region	Country	2008	2012	2016	2020	2020	Change
Western Europe	UK	**0,43**	0,49	0,08	-0,02	**0,98**	0,54
Western Europe	AT	**0,48**	-0,11	0,51	0,09	**0,98**	0,50
Western Europe	NL	**0,52**	0,48	-0,05	0,02	**0,96**	0,44
Western Europe	CH	**0,41**	-0,07	0,23	0,33	**0,90**	0,50
Western Europe	FR	**0,93**	-0,35	0,32	0,01	**0,90**	-0,03
Western Europe	IE	**0,25**	-0,12	0,58	0,15	**0,86**	0,61
Western Europe	DE	**0,16**	0,60	0,00	-0,01	**0,75**	0,59
Western Europe	LU	**0,61**	-0,22	0,30	0,01	**0,70**	0,09
Western Europe	BE	**0,41**	-0,28	0,51	0,01	**0,65**	0,25
Northern Europe	DK	**0,93**	-0,38	0,26	0,15	**0,96**	0,03
Northern Europe	FI	**0,27**	0,46	0,18	0,04	**0,95**	0,68
Northern Europe	NO	**0,52**	0,16	0,08	0,14	**0,90**	0,38
Northern Europe	SE	**0,66**	0,03	0,08	0,06	**0,82**	0,16
Northern Europe	IS	**0,07**	0,09	0,50	0,11	**0,77**	0,71
Southern Europe	CY	**0,09**	-0,01	0,45	0,43	**0,95**	0,86
Southern Europe	ES	**0,36**	0,14	0,43	-0,09	**0,85**	0,48
Southern Europe	MT	**0,39**	-0,12	0,52	0,05	**0,83**	0,45
Southern Europe	IT	**0,23**	0,04	0,65	-0,09	**0,82**	0,59
Southern Europe	PT	**0,25**	0,12	0,29	0,16	**0,82**	0,57
Southern Europe	EL	**0,09**	0,25	0,27	0,18	**0,79**	0,69
Central and Eastern Europe	EE	**0,73**	0,04	0,05	0,19	**1,00**	0,27
Central and Eastern Europe	PL	**0,23**	-0,04	0,70	0,08	**0,96**	0,74
Central and Eastern Europe	BG	**0,05**	-0,02	0,67	0,20	**0,89**	0,85
Central and Eastern Europe	HR	**0,14**	0,15	0,49	0,11	**0,89**	0,76
Central and Eastern Europe	SI	**0,23**	-0,02	0,52	0,13	**0,86**	0,63
Central and Eastern Europe	RO	**0,05**	0,03	0,55	0,18	**0,81**	0,76
Central and Eastern Europe	LT	**0,48**	0,05	0,30	-0,09	**0,74**	0,26
Central and Eastern Europe	CZ	**0,20**	0,06	0,30	0,17	**0,73**	0,52
Central and Eastern Europe	SK	**0,07**	0,06	0,41	0,16	**0,70**	0,63
Central and Eastern Europe	HU	**0,20**	0,24	0,04	0,19	**0,68**	0,47
Central and Eastern Europe	LV	**0,23**	-0,02	0,31	0,06	**0,58**	0,36
Oceania	NZ	**0,80**	-0,22	0,37	0,04	**0,99**	0,19
Oceania	AU	**0,89**	-0,12	0,22	-0,02	**0,96**	0,08
North America	US	**1,00**	-0,08	-0,02	0,10	**1,00**	0,00
North America	CA	**0,61**	0,07	0,23	0,03	**0,94**	0,33

Source: UN

Table A 15: Societal consultation

Region	Country	2014	2016	2018	2020	2020	Change
Western Europe	CH	**10**	0	0	0	**10**	0
Western Europe	NL	**9**	0	0	-1	**8**	-1
Western Europe	AT	**8**	0	0	-1	**7**	-1
Western Europe	DE	**7**	0	0	0	**7**	0
Western Europe	LU	**8**	0	0	-1	**7**	-1
Western Europe	UK	**5**	2	0	0	**7**	2
Western Europe	BE	**7**	-1	0	0	**6**	-1
Western Europe	FR	**6**	-1	1	0	**6**	0
Western Europe	IE	**4**	1	1	0	**6**	2
Northern Europe	NO	**10**	0	0	0	**10**	0
Northern Europe	DK	**9**	0	0	0	**9**	0
Northern Europe	FI	**10**	-1	-1	0	**8**	-2
Northern Europe	SE	**8**	0	0	0	**8**	0
Northern Europe	IS	**6**	0	0	0	**6**	0
Southern Europe	ES	**5**	0	0	1	**6**	1
Southern Europe	MT	**5**	1	0	0	**6**	1
Southern Europe	CY	**5**	0	0	0	**5**	0
Southern Europe	PT	**4**	0	0	1	**5**	1
Southern Europe	IT	**4**	0	1	-1	**4**	0
Southern Europe	EL	**2**	1	0	0	**3**	1
Central and Eastern Europe	LV	**7**	0	1	0	**8**	1
Central and Eastern Europe	EE	**8**	-1	0	0	**7**	-1
Central and Eastern Europe	LT	**7**	0	0	0	**7**	0
Central and Eastern Europe	CZ	**5**	1	0	0	**6**	1
Central and Eastern Europe	BG	**5**	0	0	0	**5**	0
Central and Eastern Europe	SI	**4**	1	0	0	**5**	1
Central and Eastern Europe	SK	**7**	-1	0	-1	**5**	-2
Central and Eastern Europe	HR	**4**	0	0	0	**4**	0
Central and Eastern Europe	PL	**7**	0	-3	-1	**3**	-4
Central and Eastern Europe	RO	**3**	1	-1	0	**3**	0
Central and Eastern Europe	HU	**2**	0	0	0	**2**	0
Oceania	NZ	**8**	0	0	0	**8**	0
Oceania	AU	**7**	0	0	0	**7**	0
North America	CA	**7**	0	1	0	**8**	1
North America	US	**8**	0	-3	0	**5**	-3

Source: Sustainable governance indicators

Table A 16: Corruption prevention

Region	Country	2014	2016		2018		2020		2020	Change
Western Europe	CH	**9**	–	0	–	0	–	0	**9**	0
Western Europe	AT	**8**	–	0	–	0	–	0	**8**	0
Western Europe	BE	**7**	▲	1	–	0	–	0	**8**	1
Western Europe	DE	**7**	▲	1	–	0	–	0	**8**	1
Western Europe	LU	**8**	–	0	–	0	–	0	**8**	0
Western Europe	UK	**7**	▲	1	–	0	–	0	**8**	1
Western Europe	FR	**5**	–	0	▲	2	–	0	**7**	2
Western Europe	IE	**7**	–	0	▲	1	▼	-1	**7**	0
Western Europe	NL	**7**	–	0	–	0	–	0	**7**	0
Northern Europe	DK	**10**	–	0	–	0	–	0	**10**	0
Northern Europe	FI	**9**	–	0	–	0	–	0	**9**	0
Northern Europe	NO	**8**	–	0	–	0	▲	1	**9**	1
Northern Europe	SE	**10**	▼	-1	–	0	–	0	**9**	-1
Northern Europe	IS	**7**	▼	-1	▼	-1	▼	-1	**4**	-3
Southern Europe	ES	**5**	▲	1	▲	1	–	0	**7**	2
Southern Europe	PT	**7**	–	0	–	0	–	0	**7**	0
Southern Europe	IT	**4**	▲	1	▲	1	–	0	**6**	2
Southern Europe	EL	**5**	–	0	–	0	–	0	**5**	0
Southern Europe	MT	**4**	▲	1	–	0	–	0	**5**	1
Southern Europe	CY	**4**	–	0	–	0	▼	-1	**3**	-1
Central and Eastern Europe	EE	**8**	–	0	–	0	▲	1	**9**	1
Central and Eastern Europe	LV	**7**	–	0	–	0	–	0	**7**	0
Central and Eastern Europe	LT	**6**	–	0	–	0	–	0	**6**	0
Central and Eastern Europe	SI	**5**	▲	1	–	0	▼	-1	**5**	0
Central and Eastern Europe	BG	**4**	–	0	–	0	–	0	**4**	0
Central and Eastern Europe	CZ	**4**	▲	1	▲	1	▼	-2	**4**	0
Central and Eastern Europe	HR	**4**	▲	1	–	0	▼	-1	**4**	0
Central and Eastern Europe	PL	**7**	–	0	▼	-2	▼	-1	**4**	-3
Central and Eastern Europe	RO	**5**	–	0	–	0	▼	-1	**4**	-1
Central and Eastern Europe	SK	**5**	–	0	–	0	▼	-1	**4**	-1
Central and Eastern Europe	HU	**4**	▼	-1	–	0	–	0	**3**	-1
Oceania	NZ	**10**	–	0	–	0	–	0	**10**	0
Oceania	AU	**8**	–	0	–	0	▼	-1	**7**	-1
North America	CA	**8**	–	0	–	0	–	0	**8**	0
North America	US	**9**	–	0	▼	-2	▼	-1	**6**	-3

Source: Sustainable governance indicators

Table A 17: GDP per capita

Region	Country	2007	2010	2013	2016	2019	2020	2020	Change
Western Europe	LU	**85109,9**	5251,90	10563,23	12440,16	3976,73	504,22	**117846,1**	32736,25
Western Europe	IE	**46773,5**	-3570,37	4627,51	23667,97	15881,09	5970,39	**93350,1**	46576,60
Western Europe	CH	**51208,1**	3650,35	7366,64	5880,07	3928,77	-288,63	**71745,3**	20537,20
Western Europe	NL	**43939,1**	1104,76	4197,62	3046,89	6715,91	262,59	**59266,9**	15327,77
Western Europe	AT	**39430,6**	2578,83	5912,61	4761,96	5392,33	-2390,38	**55686,0**	16255,36
Western Europe	DE	**36287,5**	2665,21	6041,20	5585,79	5073,20	-808,34	**54844,5**	18557,07
Western Europe	BE	**36791,2**	3048,89	3831,03	4926,28	5672,12	-1180,55	**53089,0**	16297,77
Western Europe	FR	**34121,3**	1781,56	3620,95	3400,76	6147,75	-2081,18	**46991,2**	12869,84
Western Europe	UK	**35695,3**	881,29	3642,16	4416,55	4406,16	-2558,60	**46482,9**	10787,57
Northern Europe	NO	**55930,5**	1989,12	9041,60	-8021,34	7859,25	-4154,32	**62644,8**	6714,31
Northern Europe	DK	**39006,2**	3996,85	3723,80	5249,15	6724,97	1528,94	**60229,9**	21223,71
Northern Europe	SE	**40905,1**	1318,77	4088,47	4117,86	4168,53	438,94	**55037,7**	14132,58
Northern Europe	IS	**41463,4**	-1688,13	4634,37	9070,73	4809,70	-4673,41	**53616,7**	12153,26
Northern Europe	FI	**37838,3**	1118,13	2536,67	3441,31	5387,09	195,49	**50517,0**	12678,69
Southern Europe	MT	**25059,1**	3663,56	3573,14	7591,25	6001,59	-3427,43	**42461,3**	17402,12
Southern Europe	IT	**34141,2**	1017,24	1156,25	3612,26	4407,25	-2432,12	**41902,1**	7760,88
Southern Europe	CY	**32881,5**	541,95	-3048,41	5344,10	6619,83	-2965,61	**39373,4**	6491,86
Southern Europe	ES	**32469,5**	-786,82	751,29	4852,21	4408,93	-3938,80	**37756,4**	5286,82
Southern Europe	PT	**25733,1**	1528,83	674,09	3671,71	4564,32	-1994,99	**34177,1**	8443,96
Southern Europe	EL	**29320,3**	-1407,18	-1926,44	1525,15	2844,46	-2407,62	**27948,7**	-1371,62
Central and Eastern Europe	CZ	**26282,4**	1599,59	2936,14	5279,60	6749,30	-1238,98	**41608,0**	15325,65
Central and Eastern Europe	SI	**27570,1**	256,73	2146,83	3962,34	6734,84	-945,62	**39725,3**	12155,11
Central and Eastern Europe	LT	**19094,6**	1002,10	6624,84	4203,59	7615,61	339,77	**38880,5**	19785,91
Central and Eastern Europe	EE	**22195,2**	-575,74	5845,06	3848,23	6538,55	-206,08	**37645,2**	15450,03
Central and Eastern Europe	PL	**16802,8**	4269,69	3494,98	3754,60	5475,66	489,22	**34287,0**	17484,15
Central and Eastern Europe	HU	**19099,9**	2651,98	2804,88	3390,92	5567,30	-439,02	**33075,9**	13976,07
Central and Eastern Europe	RO	**13700,1**	3276,17	2805,67	4489,54	7595,92	232,02	**32099,4**	18399,31
Central and Eastern Europe	LV	**18236,6**	-529,71	4932,17	4082,66	5161,53	-400,58	**31482,7**	13246,07
Central and Eastern Europe	SK	**21222,4**	4079,85	2613,20	1730,31	2320,81	-610,10	**31356,5**	10134,08
Central and Eastern Europe	HR	**19493,2**	473,98	2113,88	3129,88	5333,01	-1763,78	**28780,2**	9286,98
Central and Eastern Europe	BG	**12811,4**	2145,13	1690,52	3427,37	4423,25	66,64	**24564,3**	11752,91
Oceania	AU	**36599,9**	2736,81	6569,78	1348,87	4493,09	1568,49	**53316,9**	16717,04
Oceania	NZ	**29369,8**	1852,65	5020,17	3713,18	5482,09	-946,57	**44491,3**	15121,52
North America	US	**47976,0**	490,69	4639,88	4914,87	7258,13	-2073,01	**63206,5**	15230,55
North America	CA	**39575,3**	524,14	4199,13	2173,76	2826,87	-2727,07	**46572,1**	6996,83

Source: World Bank

Table A 18: Gini coefficient

Region	Country	2007	2010	2013	2016	2019	2019	Change
Western Europe	CH	**34,3**	-1,70	-0,10	**33,0**	.	.	-1,30
Western Europe	DE	**31,4**	-1,10	1,20	**31,6**	.	.	0,20
Western Europe	FR	**32,4**	1,30	-1,20	**31,9**	.	.	-0,50
Western Europe	IE	**31,9**	0,40	1,20	**32,8**	.	.	0,90
Western Europe	UK	**35,7**	-1,30	-1,20	**34,8**	.	.	-0,90
Western Europe	LU	**31,1**	-0,60	1,50	-0,30	2,50	**34,2**	3,10
Western Europe	AT	**30,6**	-0,30	0,50	0,00	-0,60	**30,2**	-0,40
Western Europe	NL	**29,6**	-1,80	0,30	0,10	1,00	**29,2**	-0,40
Western Europe	BE	**29,2**	-0,80	-0,70	-0,10	-0,40	**27,2**	-2,00
Northern Europe	IS	**29,5**	-3,30	-0,80	**27,2**		.	-2,30
Northern Europe	SE	**27,1**	0,60	1,10	0,80	-0,30	**29,3**	2,20
Northern Europe	DK	**26,2**	1,00	1,30	-0,30	-0,50	**27,7**	1,50
Northern Europe	FI	**28,3**	-0,60	-0,50	-0,10	0,60	**27,7**	-0,60
Northern Europe	NO	**27,1**	-1,40	0,70	2,10	-0,80	**27,7**	0,60
Southern Europe	IT	**32,9**	1,80	0,20	**35,2**		.	2,30
Southern Europe	ES	**34,1**	1,10	1,00	-0,40	-1,50	**34,23**	0,20
Southern Europe	EL	**34,0**	0,10	2,00	-1,10	-1,90	**33,1**	-0,90
Southern Europe	PT	**36,8**	-1,00	0,40	-1,00	-2,40	**32,78**	-4,00
Southern Europe	CY	**31,1**	0,40	5,50	-4,10	-1,70	**31,2**	0,10
Southern Europe	MT	**29,2**	-0,20	-0,20	0,30	1,90	**31**	1,80
Central and Eastern Europe	PL	**34,0**	-0,80	-0,10	**31,2**		.	-3,80
Central and Eastern Europe	BG	**36,1**	-0,40	0,90	4,00	-0,30	**40,3**	4,20
Central and Eastern Europe	LT	**34,8**	-1,20	1,70	3,10	-3,10	**35,3**	0,50
Central and Eastern Europe	RO	**37,5**	-2,00	1,40	-2,50	0,40	**34,8**	-2,70
Central and Eastern Europe	LV	**37,5**	-2,50	0,50	-1,20	0,20	**34,5**	-3,00
Central and Eastern Europe	EE	**31,2**	0,80	3,10	-3,90	-0,40	**30,8**	-0,40
Central and Eastern Europe	HU	**27,9**	1,50	2,10	-1,20	-0,30	**30**	2,10
Central and Eastern Europe	HR	**.**	**32,4**	-0,40	-1,10	-2,00	**28,9**	-3,50
Central and Eastern Europe	CZ	**26,0**	0,60	-0,10	-1,10	-0,10	**25,3**	-0,70
Central and Eastern Europe	SI	**24,4**	0,50	1,30	-1,40	-0,40	**24,4**	0,00
Central and Eastern Europe	SK	**24,7**	2,60	0,80	-2,90	-2,00	**23,2**	-1,50
Oceania	AU	**.**	**34,7**	.	**33,7**	.	.	-1,00
Oceania	NZ	**32,0**	0,40	1,00	**34,8**		.	2,80
North America	CA	**33,8**	-0,20	0,20	**32,7**		.	-1,10
North America	US	**40,8**	-0,80	0,70	0,40	0,40	**41,5**	0,70

Source: World Bank

Table A 19: Voice and accountability

Region	Country	2007	2010	2013	2016	2019	2020	2020	Change
Western Europe	CH	**1,50**	0,08	0,04	-0,10	-0,03	0,04	**1,54**	0,04
Western Europe	NL	**1,52**	-0,07	0,12	-0,03	-0,05	0,04	**1,53**	0,00
Western Europe	LU	**1,54**	0,04	0,06	-0,13	-0,01	0,01	**1,50**	-0,04
Western Europe	AT	**1,37**	0,06	0,03	-0,12	0,00	0,06	**1,40**	0,03
Western Europe	IE	**1,40**	-0,07	-0,01	-0,02	0,01	0,09	**1,39**	0,00
Western Europe	DE	**1,34**	-0,04	0,11	-0,04	-0,01	0,02	**1,38**	0,04
Western Europe	BE	**1,36**	0,00	0,01	0,00	-0,07	-0,03	**1,28**	-0,08
Western Europe	UK	**1,34**	-0,05	0,04	-0,03	-0,03	-0,01	**1,25**	-0,09
Western Europe	FR	**1,26**	-0,06	0,02	-0,08	-0,02	-0,05	**1,07**	-0,19
Northern Europe	NO	**1,55**	0,05	0,14	-0,07	-0,01	0,07	**1,73**	0,18
Northern Europe	FI	**1,46**	0,03	0,09	-0,04	0,03	0,05	**1,62**	0,15
Northern Europe	DK	**1,48**	0,06	0,12	-0,12	0,00	-0,02	**1,52**	0,04
Northern Europe	SE	**1,51**	0,03	0,12	-0,09	0,00	-0,06	**1,50**	-0,01
Northern Europe	IS	**1,43**	0,01	-0,01	-0,08	-0,05	0,08	**1,39**	-0,04
Southern Europe	PT	**1,23**	-0,12	-0,04	0,09	0,04	0,06	**1,26**	0,03
Southern Europe	MT	**1,24**	-0,08	-0,01	0,04	-0,11	0,04	**1,12**	-0,12
Southern Europe	IT	**1,11**	-0,15	-0,01	0,08	-0,13	0,15	**1,06**	-0,05
Southern Europe	ES	**1,12**	0,00	-0,13	0,05	0,00	-0,03	**1,01**	-0,12
Southern Europe	EL	**0,98**	-0,09	-0,21	-0,02	0,14	0,15	**0,97**	-0,02
Southern Europe	CY	**1,07**	-0,04	-0,04	0,07	0,00	-0,14	**0,91**	-0,16
Central and Eastern Europe	EE	**1,07**	0,03	0,01	0,09	-0,03	-0,01	**1,17**	0,10
Central and Eastern Europe	LT	**0,89**	0,03	0,02	0,06	0,00	0,01	**1,01**	0,12
Central and Eastern Europe	CZ	**1,00**	0,02	-0,03	0,04	-0,19	0,15	**0,98**	-0,01
Central and Eastern Europe	SI	**1,06**	-0,01	-0,05	0,01	-0,03	-0,04	**0,94**	-0,13
Central and Eastern Europe	SK	**0,95**	-0,04	0,05	0,00	-0,10	0,02	**0,88**	-0,07
Central and Eastern Europe	LV	**0,83**	-0,03	-0,02	0,07	0,01	0,01	**0,87**	0,04
Central and Eastern Europe	PL	**0,88**	0,16	-0,04	-0,15	-0,17	-0,06	**0,62**	-0,26
Central and Eastern Europe	RO	**0,50**	-0,07	-0,12	0,23	-0,02	0,07	**0,58**	0,09
Central and Eastern Europe	HR	**0,52**	-0,04	0,04	0,01	-0,07	0,12	**0,58**	0,06
Central and Eastern Europe	HU	**1,04**	-0,15	-0,16	-0,34	-0,06	0,05	**0,39**	-0,65
Central and Eastern Europe	BG	**0,69**	-0,16	-0,19	0,06	-0,05	-0,10	**0,26**	-0,43
Oceania	NZ	**1,48**	0,03	0,10	-0,07	0,00	0,06	**1,60**	0,12
Oceania	AU	**1,37**	0,05	0,02	-0,08	-0,09	0,04	**1,30**	-0,07
North America	CA	**1,38**	-0,03	0,10	-0,01	-0,01	0,04	**1,48**	0,09
North America	US	**1,11**	0,02	-0,03	0,01	-0,21	-0,03	**0,87**	-0,24

Source: World Bank

Table A 20: Political stability and absence of violence

Region	Country	2007	2010	2013	2016	2019	2020	2020	Change
Western Europe	LU	**1,48**	-0,02	-0,13	0,08	-0,07	-0,12	**1,23**	-0,25
Western Europe	CH	**1,23**	0,02	0,14	-0,09	0,02	-0,13	**1,19**	-0,04
Western Europe	IE	**1,21**	-0,19	-0,12	-0,05	0,12	0,01	**0,98**	-0,24
Western Europe	AT	**1,28**	-0,13	0,21	-0,45	0,01	-0,06	**0,85**	-0,43
Western Europe	NL	**0,78**	0,16	0,20	-0,23	-0,06	0,00	**0,85**	0,07
Western Europe	DE	**1,00**	-0,20	0,13	-0,25	-0,11	0,10	**0,67**	-0,32
Western Europe	BE	**0,76**	0,05	0,13	-0,50	0,03	0,12	**0,59**	-0,17
Western Europe	UK	**0,58**	-0,16	0,07	-0,13	0,18	-0,07	**0,47**	-0,10
Western Europe	FR	**0,56**	0,12	-0,23	-0,54	0,39	0,01	**0,31**	-0,25
Northern Europe	IS	**1,48**	-0,46	0,26	0,07	0,28	-0,25	**1,39**	-0,09
Northern Europe	NO	**1,15**	0,19	0,02	-0,15	-0,03	0,08	**1,25**	0,10
Northern Europe	SE	**1,27**	-0,18	0,03	-0,11	0,02	-0,02	**1,02**	-0,25
Northern Europe	FI	**1,49**	-0,06	-0,04	-0,39	-0,15	0,09	**0,94**	-0,54
Northern Europe	DK	**1,12**	-0,08	-0,08	-0,09	0,13	-0,05	**0,94**	-0,17
Southern Europe	PT	**0,82**	-0,10	0,03	0,23	0,09	-0,04	**1,03**	0,20
Southern Europe	MT	**1,27**	-0,02	-0,21	0,04	-0,06	-0,07	**0,95**	-0,32
Southern Europe	IT	**0,45**	0,03	0,02	-0,13	0,03	0,04	**0,44**	-0,01
Southern Europe	ES	**-0,28**	-0,04	0,33	0,40	-0,10	0,08	**0,40**	0,67
Southern Europe	CY	**0,54**	-0,08	0,11	0,04	-0,05	-0,27	**0,29**	-0,25
Southern Europe	EL	**0,52**	-0,65	-0,04	0,05	0,30	-0,06	**0,13**	-0,40
Central and Eastern Europe	CZ	**1,02**	-0,03	0,10	-0,11	-0,03	-0,02	**0,92**	-0,09
Central and Eastern Europe	LT	**0,82**	-0,10	0,25	-0,14	-0,05	0,09	**0,87**	0,05
Central and Eastern Europe	HU	**0,75**	-0,06	0,11	-0,14	0,12	0,09	**0,86**	0,12
Central and Eastern Europe	EE	**0,63**	0,03	0,09	-0,07	-0,04	0,08	**0,71**	0,08
Central and Eastern Europe	SI	**1,10**	-0,23	0,02	0,11	-0,18	-0,10	**0,71**	-0,39
Central and Eastern Europe	SK	**1,04**	0,02	0,07	-0,40	-0,05	-0,03	**0,64**	-0,40
Central and Eastern Europe	HR	**0,60**	0,00	0,03	0,02	0,03	-0,09	**0,61**	0,00
Central and Eastern Europe	RO	**0,20**	0,08	-0,09	0,10	0,28	0,03	**0,59**	0,39
Central and Eastern Europe	PL	**0,68**	0,33	-0,04	-0,47	0,06	0,01	**0,57**	-0,11
Central and Eastern Europe	BG	**0,36**	0,00	-0,19	-0,09	0,50	-0,11	**0,47**	0,11
Central and Eastern Europe	LV	**0,56**	-0,03	0,07	-0,11	-0,04	0,02	**0,46**	-0,10
Oceania	NZ	**1,24**	-0,01	0,22	0,07	-0,11	0,07	**1,49**	0,24
Oceania	AU	**0,93**	-0,04	0,14	0,02	-0,14	-0,06	**0,85**	-0,08
North America	CA	**1,01**	-0,07	0,13	0,19	-0,24	0,09	**1,11**	0,10
North America	US	**0,38**	0,06	0,20	-0,24	-0,27	-0,16	**-0,02**	-0,40

Source: World Bank

Table A 21: Regulatory quality

Region	Country	2007	2010	2013	2016	2019	2020	2020	Change
Western Europe	LU	**1,74**	-0,06	0,10	-0,06	-0,02	0,14	**1,84**	0,11
Western Europe	NL	**1,80**	-0,07	0,04	0,21	-0,11	-0,11	**1,75**	-0,05
Western Europe	CH	**1,64**	-0,02	0,01	0,28	-0,25	-0,07	**1,59**	-0,05
Western Europe	DE	**1,62**	-0,04	-0,02	0,26	-0,09	-0,14	**1,58**	-0,03
Western Europe	UK	**1,87**	-0,13	0,04	-0,01	-0,13	-0,14	**1,48**	-0,39
Western Europe	IE	**1,85**	-0,23	-0,04	0,16	-0,14	-0,13	**1,47**	-0,38
Western Europe	AT	**1,69**	-0,24	0,04	-0,05	0,02	-0,06	**1,40**	-0,29
Western Europe	BE	**1,42**	-0,13	0,01	0,05	-0,05	0,06	**1,35**	-0,07
Western Europe	FR	**1,29**	0,03	-0,16	-0,09	0,37	-0,24	**1,20**	-0,09
Northern Europe	FI	**1,55**	0,33	-0,02	-0,03	0,03	0,00	**1,85**	0,31
Northern Europe	DK	**1,93**	-0,05	-0,07	-0,23	-0,01	0,23	**1,79**	-0,13
Northern Europe	NO	**1,33**	0,19	0,15	0,03	0,11	-0,11	**1,70**	0,37
Northern Europe	SE	**1,57**	0,09	0,25	-0,05	-0,05	-0,12	**1,68**	0,11
Northern Europe	IS	**1,51**	-0,59	0,22	0,14	0,10	0,07	**1,45**	-0,06
Southern Europe	MT	**1,14**	0,29	-0,13	-0,14	-0,20	0,26	**1,22**	0,07
Southern Europe	CY	**1,33**	0,09	-0,51	0,14	-0,04	-0,01	**1,00**	-0,33
Southern Europe	PT	**1,08**	-0,36	0,08	0,04	0,13	-0,14	**0,83**	-0,25
Southern Europe	ES	**1,21**	-0,05	-0,22	0,07	0,04	-0,28	**0,77**	-0,45
Southern Europe	EL	**0,89**	-0,25	-0,01	-0,49	0,38	0,02	**0,55**	-0,34
Southern Europe	IT	**0,94**	-0,04	-0,11	-0,07	0,24	-0,45	**0,50**	-0,44
Central and Eastern Europe	EE	**1,36**	0,03	0,06	0,25	-0,11	-0,06	**1,54**	0,18
Central and Eastern Europe	CZ	**1,02**	0,28	-0,21	-0,10	0,26	0,00	**1,24**	0,22
Central and Eastern Europe	LV	**1,01**	-0,02	0,06	0,04	0,11	0,00	**1,19**	0,18
Central and Eastern Europe	LT	**1,08**	-0,12	0,19	-0,02	0,02	-0,07	**1,09**	0,00
Central and Eastern Europe	SI	**0,80**	-0,04	-0,13	0,01	0,37	-0,09	**0,92**	0,12
Central and Eastern Europe	PL	**0,77**	0,21	0,07	-0,09	0,06	-0,13	**0,89**	0,11
Central and Eastern Europe	SK	**1,02**	-0,02	-0,07	-0,05	0,12	-0,22	**0,78**	-0,24
Central and Eastern Europe	BG	**0,63**	0,02	-0,11	0,12	-0,13	-0,01	**0,52**	-0,11
Central and Eastern Europe	HU	**1,19**	-0,17	-0,11	-0,30	0,00	-0,12	**0,48**	-0,71
Central and Eastern Europe	HR	**0,49**	0,08	-0,11	-0,11	0,23	-0,16	**0,43**	-0,06
Central and Eastern Europe	RO	**0,51**	0,14	-0,03	-0,02	-0,13	-0,08	**0,38**	-0,13
Oceania	NZ	**1,71**	0,10	0,01	0,21	-0,16	0,00	**1,88**	0,16
Oceania	AU	**1,68**	0,02	0,10	0,10	-0,02	-0,06	**1,82**	0,13
North America	CA	**1,61**	0,09	0,04	0,00	-0,02	-0,12	**1,60**	-0,01
North America	US	**1,49**	-0,05	-0,18	0,23	-0,15	-0,10	**1,24**	-0,25

Source: World Bank

Table A 22: Rule of law

Region	Country	2007	2010	2013	2016	2019	2020	2020	Change
Western Europe	CH	**1,85**	-0,09	0,05	0,14	-0,04	-0,08	**1,83**	-0,02
Western Europe	AT	**1,96**	-0,15	0,03	-0,04	0,10	-0,09	**1,81**	-0,15
Western Europe	LU	**1,77**	0,09	-0,04	-0,06	0,03	0,00	**1,79**	0,03
Western Europe	NL	**1,79**	0,03	0,01	0,05	-0,11	-0,02	**1,76**	-0,03
Western Europe	DE	**1,77**	-0,13	0,01	-0,03	0,00	-0,06	**1,56**	-0,22
Western Europe	IE	**1,75**	0,02	-0,05	-0,22	-0,12	0,12	**1,50**	-0,25
Western Europe	UK	**1,74**	0,04	-0,08	-0,02	-0,07	-0,11	**1,50**	-0,24
Western Europe	BE	**1,33**	0,09	0,04	-0,03	-0,06	-0,01	**1,37**	0,04
Western Europe	FR	**1,47**	0,03	-0,10	-0,02	0,02	-0,08	**1,33**	-0,14
Northern Europe	FI	**1,91**	0,05	0,00	0,09	0,01	0,02	**2,08**	0,16
Northern Europe	NO	**1,95**	-0,05	0,08	0,06	-0,05	0,00	**1,98**	0,04
Northern Europe	DK	**2,01**	-0,11	0,01	0,01	-0,05	-0,02	**1,86**	-0,15
Northern Europe	SE	**1,91**	0,03	0,02	0,03	-0,16	-0,03	**1,81**	-0,10
Northern Europe	IS	**1,85**	-0,13	-0,05	-0,14	0,25	0,03	**1,80**	-0,05
Southern Europe	PT	**1,02**	0,02	0,01	0,03	0,06	0,04	**1,18**	0,17
Southern Europe	MT	**1,63**	-0,21	-0,08	-0,34	-0,05	-0,04	**0,92**	-0,71
Southern Europe	ES	**1,17**	0,00	-0,13	-0,03	0,03	-0,12	**0,90**	-0,27
Southern Europe	CY	**1,12**	0,10	-0,18	-0,32	0,04	-0,18	**0,58**	-0,54
Southern Europe	EL	**0,87**	-0,28	-0,12	-0,34	0,05	0,14	**0,32**	-0,55
Southern Europe	IT	**0,48**	-0,02	-0,02	-0,05	-0,09	-0,06	**0,24**	-0,24
Central and Eastern Europe	EE	**1,17**	-0,01	0,04	0,03	0,06	0,10	**1,38**	0,21
Central and Eastern Europe	SI	**0,92**	0,08	-0,01	0,08	0,04	-0,05	**1,07**	0,14
Central and Eastern Europe	CZ	**0,91**	0,03	0,09	-0,01	0,03	0,01	**1,06**	0,15
Central and Eastern Europe	LT	**0,73**	0,06	0,05	0,19	-0,01	-0,03	**0,99**	0,27
Central and Eastern Europe	LV	**0,76**	0,03	-0,02	0,19	0,06	-0,06	**0,96**	0,20
Central and Eastern Europe	SK	**0,49**	0,08	-0,10	0,16	-0,10	0,15	**0,68**	0,19
Central and Eastern Europe	PL	**0,43**	0,26	0,11	-0,19	-0,18	0,11	**0,54**	0,11
Central and Eastern Europe	HU	**0,96**	-0,19	-0,19	-0,15	0,09	-0,01	**0,51**	-0,45
Central and Eastern Europe	RO	**-0,09**	0,18	0,08	0,26	-0,02	-0,03	**0,37**	0,46
Central and Eastern Europe	HR	**0,09**	0,11	0,08	0,11	0,01	-0,10	**0,29**	0,21
Central and Eastern Europe	BG	**-0,05**	-0,04	-0,04	0,03	0,10	-0,08	**-0,09**	-0,04
Oceania	NZ	**1,84**	0,02	0,01	0,08	-0,07	0,00	**1,88**	0,04
Oceania	AU	**1,76**	0,00	0,01	-0,02	-0,02	-0,08	**1,65**	-0,11
North America	CA	**1,81**	-0,01	-0,05	0,09	-0,08	-0,11	**1,66**	-0,16
North America	US	**1,63**	0,01	-0,08	0,06	-0,16	-0,09	**1,37**	-0,26

Source: World Bank

Table A 23: Control of corruption

Region	Country	2007	2010		2013		2016		2019		2020		2020	Change
Western Europe	CH	**2,15**	▼	-0,08	▲	0,06	▼	-0,14	▲	0,00	▲	0,10	**2,08**	-0,07
Western Europe	LU	**1,97**	▲	0,08	▲	0,08	▼	-0,03	▲	0,02	▼	-0,05	**2,06**	0,09
Western Europe	NL	**2,17**	▼	-0,07	▼	-0,07	▼	-0,12	▲	0,00	▲	0,13	**2,03**	-0,14
Western Europe	DE	**1,74**	▲	0,04	▲	0,03	▲	0,02	▲	0,08	▼	-0,05	**1,86**	0,12
Western Europe	UK	**1,74**	▼	-0,13	▲	0,11	▲	0,17	▼	-0,11	▼	-0,09	**1,69**	-0,05
Western Europe	IE	**1,75**	▼	-0,06	▼	-0,04	▲	0,04	▼	-0,20	▲	0,07	**1,57**	-0,18
Western Europe	AT	**2,01**	▼	-0,41	▼	-0,06	▲	0,00	▲	0,02	▼	-0,05	**1,51**	-0,50
Western Europe	BE	**1,36**	▲	0,13	▲	0,13	▼	-0,04	▼	-0,09	▼	-0,01	**1,48**	0,12
Western Europe	FR	**1,46**	▲	0,03	▼	-0,18	▲	0,06	▼	-0,09	▼	-0,13	**1,15**	-0,31
Northern Europe	DK	**2,45**	▼	-0,08	▲	0,05	▼	-0,16	▼	-0,09	▲	0,11	**2,27**	-0,18
Northern Europe	FI	**2,40**	▼	-0,24	▲	0,05	▲	0,03	▼	-0,08	▲	0,05	**2,20**	-0,20
Northern Europe	SE	**2,24**	▼	-0,02	▲	0,02	▼	-0,09	▼	-0,02	▲	0,00	**2,13**	-0,12
Northern Europe	NO	**1,99**	▲	0,09	▲	0,21	▼	-0,10	▼	-0,12	▲	0,03	**2,10**	0,11
Northern Europe	IS	**2,21**	▼	-0,27	▼	-0,03	▲	0,04	▼	-0,24	▼	-0,01	**1,70**	-0,51
Southern Europe	PT	**1,04**	▲	0,03	▼	-0,15	▼	-0,02	▼	-0,12	▼	-0,03	**0,75**	-0,29
Southern Europe	ES	**1,09**	▲	0,08	▼	-0,23	▼	-0,33	▲	0,09	▲	0,04	**0,74**	-0,35
Southern Europe	IT	**0,34**	▼	-0,05	▼	-0,21	▲	0,04	▲	0,15	▲	0,27	**0,54**	0,20
Southern Europe	CY	**1,08**	▼	-0,11	▲	0,27	▼	-0,42	▼	-0,20	▼	-0,25	**0,38**	-0,70
Southern Europe	MT	**1,02**	▼	-0,23	▲	0,19	▼	-0,26	▼	-0,48	▲	0,13	**0,37**	-0,65
Southern Europe	EL	**0,27**	▼	-0,33	▼	-0,01	▼	-0,03	▲	0,14	▲	0,02	**0,06**	-0,21
Central and Eastern Europe	EE	**1,00**	▼	-0,01	▲	0,19	▲	0,08	▲	0,29	▲	0,05	**1,61**	0,61
Central and Eastern Europe	LT	**0,13**	▲	0,25	▲	0,05	▲	0,29	▼	-0,02	▲	0,11	**0,81**	0,68
Central and Eastern Europe	SI	**1,01**	▼	-0,09	▼	-0,19	▲	0,09	▲	0,10	▼	-0,11	**0,81**	-0,20
Central and Eastern Europe	LV	**0,35**	▼	-0,12	▲	0,10	▲	0,10	▲	0,08	▲	0,21	**0,72**	0,37
Central and Eastern Europe	PL	**0,30**	▲	0,22	▲	0,13	▲	0,14	▼	-0,14	▲	0,01	**0,65**	0,35
Central and Eastern Europe	CZ	**0,30**	▲	0,09	▼	-0,08	▲	0,29	▼	-0,03	▲	0,02	**0,59**	0,28
Central and Eastern Europe	SK	**0,35**	▼	-0,10	▼	-0,20	▲	0,13	▲	0,03	▲	0,23	**0,44**	0,10
Central and Eastern Europe	HR	**0,09**	▼	-0,03	▲	0,08	▲	0,08	▼	-0,13	▲	0,12	**0,20**	0,11
Central and Eastern Europe	HU	**0,62**	▼	-0,31	▼	-0,01	▼	-0,20	▼	-0,05	▲	0,04	**0,10**	-0,53
Central and Eastern Europe	RO	**-0,18**	▼	-0,12	▲	0,05	▲	0,15	▼	-0,06	▲	0,13	**-0,03**	0,15
Central and Eastern Europe	BG	**-0,18**	▼	-0,04	▼	-0,08	▲	0,09	▲	0,07	▼	-0,13	**-0,27**	-0,09
Oceania	NZ	**2,33**	▲	0,01	▲	0,00	▼	-0,06	▼	-0,11	▼	-0,02	**2,15**	-0,18
Oceania	AU	**2,01**	▲	0,02	▼	-0,25	▲	0,03	▲	0,01	▼	-0,16	**1,67**	-0,35
North America	CA	**2,00**	▲	0,07	▼	-0,18	▲	0,10	▼	-0,22	▼	-0,17	**1,60**	-0,40
North America	US	**1,39**	▼	-0,11	▲	0,04	▲	0,06	▼	-0,16	▼	-0,15	**1,07**	-0,32

Source: World Bank

Table A 24: Public sector efficiency (PSE)

Region	Country	2007	2010	2013	2016	2016	Change
Western Europe	CH	**2,24**	-0,09	-0,10	0,03	**2,09**	-0,15
Western Europe	LU	**1,80**	-0,25	-0,07	0,15	**1,63**	-0,17
Western Europe	DE	**1,12**	0,09	-0,18	0,15	**1,19**	0,06
Western Europe	UK	**1,13**	-0,05	0,02	0,08	**1,18**	0,05
Western Europe	NL	**1,24**	-0,15	-0,10	0,15	**1,14**	-0,10
Western Europe	IE	**1,33**	-0,33	-0,02	0,16	**1,14**	-0,19
Western Europe	AT	**1,14**	-0,09	-0,12	0,10	**1,04**	-0,10
Western Europe	BE	**0,97**	-0,03	-0,11	0,06	**0,90**	-0,08
Western Europe	FR	**0,85**	-0,05	-0,09	0,04	**0,74**	-0,11
Northern Europe	IS	**1,55**	-0,72	0,42	0,16	**1,42**	-0,14
Northern Europe	NO	**1,40**	-0,19	0,03	-0,07	**1,18**	-0,22
Northern Europe	SE	**1,00**	0,12	-0,25	0,06	**0,93**	-0,07
Northern Europe	DK	**0,85**	-0,02	-0,06	0,14	**0,92**	0,06
Northern Europe	FI	**0,97**	-0,11	-0,18	0,17	**0,85**	-0,12
Southern Europe	MT	**1,50**	0,06	0,02	-0,09	**1,49**	-0,01
Southern Europe	CY	**1,26**	-0,24	-0,66	0,85	**1,21**	-0,05
Southern Europe	ES	**0,95**	-0,27	-0,11	0,27	**0,84**	-0,10
Southern Europe	PT	**0,80**	-0,07	-0,17	0,20	**0,75**	-0,05
Southern Europe	IT	**0,69**	-0,04	-0,20	0,17	**0,62**	-0,07
Southern Europe	EL	**0,59**	-0,47	0,10	0,12	**0,34**	-0,25
Central and Eastern Europe	PL	**1,47**	-0,17	-0,14	0,19	**1,34**	-0,13
Central and Eastern Europe	RO	**1,35**	-0,75	0,47	0,14	**1,22**	-0,13
Central and Eastern Europe	CZ	**1,31**	-0,23	-0,15	0,27	**1,21**	-0,10
Central and Eastern Europe	EE	**1,37**	-0,44	-0,04	0,18	**1,07**	-0,31
Central and Eastern Europe	SK	**1,61**	-0,32	-0,37	0,14	**1,06**	-0,55
Central and Eastern Europe	BG	**1,27**	-0,37	-0,16	0,27	**1,02**	-0,25
Central and Eastern Europe	LT	**1,57**	-0,75	0,16	-0,04	**0,93**	-0,64
Central and Eastern Europe	SI	**1,15**	-0,32	-0,19	0,25	**0,90**	-0,25
Central and Eastern Europe	LV	**1,36**	-1,00	0,46	0,07	**0,89**	-0,47
Central and Eastern Europe	HU	**0,70**	-0,02	0,03	0,08	**0,80**	0,10
Central and Eastern Europe	HR	**.**	**0,52**	0,04	0,24	**0,79**	0,27
Oceania	AU	**.**	**2,32**	.	.	**2,37**	0,05
Oceania	NZ	**1,56**	-0,17	0,10	0,08	**1,57**	0,01
North America	US	**1,53**	-0,04	-0,04	-0,01	**1,46**	-0,08
North America	CA	**1,82**	-0,28	-0,04	-0,07	**1,43**	-0,39

Source: Own calculation

Table A 25: Trust in government

Region	Country	2010	2013	2016	2019	2020	2020	Change
Western Europe	LU	**76,8**	-3,18	-5,77	**78,0**	.	.	1,2
Western Europe	CH	.	.	**79,9**	0,81	3,97	**84,6**	4,7
Western Europe	NL	**63,6**	-9,32	2,93	4,43	16,42	**78,1**	14,5
Western Europe	DE	**39,5**	16,23	-0,51	1,58	8,56	**65,4**	25,9
Western Europe	AT	**49,2**	-7,47	1,55	7,97	11,38	**62,6**	13,4
Western Europe	IE	**33,3**	-4,76	28,97	0,65	0,69	**58,8**	25,6
Western Europe	FR	**40,1**	-0,63	-11,12	9,79	2,86	**41,0**	0,9
Western Europe	UK	**50,4**	-12,43	2,94	-6,78	0,61	**34,7**	-15,7
Western Europe	BE	**33,7**	21,76	-13,49	-9,13	-3,31	**29,5**	-4,2
Northern Europe	NO	.	.	**65,8**	-5,97	23,12	**82,9**	17,1
Northern Europe	FI	**46,2**	-4,12	6,51	15,35	16,94	**80,9**	34,7
Northern Europe	DK	**58,7**	-19,53	7,63	16,53	8,28	**71,6**	12,9
Northern Europe	SE	**60,3**	-2,30	-9,41	2,75	15,78	**67,1**	6,8
Northern Europe	IS	.	**45,7**	-9,30	15,79	7,10	**59,2**	13,5
Southern Europe	CY	.	.	.	.	.	.	.
Southern Europe	MT	.	.	.	.	.	.	.
Southern Europe	PT	**24,5**	-6,56	17,53	8,11	17,91	**61,5**	37,0
Southern Europe	EL	**23,7**	-9,29	-1,11	26,39	0,10	**39,7**	16,1
Southern Europe	ES	**30,3**	-11,82	11,80	6,53	1,40	**38,2**	7,9
Southern Europe	IT	**33,4**	-18,79	9,16	-1,57	15,26	**37,5**	4,1
Central and Eastern Europe	BG	.	.	.	.	.	.	.
Central and Eastern Europe	HR	.	.	.	.	.	.	.
Central and Eastern Europe	RO	.	.	.	.	.	.	.
Central and Eastern Europe	LT	**11,5**	26,97	-10,46	12,76	6,68	**47,4**	35,9
Central and Eastern Europe	EE	.	**26,1**	7,92	6,35	6,15	**46,5**	20,4
Central and Eastern Europe	SI	**33,2**	-16,85	8,64	14,73	5,58	**45,3**	12,1
Central and Eastern Europe	HU	**25,2**	7,63	-2,41	18,02	-5,52	**42,9**	17,7
Central and Eastern Europe	CZ	**31,2**	-6,95	17,26	.	-10,19	**31,9**	0,7
Central and Eastern Europe	SK	**30,9**	-2,52	8,87	-14,12	7,65	**30,7**	-0,1
Central and Eastern Europe	LV	.	**23,4**	8,15	-7,59	6,74	**30,7**	7,3
Central and Eastern Europe	PL	**35,6**	-19,20	21,91	11,53	-22,49	**27,3**	-8,3
Oceania	NZ	**63,9**	-9,56	2,62	10,55	-4,66	**62,9**	-1,0
Oceania	AU	**61,0**	-15,39	-0,31	1,60	-2,23	**44,6**	-16,4
North America	CA	**55,1**	-4,51	11,22	-6,89	5,11	**60,0**	4,9
North America	US	**41,8**	-12,96	0,86	6,56	10,21	**46,5**	4,7

Source: OECD

References

Afonso, A. & Kazemi, M. (2016). ***Assessing public spending efficiency in 20 OECD countries***. WP12/2016/DE/UECE. Lisbon School of Economics and Management, Universidade de Lisboa.

Baltagi, B. H. (2008). ***Econometric analysis of panel data (Vol. 4)***. John Wiley & Sons.

Cameron, A. C., & Miller , D. L. (2015). A practitioner's guide to cluster-robust inference. ***Journal of Human Resources, 50***(2), 317-372.

4. SOCIAL SAFETY

4.1. INTRODUCTION

The purpose of this chapter is to evaluate the performance of public services in the area of social safety in 35 countries: the 27 European Union Member States plus the United Kingdom (UK), Norway, Iceland, Switzerland, Australia, New Zealand, Canada and the United States of America (US). This evaluation will be based on an analysis of quantitative data from various international datasets, which will follow an overview of some relevant research on the most current developments in social safety. But before we can explain in further detail our goals and methods, we need to define what we mean by 'social safety'.

4.1.1. What is social safety?

Social safety is the existence of the necessary societal conditions for citizens to live their lives and enjoy their rights free from any harm caused or threatened by other individuals or groups. For the state, social safety implies the duty and responsibility to ensure that these conditions are in place.

The most common source of harm in any state is crime. In most countries, the law tends to qualify as criminal any behaviour that causes harm or the risk of harm to individual or social interests and values (Pasculli, 2016). However, not all harmful behaviours are criminalised by the law. Some harmful behaviours may be illegal, but not necessarily criminal, such as some dubious banking practices or some driving offences. These behaviours are not prosecuted before criminal courts but dealt with by different processes and measures such as civil litigation and compensation, regulatory or administrative penalties, or disciplinary action. Other harmful behaviours might even be perfectly legal and are therefore far more difficult to address. In fact, as we shall see some harmful practices are inadvertently enabled by the law itself (Passas, 2005; Savona, 2006). This is the case, for instance, of aggressive tax avoidance, which exploits the letter of the law to avoid the payment of taxes in violation of the purposes and spirit of the law (McBarnet, 1991).

Social safety is, therefore, more than just the punishment of crime but requires the state to adopt a much wider set of interventions. Such interventions include not only protecting citizens from immediate internal and external threats of harm through control measures such as policing and law enforcement, but also the removal of those conditions which, in the longer term, might cause or aggravate risks of harm. This is the focus of crime prevention, which seeks to eliminate or mitigate environmental, individual and social factors that can facilitate or enable crime. This goal requires a broad range of measures such as community programmes, education, training, information campaigns, risk assessment and management. Similar initiatives are often adopted not only to prevent crime as strictly considered, but also other forms of illegality. Although in this study we will focus mostly on crime, we will also touch upon other forms of illegality – especially when the lines between these and crime are blurred.

As a policy area, therefore, social safety is more than just law enforcement and includes a variety of social and even welfare interventions. In this respect, social safety tends to partially overlap with social security. However, the two notions remain fundamentally different. Social security is primarily concerned with the equal distribution of wealth, especially through measures support disadvantaged individuals and groups, rather than the prevention of crime. While some social security measures – such as good levels of employment – may help prevent crime, not all of them – such as pensions or disability benefits and insurances – are aimed at, or are relevant to the prevention of crime. In fact, some social security measures can unintendedly increase the risk of crime. For instance, financial or fiscal benefits and concessions can provide both a motivation and an opportunity for those who do not qualify for such benefits to still take advantage of them through fraudulent means (Morgan & Clarke, 2006). Some recent examples are the schemes introduced by many states to offer financial support to businesses during the coronavirus pandemic, which have triggered fraud schemes aimed at dishonestly exploiting them through deception (Pasculli, 2020a).

What we said so far should also help illustrate the difference between social safety and national security. Although national security is also concerned with the prevention of harm to an extent, its focus is traditionally on threats that can undermine national sovereignty, the economic and territorial integrity of the state and, ultimately, its very existence. However, once again the lines between notions are blurred (Zedner, 2009). Threats to national security can also threaten public safety and some threats to public safety can also threaten national security. This is especially true for some forms of global crime such as international terrorism or transnational organised crime, which are so harmful and pervasive that they threaten the stability of entire states.

This leads us to introduce one of the most complex challenges to social safety: globalisation. Traditionally, social safety and especially criminal policies have been primarily the responsibility of individual states. Crime used to be considered a rather local phenomenon. Its causes and forms of manifestation were largely related to the peculiar characteristics of the state where it took place – its territory, its economy, its culture, its society, its cities... its harmful consequences affected primarily the interests of that state and its people. As a result, each state was assumed to be best placed to understand, regulate, prevent and respond to crime. While this is still the case for some localised forms of crime, globalisation is transforming many areas of crime in ways that escape the control of individual states.
Through technological advances in transportation, information and communication, globalisation is making societies increasingly interconnected and interdependent. Such interconnectedness has a great impact on crime; new crimes exploiting global technologies emerge. Think, for instance, of crimes enabled by the cyberspace, such as hackers' attacks on Internet websites or the spreading of viruses and malware. Old crimes take new forms, increasingly detached from a specific state. Think, for instance, of transnational economic crimes taking advantage of the globalisation and digitisation of financial services, such as money laundering or tax frauds. But examples are countless: international terrorism, human trafficking, cyber-frauds, online bullying, etc. We will address some of these developments in full detail later. For now, it is important to note that, as crime becomes increasingly deterritorialised, social safety is not any longer the responsibility of each single state but requires effective international coordination and collaboration. State policies in this area are therefore increasingly shaped by international law and practice. In this context, comparative research is particularly important to assess international trends, problems and solutions.

4.1.2. The goals and methods of this chapter

The objective of this chapter is to offer a comparative evaluation of the performance of the 35 countries examined in the area of social safety. Our assessment will focus especially on crime prevention and law enforcement, as two main pillars of social safety. Through a comparative analysis of relevant data and a review of research findings from various social sciences, we will assess, in particular, the effectiveness, efficiency and cost-effectiveness of relevant activities, policies and strategies. This will include the satisfaction and trust of citizens, enterprises and other relevant stakeholders. The ultimate goal of the chapter is to identify issues, trends, similarities and differences between states that can orient future research and policy initiatives.

To conduct our evaluation, we will analyse data from different international datasets and on various relevant issues, also in the light of a literature review from relevant social sciences on trends, developments and challenges in social safety – especially crime, crime prevention and law enforcement.

4.1.3. Chapter outline

The next section will explain the methodology and limitations of this study.

The following section will discuss some of the most challenging local and global developments in social safety with a special focus on the implications of globalisation on crime, crime prevention and law enforcement. We will discuss some recent evolutions of the forms, means and consequences of crime, as well as some of the main causes of crime in the global era. We will consider not only individual and situational causes, but also broader social and cultural factors. We will also provide an overview of some of the most significant and recent state responses to crime. These will include not only traditional methods of crime prevention and law enforcement, but also more innovative approaches, such as 'responsibilisation strategies' – the mobilisation of private individuals and organisations in crime control (Garland, 1996, 1997, 2001). The section will also cover research and policy techniques aimed at predicting and preventing future crime incidents and new forms of crime.

The following three sections will be dedicated to the analysis of quantitative data concerning – respectively – state inputs, outputs and outcomes in the area of social safety, as defined in the methodology section.

The final section will provide an assessment of the performance of the states in social safety based on the preceding data analysis.

4.2. METHODOLOGY

4.2.1. Objectives and definitions

Like the rest of the broader benchmarking study, this chapter seeks to assess public performance by examining the relationships between inputs, outputs and outcomes. ***Inputs*** are the financial, human and any other resources invested by the state on social safety measures, services and institutions. For instance, the money used to employ more police officers, the people or the time, money and personnel dedicated to developing new technologies or training programmes. ***Outputs*** are the immediate results of social safety activities relying on the resources invested by the state – for instance, an increase in prosecution or conviction rates, or the number of criminal trials brought to completion. ***Outcomes*** are the broader and less direct societal effects of social safety inputs and outputs. They include crime rates and public perceptions of social safety, or a stronger rule of law. One of the most important outcomes, to which we will dedicate special attention, are citizens' perceptions of the effectiveness and fairness of the law. This includes the police, the judiciary and other legal institutions involved in social safety, as well as citizens' trust and confidence in these institutions.

Inputs, outputs and outcomes will be then compared to assess efficiency, effectiveness and cost-effectiveness. In this study, ***efficiency*** is intended as the relationship between inputs and outputs. ***Effectiveness*** is intended as the relationship between outputs and outcomes. ***Cost-effectiveness*** is intended as the relationship between inputs and outcomes. This study does not seek to produce new primary data, nor any evidence of statistical correlations between different types of secondary data. This would go beyond our expertise and the resources available for this study. Instead, this study aims to provide a research-informed reading of available secondary data and suggest possible directions for future research, or policy interventions based on a cautious assessment of the most evident findings emerging from the available data.

4.2.2. Methods and limitations

The first component of this study is a literature review from various relevant social sciences such as criminology, law and sociology on the most recent developments in crime, their causes and possible solutions. This part of our research will be important to set the background of our study by outlining contemporary challenges in social safety: current developments in crime, crime prevention and law enforcement. A preliminary understanding of such developments will complement, integrate and support the analysis of quantitative data related the performance of different states in social safety. A thorough literature review will also allow us to identify not only common problems, but also original measures and solutions adopted by certain states that could inspire and serve as a template for similar solutions in other countries.

The second component of this study is the analysis of secondary quantitative data gathered from multiple international datasets. We will examine and compare numerical data from a variety of sources and concerning different issues relating to social safety. In line with the methods and purposes of the broader benchmarking study this paper is part of, we will seek to provide a broad overview of states' performances in social safety. To do so, we will rely on many datasets by different institutions, which often rely on very different methods, covering different years and various factors and indicators. These include government expenditure in public order and safety, crime rates, arrest, conviction and prosecution rates, prison population, citizens perception of government quality, law enforcement effectiveness and public safety. The table below includes a complete list of the datasets and the indicators and factors we will analyse in this study (Table 1).

Table 1: List of datasets and indicators

List of datasets and indicators

	Level	Indicator	Source
Inputs	**Public expenditure**	Government expenditure on public order and safety	Eurostat/OECD (COFOG)
		Police and legal staff (per 100,000 population)	Eurostat
		Personnel in the criminal justice system	Eurostat
Outputs	**Arrests, prosecutions, conviction and punishment**	Persons suspected, or arrested, or cautioned	UN-CTS
		Persons prosecuted	UN-CTS
		Persons brought before criminal courts	UN-CTS
		Persons convicted	UN-CTS
		Conviction-prosecution ratio (convicted persons as % of prosecutions)	UN-CTS
		Probationers population, rates (probationers every 100,000 inhabitants) and ratios (probationers every 100 inmates)	CoE SPACE
	Prisons	Prison population: persons held in prison	UN-CTS
		Persons held in prison (prisoners per 100,000 population)	UN-CTS
		Percentage of women held in prison	UN-CTS
		Deaths and suicides in prison	UN-CTS
		Prison facilities and official capacity	UN-CTS
	Clearing rates	Disposition times	CoE CEPEJ
		Clearance rates	CoE CEPEJ
Outcomes	**Crime rates**	Offences recorded by the police by category	UNODC/Eurostat
		Homicide rate (reported homicides per 100,000 inhabitants)	UN-CTS
		Economic crime (fraud, e-fraud, money laundering and corruption)	UN-CTS
		Perceptions of corruption	TI CPI
	Social factors	School-leavers aged 18-24 (% of population)	Eurostat
		Unemployment rate	OECD
		Unemployed aged 15-29 (% of population)	OECD
		Income inequality	OECD
		Justifiability of illegal behaviours (various categories)	WVS/EVS
	Perceived ffectiveness of law enforcement, regulation and criminal justice	Effectiveness of criminal investigation	WJP
		Effectiveness and timeliness of the criminal adjudication system	WJP
		Impartiality of the criminal system	WJP
		Effectiveness of correctional system in reducing criminal behavior	WJP
		The criminal system is free of corruption	WJP
		The criminal system is free of improper government influence	WJP
		The due process of the law and rights of the accused are respected	WJP
		Effective enforcement of government regulations	WJP
		Government regulations are applied and enforced without improper influence	WJP
		Administrative proceedings are conducted without unreasonable delay	WJP
		Due process is respected in administrative proceedings.	WJP
		Crime is effectively controlled	WJP
		Civil conflict is effectively limited	WJP
		People do not resort to violence to redress personal grievances	WJP
		Reliability of police services	EOS
	Quality of government	European Quality of Government Index	QoGI
		Bayesian Corruption Indicator	QoGI
		Control of corruption	WGI
		Quality of Government EU Regional dataset	QoGI
		Government effectiveness	WGI
		Political stability and the absence of violence/terrorism	WGI
	Rule of law	Constraints on government powers (all indicators)	WJP
		Fundamental rights (all indicators)	WJP
		Rule of law	WJP
		Rule of law	WGI

	Level	Indicator	Source
Outcomes	**Perceptions of safety**	Feeling that the EU is a secure place to live in	Eurobarometer
		Feeling that my country is a secure place to live in	Eurobarometer
		Feeling that my city is a secure place to live in	Eurobarometer
		Feeling that my neighbourhood is a secure place to live in	Eurobarometer
		Feeling informed about the risks of cybercrime	Eurobarometer
		Awareness of reporting mechanisms for cybercrime	Eurobarometer
		Feeling of safety in the city	Eurostat
		Feeling of safety when walking alone at night in the city	Eurostat
		Feeling of safety in the neighbourhood	Eurostat
		Feeling of safety when walking alone at night in the neighbourhood	Eurostat
		Perception survey results: public transport safety	Eurostat
	Trust and confidence in law enforcement	Confidence in the local police	GaaG
		Trust in police	ESS
		Trust in the legal system	ESS
		Confidence in the judicial system	GaaG

Abbreviations

CoE: Council of Europe
CoE CEPEJ: Council of Europe's European Commission for the Efficiency of Justice
CoE SPACE: Council of Europe Annual Penal Statistics
COFOG: Classification of the Functions of Government
EOS: World Economic Forum's Executive Opinion Survey
ESS: European Social Survey
EVS: European Values Study
GaaG: OECD's Government at a Glance
OECD: Organisation for Economic Co-operation and Development
QoGI: Quality of Government Institute
TI CPI: Transparency International's Corruption Perception Index
UN-CTS: United Nations Survey of Crime Trends and Operations of Criminal Justice Systems
WJP: World Justice Project
WGI: World Bank's Worldwide Governance Indicators
WVS: World Values Survey

This approach has the benefit of broadening the scope of analysis by integrating different data and different issues, but it entails considerable challenges and limitations. A first limitation is related to known difficulties in using quantitative data to assess crime-related issues. Quantitative data are important and can provide an indication of patterns and trends. However, they are notoriously problematic and easily misinterpreted; the interpretation of data is even more problematic when it comes to comparing different countries. Differences in the way countries organise their police and court systems, define legal concepts such as offences and sanctions, and collect, measure and present data make comparisons between countries extremely hazardous (Aebi et al. 2021, p. 9). For instance, one could be tempted to interpret low crime rates as evidence of effective prevention and enforcement, but this is not necessarily the case. Low crime rates could depend on poor reporting of crime by citizens – perhaps because they do not trust the authorities – or poor recording of crime by the police. On the other hand, high crime rates might indicate a very effective system of crime detection, reporting and recording. Similarly, it would be a mistake to assess the performance of the court systems of different jurisdictions by comparing their clearance rates or disposition times. For instance, high clearance rates and fast disposition times might be the result of summary proceedings falling short of due process standards, which are an essential component of an effective criminal justice system. For all these reasons, using criminal justice statistics for decision-making in crime policy or for conducting scientific studies is problematic and can be misleading. It is advisable not to use data on their own, but to complement them with alternative studies on crime (ibid.).

A second limitation concerns the level of focus and accuracy allowed by this study. The choice of analysing so many data sources and indicators will allow us to have a more comprehensive impression of social safety in different countries, but it will inevitably make the analysis more descriptive and, to an extent, generic. Practical and time constraints related to the nature of this study prevent any rigorous and in-depth exploration of specific correlations between certain indicators – for instance, between social factors such as unemployment or inequality and crime rates. Such an exploration requires time, competences and resources that are well beyond the remit of this study and our expertise. When the number of countries, respondents, indicators or years considered in some parts of this study prevent an exhaustive analysis of all the figures, we will make reference to average figures. In many cases, we will use the mean, as it relies on more information than the median (Weisburd & Britt, 2014, pp. 65–93). However, we will use the median when the scores of a variable appear to be skewed – that is, they are very much weighted to one side and frequencies of extreme values tail off in one direction away from the main cluster of cases (ibid.).

Another limitation concerns the relative selectiveness of datasets, indicators and years considered in this study. Of course, due to practical and time constraints, we cannot address ***all*** existing data that are relevant to social safety, but only a reasonable selection of it in line with the rest of the benchmarking study. Such selection is guided by several criteria, including relevance and practicality. For instance, data on crime rates are available in datasets from different international organisations, such as the UN or the EU, research institutes and governments. These are collected by different researchers using different methods. Collating and comparing all the data from all these sources are tasks that go far beyond the scope of this study. Instead, we will focus primarily on the UNODC datasets, which include data from the majority of the countries considered by this study. When necessary, we will integrate or cross-check these datasets with Eurostat data or with data from the European Sourcebook of Crime and Criminal Justice Statistics (Aebi et al., 2001). Inevitable selectiveness also concerns the factors and indicators we will analyse. For instance, the European Values Study (EVS) and the World Values Survey (WVS) report perceptions and attitudes towards issues, such as religion or multi-cultural integration. These could certainly be relevant to crime and social safety, but would be impossible to address with the required scientific rigour in this study.

A fourth limitation concerns the periods of time examined. Whenever possible, we will focus on the period between 2010 and 2020. Obviously, covering such a long period for so many indicators and so many countries is laden with difficulties. First, a proper longitudinal analysis seeking to discover trends and patterns for each indicator would be impossible in the time and with the resources available for this study, given the number of indicators considered. Moreover, some of the datasets considered do not cover the entirety of this period and the respective data is limited only to certain years. On other occasions, data from previous years is available but too difficult to access or to collate; in these cases, we will focus on the latest years available only. Throughout the text we will clarify the periods to which the data analysed refers, to avoid confusion or misinterpretation.

A final limitation concerns the available data. Although the many datasets examined in this study provide a wealth of interesting information, they are often incomplete. Data for some countries are often missing for certain years or for certain indicators and this seriously affects the exhaustiveness and reliability of any comparisons or assessments. The following analysis will be based on all the data available, including when data from some countries is missing for

some indicators or years. Doing otherwise would mean precluding any analysis of many years or indicators, given that states provided incomplete data for different years and indicators. However, this can cause distortions in data analysis and interpretation. Including incomplete data can be especially problematic when calculating totals or averages. For instance, the yearly number of prosecutions in the UK and Germany is so high (from 1 to 1.5 million approximately) that when the relative data is missing the total number of prosecutions in all the countries considered appears greatly reduced. To avoid the risk of misinterpretation, we will warn the reader of any gaps in the available data. We will explain how these gaps affect the interpretation of such data and their reliability, particularly when totals and averages could be affected by missing data. We will omit from our visualisations (figures) of the relevant data countries for which data is completely unavailable, while we will keep those for which data is partially unavailable. Whenever possible we will add tables including the exact figures for all states, indicating when data was unavailable for some of these, so the reader can easily detect any missing data and any risk of distortions. However, given the number of datasets covered in this chapter, providing full tables for every indicator or year considered is not feasible, as this would mean including practically all the datasets in the chapter. Therefore, when the full data are not represented in a dedicated table or figure, we will refrain from any interpretation, and we will use particular caution in the presentations of the data to avoid misrepresentations. The reader is advised to use the same caution and access the full databases in case of doubt. To facilitate such access, we will include under each figure the source of the dataset the figure refers to with the year in which the data was accessed (not in which the data was produced or published). Full references and links to the databases are provided at the end of the chapter.

To reiterate, the analysis of the data will be arranged in three sections in this paper: one for inputs, one for outputs and one for outcomes. Each of these sections opens with some introductory remarks and a special subsection – ***Key Findings*** – that summarises some of the main findings discussed in detail in the following parts of the data analysis. The ***Key Findings*** subsection will not include new or further analysis and will refer to the same figures and tables discussed later in the full data analysis.

4.3. CRIME AND OTHER THREATS TO SOCIAL SAFETY IN THE GLOBAL ERA

It is convenient to start our analysis from one of the major threats to social safety: crime. Crime has considerably evolved in the last century. Other than traditional crimes such as murder, assault, sexual offences, fraud, theft, burglary or robbery more sophisticated and complex forms of crime threaten the safety of contemporary societies. Some of these are digital or transnational variations of traditional offences, such as cyber fraud, bribery of foreign public officers or international terrorism. Others are complex mutations of traditional offences resulting from the intersection of different crimes, such as transnational organised crime or human trafficking, which often rely on corruption (Fouladvand, 2019). Others are even entirely new offences altogether, mostly born out of technological advances such as hacking, or the spreading of viruses or malware. But before we can assess these developments, we first need to define globalisation.

Globalisation can be defined as the 'intensification of worldwide relations' which links distant societies so that local events are shaped by events occurring many miles away and vice versa (Giddens, 1990, p. 64). Such a process is characterised by cultural, social, political and economic changes affecting the whole international community, often driven by scientific and technological advances. Information and communication technologies in particular play a crucial role in this respect as their diffusion allows the global circulation of financial assets and products, information and data, ideas and ideologies, thus reducing the distance between different societies. Cyberspace is the perfect example of a space that is not physical and when people from any country and culture converge, congregate and, occasionally, conflict. Fast, accessible and competitive transportation technologies allow people to move relatively easily from one country to another. These developments deeply affect not only our daily life and legitimate activities, but also the causes, the forms, means and consequences of crime.

We will start by examining crime as a phenomenon – that is, the ways in which crime manifests itself: its forms and means of perpetration, and its effects. We will do this in the next subsection. Only once we have an idea of how crime looks as a phenomenon, we will move to consider what could be its causes and how to intervene to prevent it and punish it.

4.3.1. Forms, means and consequences of crime in a global context

The ***forms of manifestation*** of crime are the ways in which crime can be observed. This includes ***modalities of perpetration***, such as ***modus operandi***, tactics, strategies and schemes used by offenders to pursue their criminal objectives or the number of people or groups involved. It also includes the ***means of perpetration*** – the instruments used by criminals to perpetrate their crimes. Crime also manifests itself through its ***consequences***, which are its harmful or dangerous effects. Globalisation affects the forms, means and consequences of crime making them ***transnational*** and ***transversal***, and heightening their ***harmfulness***.

Transnationality is a rather evident and well-known feature of globalised crime. Crime is transnational, alternatively, when: a) it is committed, prepared, planned, directed or controlled in more than one state; or b) it is committed in one state but involve groups or individuals who engage in corrupt activities in more than one state; c) it harms or endangers the interests of more than one state or the entire international community; or d) it is committed in one state but has substantial effects in another state. Each of these four conditions alone is enough to make crime transnational in nature (Pasculli, 2012, p. 15). A similar definition of transnationality with specific regard to organised crime is recognised by international law – the UN Convention against Transnational Organized Crime signed in Palermo in 2000 (UN, 2000). Researchers have applied the same definition to other forms of globalised crime, such as international corruption (Pasculli & Ryder, 2019, p. 10). At the heart of transnationality are the same defining features of globalisation: a) interactions between individuals or entities from different countries; and b) the employment of transportation, information or communication technologies to facilitate such interactions. It is not difficult to see how transnational crime makes it very difficult, if not impossible, for individual states to prevent, investigate and prosecute it – but more about this later.

Transversality is the interconnectedness between different crimes. This character of global crime is recognised by many international sources. For instance, the Palermo Convention calls upon all states to recognise the links between transnational organised criminal activities and acts of terrorism (Preamble, point 6). Similarly, in the UN Convention against Corruption signed in 2003 (UN, 2003), the state parties declare themselves concerned 'about the links between corruption and other forms of crime, in particular organized crime and economic crime, including money-laundering' (Preamble). Research has also explored the transversality of different crimes in the global context. For instance, studies have found links between match-fixing and transnational organised crime (Antonopoulos, 2015), or between fraud and terrorist financing (Ryder, 2019). Understanding the transversality of globalised crime is paramount to design effective preventive and enforcement measures beyond the artificial boundaries between traditional definitions and categories.

Together, transnationality and transversality contribute to aggravate the potential ***harmfulness*** of globalised forms of crime. On the one hand, they expand the ***extent*** – that is, the scope and reach – of the negative consequences of crime. On the other hand, they aggravate the ***seriousness*** of such consequences. Not only can transnational crimes directly target victims, assets or interests of multiple countries, but the increasing interconnectedness and interdependence between states means that the effects of crimes targeting one or more particular states can reverberate in many other countries. For instance, acts of international terrorism such as 9/11 can destabilise global markets; widespread financial crime can cause or aggravate global financial crises (Ryder, 2014). The aggregation and mutual interactions between different forms of crime and different criminal groups (transversality) can provide traditional crimes with new harmful dimensions. For instance, the corruption of a public officer in a particular country can be used to facilitate human trafficking and sexual exploitation (Fouladvand, 2019) or to unlawfully exploit natural resources (Global Witness, 2017), thus harming not only good governance and public integrity, but indirectly, the fundamental human rights of the victims (Olaniyan, 2014). Finally, technology can dramatically amplify both the extent and the seriousness of crime. This is not only the case of expensive or inaccessible technologies, such as weapons or means of transportation – such as a plane crashed into a populated building. It also applies to more readily accessible technologies such as computers or mobile phones, which can cause equally extensive and serious consequences such as:

- malware spread through a mailing list;
- the defacement of institutional websites;
- the online grooming of children;
- large volumes of scam emails and text messages sent to many users;
- the unlawful access to an international financial institution;
- the breach and misappropriation of confidential data;
- the sale of drugs and weapons through the dark web.

These can all harm multiple interests of multiple victims across multiple countries.

4.3.2. The proximate causes of crime: individual, environmental and situational factors

The causes of crime is a very complex issue that is a topic of endless debates. However, for the purposes of this chapter, we can provide a simplified framework that summarises some of the most significant findings from criminology. We can draw a basic distinction between proximate and remote causes. ***Proximate causes*** are factors that are mostly related to the individual and the immediate environment, such as motivations, opportunities and rationalisation. ***Remote causes*** are broader social and cultural developments, such as social inequality or the institutional promotion of certain cultural goals. Obviously, in reality, proximate and remote causes are not neatly separated but they blur into each other as the latter produces or influences the situations and environments that determine or aggravate the former. The development and global distribution and sale of new technologies, for instance, is a socio-economic development (***remote cause***) that makes these technologies available to potential offenders in different countries. Such availability can, in turn, strengthen the motivation of particular offenders and provide opportunities for specific crimes (***proximate cause***).

Proximate causes include motivations, opportunities and rationalisation. ***Motivations*** are individual drives to engage in corrupt behaviours. Despite their subjective nature, criminal motivations are rarely innate, especially when it comes to economic crime (Coleman, 1987) but more often depend on environmental conditions that make certain goals and activities desirable. These conditions can be found either in the immediate environment of the offender or, as we shall see later, in the broader social and cultural milieu. Immediate environments can help potential offenders to decide whether or not to commit a previously contemplated crime, according to rational choice theory (Cornish & Clarke, 1986), or actively push individuals to engage in misconduct they might not have otherwise contemplated (Wortley, 2017). Common examples include personal financial difficulties, or corporate pressures and incentives to achieve business targets. Lack of effective controls and offenders' awareness of the inefficiency of law enforcement authorities might also aggravate criminal motivations.

Opportunities are situations, such as access to targets or the absence of capable guardians, that make certain behaviours possible or more tempting (Coleman, 1992; Clarke, 2017; Cohen & Felson, 1979). As such, opportunities play a role in causing all crime, but they tend to be highly crime-specific. For traditional crimes, targets are often victims or property, and guardians are anybody whose presence or proximity would discourage a crime from happening, such as the police or neighbours. But, as crime evolve, these categories assume new meanings. For cybercrimes, targets can be computer data, systems or networks, while guardians can be not only the authorities but also (and especially) anti-virus software, moderators of blogs and social media, or other Internet users. For sophisticated financial crimes, such as intricate tax frauds, money laundering or bribery, opportunities, means and targets of crime can be provided by legal loopholes, business structures, lawyers, professional advisors or business partners, while guardians are not only traditional law enforcement agencies (police and the courts) but also other individuals and entities that can discourage misconduct, such as customers, competitors, regulators, or professional, industry and consumer associations.

Rationalisation is the mental construction of the criminal or corrupt behaviour that neutralises its moral and cognitive dissonances (Cressey, 1953; Sykes & Matza, 1957; Benson, 1985). Rationalisation is not an after-the-fact justification. It takes place before the act is committed to reinforce the motivation of potential offenders by helping them maintaining a positive concept of self (Matza, 1964; Mazar et al., 2008). Common patterns of rationalisation include denial of responsibility ('everybody does it' or 'I had no choice'), denial of injury ('it does not hurt anybody'), denial of the victim ('they asked for it' or 'they should have read the contract'), denial of illegality ('but it's legal' or 'if it is not prohibited by law, then it is permitted') or appeal to higher loyalties ('the law is unfair' or 'the authorities are all corrupt').

4.3.3. The remote causes of crime: social and cultural factors

Remote causes are more varied, more complex and more controversial. They include:

- socio-psychological and cultural factors such as an excessive emphasis on financial success (Durkheim, 1897; Messner & Rosenfeld, 2013) and the psychological strains caused by the lack of legitimate means to achieve it (Merton, 1938, 1968; Passas, 1990, 2000; Agnew, 2006);
- the socialisation of deviance through various subcultures such as the hacking community (cf. Holt, 2010; Steinmetz 2015, 2016) or corporate environments, and its institutionalisation through organisational processes (cf. Sutherland et al., 1992; Ashforth & Anand, 2003; Goldstraw-White 2012; Prabowo et al., 2018);
- irrational responses to diversity (cf. Green et al., 1998; Perry, 2001; Lyons, 2007; Chiu et al., 2011; Chakraborti & Garland, 2012, p. 90);
- challenges to personal identity caused by the deterritorialisation brought about by the cyberspace and other technological advances (cf. Jewkes & Sharp, 2003; Aas, 2013).

Anomie (meaning 'normlessness') and strain theories seek to explain crime on the tension between cultural pressures of material success and the lack of legitimate means to achieve it. Industrialisation (Durkheim, 1897), economic globalisation and neoliberal ideologies of economic growth, free markets, consumerism, privatisation and deregulation (Passas, 2000) have put economic prosperity at the forefront of any state's life and created new needs, desires and fashions. Cultural goals of success have shifted considerably to material interests – financial gains, the accumulation of consumer goods, a house, a car, regular holidays, etc. The globalisation of markets, the rapid economic growth of so many countries in the span of just a century, and fast-advancing information and communication technologies may cause the illusion that everyone can achieve the same material success. The 'American Dream' discourse is a typical example of this cultural mindset (Messner & Rosenfeld, 2013). However, not everyone can achieve the same material success. Despite the overall improvement of life conditions around the world in the last two centuries, national and international institutions do not yet provide equal legitimate means to achieve the globally valued goals of financial prosperity (Stiglitz, 2002, 2012). Such divergence between goals and means can produce a sense of deprivation and frustration in those who fail to achieve the goals. In turn, such strains can motivate these individuals to resort to illegal means to achieve them (Merton, 1938; Merton, 1968; Agnew, 2006). These theories work especially well for financial crimes (Passas, 1990, 2000), but they have been used to explain also other forms of globalised crime such as terrorism (Agnew, 2010), refugee criminality (Simmler et al., 2017) and online piracy (Larsson et al., 2012).

Anomie theory does not suggest that poverty is the main cause of crime – quite the contrary. Sociologists suggest that poverty is a restraint, for desires depend on resources: 'The less one has the less he is tempted to extend the range of his needs indefinitely' (Durkheim, 1897, p. 214). It is those who do have access to some means to achieve material goals of success that are easily pressured into desiring more. Moreover, since crime depends on opportunity, those who are really deprived might not have access to the means and opportunities to commit crime either – especially sophisticated forms of global crimes. Economic crime and cybercrime are good examples. Economic crimes such as money laundering, tax evasion or bribery are not committed by the poor but by financial advisors, corporate employees, managers and executives taking advantage of the opportunities provided by their professional environments. Such crimes are rarely motivated by the need to provide for basic life necessities. Instead, they are motivated by the desire for higher profits or higher social prestige. Similarly, cybercriminals are rarely poor and uneducated, as cybercrime requires access to technology and advanced skills (Neufeld, 2010, p. 5). Therefore, scholars suggest that removing structural obstacles to legitimate opportunities is not enough to reduce crime rates, but it is also necessary to question the goals promoted by major social institutions (Messner & Rosenfeld, 1997, 2013). These should promote alternative definitions of self-worth and achievement to mere financial success based on countervailing values of honesty, integrity and solidarity (Pasculli, 2021).

Insecurity, fear and hate. Globalisation does not just bring economic development, but also feelings of insecurity and fear. The openness of societies can easily become 'the terrifying experience of heteronomous, vulnerable populations overwhelmed by forces they neither control nor truly understand' (Bauman, 2006, p. 96). Global mobility and interconnectedness have brought together people from the most different cultures rather suddenly and without any cultural preparation to contact with diversity and the emerging global culture. Such contact can cause fear, mistrust and suspicion towards the diverse and may push individuals to withdraw into localism and traditional values. Research suggests that the emerging global culture – characterised as new, individualist, competitive, scientific and result-oriented, as opposed to traditional local cultures – can trigger emotional responses to intercultural contacts such as a fear that global culture will contaminate local culture (Chiu et al., 2011). Moreover, states' inability to

address on their own global problems furthers the perception that no one is in control (Bauman, 1998) and nurtures mistrust and anger. The recent waves of populism and nationalism are good examples of all this.

Fear and 'contamination anxiety' can lead to exclusionary reactions (Bauman, 1998) and even direct attacks against individuals or elements of different cultures. Both hate crimes and international terrorism seem to be rooted in intergroup conflicts (Mills et al., 2017, p. 1197) caused or deepened by such feelings. Sociology suggests that racially motivated crimes rise when ethnic minority groups move into areas populated by white people and are driven by the perceived need to 'defend the neighbourhood' from the perceived threat to the majority's interests posed by the minority (Green et al., 1998; Lyons, 2007). This is in line with criminological studies that define hate crime as a mechanism of power and oppression attempting to recreate both the threatened (real or imagined) hegemony of the perpetrator's group and the 'appropriate' subordinate identity of the victim's group (Perry, 2001). Research also suggests that often, contact with diversity alone triggers hate crime regardless of any hate or prejudice towards specific minorities. Many hate crimes are motivated merely by the vulnerability and diversity of their victims, perceived by hate offenders as undesirable and easy targets. Examples include the homeless, the elderly or members of alternative subcultures. (Chakraborti & Garland, 2012). More radical ideological rebellions to the materialistic, and largely Western-like, values and goals of the emerging global culture can lead to also violent attempts to introduce a 'new social order' (cf. Merton, 1938, pp. 677–678). An example is the black bloc international movement of violent protest against the power of governments and financial institutions in the global system. The group originated in the 1970s in Germany and later spread around the world through websites and online forums.

Social learning theories suggest that criminality is learned in interaction with other people (Burgess & Akers, 1966). Individuals that are exposed to mindsets and attitudes that define crime as positive ('definitions') are more likely to engage with it (Sutherland et al., 1992). The patterns of rationalisation we mentioned above are all examples of positive definitions of crime. The longer and the more intensely people are exposed to such positive definitions of crime, the more likely they are to commit crime. Intimate social groups, such as families, friends, communities and workplaces, are the first source of negative or positive definitions of crime. But broader social groups, such as industry sectors or national cultures can also provide definitions of crime that can encourage illegality. Crime can be learned in virtual environments, such as extremist or terrorist communities online. Rewards and punishment ('reinforcements') play an important role in supporting or inhibiting the learning of criminality (Akers, 2009). Institutions have therefore an important role in promoting a culture of legality, not only by disseminating negative definitions of crime through education, regulation and social measures, but also by providing adequate rewards for legal behaviours and punishment for criminal ones. Inadequate enforcement 'teaches' offenders that crime goes unpunished and reinforces criminal motivations.

Changes to personal identity brought by globalisation can also contribute to causing crime. In increasingly globalised societies, identities and social relations are 'disembedded' from local contexts of interactions (Giddens, 1990). Living in a global world means doing things and identifying oneself at a distance (Giddens, 1990; Bauman, 2007, 2012). As identities become detached from specific places, local institutions struggle to give stable identities to populations that are increasingly mobile and versatile populations (Aas, 2013, pp. 177–178). Cyberspace is the main manifestation of these changes. Research in psychiatry suggests that the Internet transforms human functioning, personhood and identity, with important implications for knowledge and consciousness (Kirmayer et al., 2013, p. 167). Anonymous virtual interactions offer the opportunity to craft one's own identity free from the constraints of material reality (Jewkes & Sharp, 2003, p. 3) – but there are various side effects. First, psychology and criminology (Hinduja, 2008; Holt & Kilger, 2012) suggest that the virtual and anonymous nature of cyberspace lowers the perception of victims and of effective legal and social controls (the likelihood of being detected and punished). Consequently, online behaviour – or at least certain types of behaviour – can be more disinhibited than in real life. Secondly, the Internet contributes to the differentiation of groups and amplifies the perception of group cohesion and normative support to individual behaviours, which is integral to extremist violence (Mills et al., 2017, pp. 1197–1199). Cyberspace can facilitate the identification with virtual subcultures that can promote or support criminal or harmful behaviours, such as the hacking community, or extremist and terrorist ideologies (Kirmayer et al., 2013, p. 172). Here, individuals looking for an identity, under the strains of dominant cultural goals perceived as oppressive, can easily find in radical or deviant ideologies new values to embrace, new ideals to live up to, new causes to support. This is the case, for instance, of the radicalisation of British citizens (Townsend, 2016), also from non-Muslim backgrounds, such as the Greenwich-born punk singer Sally Jones (Weaver, 2017).

Legal and institutional frameworks can also be criminogenic. This can happen not only when the law and institutions are corrupted by undue political and private influences (Giavazzi & Barbieri, 2014). More often and more

insidiously, crime can be the unintended consequence of law-making. This happens when the law inadvertently creates or aggravates criminal motivations and opportunities (Albrecht & Kilchling, 2002; Savona et al., 2006; Pasculli, 2017, 2020a, 2021). Scholars have identified a set of typical regulatory situations that can trigger crime risks:

1) the introduction of burdensome obligations;
2) the introduction of concessions on taxes, fees or obligations;
3) the introduction of grants, subsidies, or compensation schemes;
4) the introduction or increase of costs of legal goods;
5) the prohibition, restriction or reduction of the availability of demanded products or services;
6) the introduction, removal of or other changes to a law enforcement capacity;
7) the attribution of regulatory powers to public officials (Morgan & Clarke, 2006).

For example, the Coronavirus Job Retention Scheme or the Self-Employed Income Support Scheme adopted by the UK to mitigate the economic impact of the coronavirus pandemic attracted frauds aimed to unlawfully exploit the schemes (Pasculli, 2020a). Research suggests that not only reductions in enforcement activities or capabilities can facilitate crime, but also the increases in such activities and capabilities can have unintended criminogenic consequences. For instance, strengthened police powers and capabilities might displace crime elsewhere, prompt corruption or determine an increased sophistication of criminal groups and activities (Morgan & Clarke, 2006). The problem also has an international dimension. Differences in legal definitions and law enforcement between countries create legal loopholes that can be exploited by criminals and encourage the displacement of corporate wrongdoing in more permissive jurisdictions (Passas, 2005). Formal legislative or regulatory defects can also be criminogenic (Kotchegura, 2018). Inaccessible, obscure, ambiguous, incomplete legislation and regulation can provide opportunities for malicious agents to 'game the system' through exploitative interpretations or abuse of legal loopholes (Pasculli, 2021).

At a deeper level, the law may contribute to aggravate the social inequalities that can motivate crime. The many modules of the law – contract law, commercial law etc. – provide the 'legal coding' required to enable the rich to produce even more wealth (Pistor, 2020), empower corporations over consumers, and shield companies and executives from responsibility (Passas, 2005). Access and control of the law governing economic life is unequal. Consumers, employees and small businesses cannot afford the professional and political instruments that allow corporations not only to take full advantage of the law and its gaps – for instance, through tax avoidance schemes meticulously orchestrated by lawyers and accountants – but also to influence its formation through lobbying and campaigning. Much criminogenic regulation and deregulation is the direct product of corporate pressures on policymakers and lawmakers, which contribute to the development of a permissive or criminogenic legal environment (cf. Passas, 2005; Tillman & Indergaard, 2005, 2007; Tillman, 2009).

4.4. SOCIAL SAFETY POLICIES AND STRATEGIES IN THE GLOBAL ERA

After considering the causes and forms of manifestation of crime, we are ready now to examine some of the most significant strategies against crime. For simplicity we will divide these in two main categories: crime prevention and law enforcement. For the purposes of this chapter, we will adopt a broad definition of both expressions. By *crime prevention* we mean any policy or measure aiming at removing or mitigating either proximate or remote causes of crime. For how broad, this definition is still narrower than similar notions such as public safety or public protection, as it is focused only on a specific threat to social safety: crime. By *law enforcement* we mean the framework of rules and institutions responsible for the effective application of the law.

4.4.1. Crime prevention

Crime prevention encompasses a very broad range of techniques and strategies that would be impossible to summarise here. We will focus instead on main categories of groups of measures with similar features. Following the helpful framework traced by Tilley (2012), we will distinguish between individual measures, social measures and situational measures.

We will also consider a complex set of measures known as 'responsibilisation' (Garland 1996, 1997, 2001).

Individual measures of crime prevention target individuals that are at high risk of being involved in crime either by diverting them before they become prolific offenders or by promoting desistance once they have embarked on their crime careers (Tilley, 2012, p. 53). Risk factors include both individual characteristics and predispositions – such as impulsivity – and environmental conditions – such as problematic families, child maltreatment or socio-economic deprivation (Farrington, 1996, 2007). The emphasis is on supporting, rather than controlling or punishing the individual (Cullen, 1994). Some techniques include cognitive behavioural therapy or treatment of drug addiction. A prominent strategy in individual crime prevention is ***developmental prevention***. Developmental prevention uses scientific research to develop resources for individuals, families, schools or communities to address the conditions of antisocial or criminal behaviour before they arise or become entrenched (Homel & Thomsen, 2012). Techniques of developmental prevention include early identification of individuals at risk by teachers, targeted or collective programmes of cognitive behavioural therapy or social skills training, home visits from professional nurses or childcare professionals (Homel & Thomsen, 2012).

Social prevention considers crime as a social problem and seeks to focuses on social relations and issues. It includes large-scale programmes aimed at addressing complex and interrelated social problems considered to be the root causes of crime as well as programmes targeted to specific communities. Large-scale programmes do not address crime directly but focus on wider issues of social inequality. These programmes are very ambitious and agreeable in principle, but they have various shortcomings (cf. Tilley, 2012, pp. 84–85). First, they tend to be very expensive and produce limited results. Second, often the reduction of crime is a precondition to the solution of broader social issues. Third, not all crime is the product of inequality or deprivation – think, for instance, about sophisticated tax frauds committed by high-profile businessmen and lawyers. Community programmes have a much narrower scope as they focus on the dynamics that generate crime within a particular community. Examples of such programmes include Neighbourhood Watch, community policing and community engagement (Tilley, 2012, p. 85).

Neighbourhood Watch has been operating across the UK for 40 years (www.ourwatch.org.uk). It works by mobilising members of the community to implement informal social controls. Members are given advice on how to improve security and are required to report suspicious activities to the police or look out for particular people or activities. It is difficult to assess the effectiveness of these programmes. First, they tend to flourish mostly in low-crime areas, where there are the right social conditions for the development of community programmes. Secondly, they are often established following crimes of concern for local residents, but they tend to decline as crime rates go back to normal, giving an impression of effectiveness (cf. Tilley, 2012, p. 87; Laycock & Tilley, 1995).

Community policing seeks to involve local communities in informing the agenda of the police and make them more accountable to local people by consulting the public on what police priorities should be and what should be done about it. Community policing is particularly popular in the US. A famous programme is the Chicago Alternative Policing Scheme (CAPS) (Rodriguez, 1993; Skogan & Hartnett, 1997; Chicago Police Department, 2022). CAPS brings the police, the community and other city agencies together to identify and solve neighbourhood crime problems, rather than simply react to their symptoms after the fact through a variety of strategies, including:

- neighbourhood-based beat officers;
- regular Beat Community Meetings involving police and residents;
- extensive training for both police and community;
- more efficient use of City services that impact crime;
- new technology to help police and residents target crime hot spots (ibid.).

The effectiveness of community policing is also problematic. Reviews of CAPS show rather disappointing results. The programme is very resource-intensive, and the police struggle to make it work effectively. The fall in crime rates does not seem to be that different from cities that do not have similar programmes. Participants are not always representative of the communities as the programme tends to attract those already engaged in community organisations, homeowners, the elderly, long-term residents and the educated but seems rather unsuccessful in neighbourhoods of concentrated poverty and in racially or ethnically heterogeneous areas (Skogan, 2004, 2006).

Community engagement seeks to minimise the role of the police and maximise the role of communities in crime control. The idea is that communities should play a larger part in the governance of their respective areas and less involvement of the police might help promoting better community engagement by removing some obstacles to it – such as mistrust in the police (Forrest et al., 2005). Community safety groups and partnerships around the UK are

an example of this approach. However, despite the marginal role of the police, these groups seem to suffer from the same problems as Neighbourhood Watch and community policing as they easily engage lower-crime, better-off neighbourhoods, but struggle to engage higher-crime and more fractured communities (Mistry, 2006, 2007).

Situational crime prevention focuses on reducing the opportunities for crime, that is the 'temptations' provided by the situations and environment surrounding the individual (Clarke & Bowers, 2017). It is, therefore, very different from individual and social crime prevention, as it does not seek to address individual dispositions or social causes of crime. Situational crime prevention is a very practical and successful approach, based on the observation that all crime depends on opportunity. Crime is not merely a propensity but rather the result of the interaction between a criminal disposition or motivation and a situation that provides the opportunity for crime to occur (Clarke, 2017). Situational crime prevention is also based on the principle that intervening on the nearest situational causes of crime can produce more certain and immediate results than intervening on its remote causes. Given the variety of criminal opportunities, situational crime prevention includes many different techniques. These can be grouped in five main categories:

a) measures that ***increase the effort*** by making targets harder to access (e.g. tamper-proof packaging) or increasing controls at the entrance or exit of certain facilities (e.g. baggage screening, electronic card access or electronic merchandise tags);
b) measures that ***increase the risks*** by improving surveillance or reducing anonymity (e.g. better street illumination, CCTV, security guards);
c) measures that ***reduce the rewards*** by removing targets or by denying the benefits of crime (e.g. pre-paid cards, property marking, disabling stolen cards or phones);
d) (e) measures that reduce provocations by reducing stress, disputes, temptation and arousal (e.g. polite service, soothing music, controls on violent pornography);
e) measures that reduce excuses by setting rules, posting instructions and assisting compliance (e.g. clear signs, roadside display boards, breathalysers in bars).

Research has consistently demonstrated that situational prevention is generally effective in reducing crime (cf. Guerette, 2009; Bowers & Johnson, 2016), showing a better record of evaluated successes than other forms of crime control (Clarke, 2017, p. 117). Some critics claim that it does not address the roots of crime – but this does not invalidate its effectiveness. Others claim that it might displace or escalate crime by encouraging potential offenders to move their activities into other areas or use more aggressive means and techniques. However, research suggests that displacement and escalation do not outweigh the benefits of situational prevention, as they occur only in a limited number of cases and are not inevitable (Johnson et al., 2012; Clarke, 2017).

Responsibilisation is a term used to describe the general shift from traditional centralised, state-run models of crime control to a more decentralised model focused on the mobilisation of private individuals and organisations (Garland 1996, 1997, 2001). This shift is the result of longstanding and complex adaptations of crime control strategies to changes in crime and our ways of understanding it. Since the 1970s, research in criminology has advanced the idea that crime is a normal aspect of modern society – a risk to be calculated and avoided, rather than a moral aberration (Garland, 1996, 2001). These studies have been advocating new approaches focused on the conduct of potential victims, vulnerable situations and 'those routines of everyday life which create criminal opportunities as unintended by-product' (Garland, 1996, 1997), rather than on the punishment and correction of individual offenders. Situational crime prevention is an excellent example of this discourse. Moreover, as crime becomes increasingly pervasive, volatile and deterritorialised – also as a consequence of globalisation – states become increasingly unable to effectively control it. Think for instance of the challenges for traditional law enforcement methods to policing the cyberspace, fraud, economic crime or organised crime (Levi 2008, 2010), or the legal and practical difficulties of prosecuting and punishing corporations (King & Lord, 2018; Ryder, 2018). All these developments have prompted new government strategies to complement and partially replace state-centred policing and law enforcement with a more pervasive strategy, seeking to devolve responsibility for crime prevention on to non-state agencies, organisations and individuals. The state retains its 'steering' role in policy decision-making, while service delivery is increasingly delegated to the civil society (Osborne & Gaebler, 1993). Responsibilisation relies on various techniques ranging from inter-agency and public-private partnerships, community programmes and information campaigns to specific crime control requirements for private organisations, public bodies and certain individuals, such as company executives, managers and professionals. Such requirements include, for instance, the duty for businesses to identify, assess and mitigate crime risks, to adopt and enforce codes of conduct or to report suspicious or irregular activities, or the requirement for potential victims to adopt certain precautions.

Responsibilisation does not eliminate the role of the state – it reshapes it. Responsibilisation strategies are backed by a pyramid of enforcement measures that the state can choose according to the circumstances of each case (Ayres & Braithwaite, 1992; Braithwaite, 2002). At the bottom of the pyramid are persuasive measures and collaborative approaches, but if these fail stricter approaches such as disciplinary action and civil or criminal penalties are available at the higher levels of the pyramid. Traditional law enforcement agencies have a limited role in the pyramid, as controls are largely entrusted to a broad spectrum of self-regulators, such as professional or industry associations, and regulators monitoring the conduct of particular sectors, such as financial or prudential authorities (Lord & Levi, 2015; Gill, 2002).

4.4.2. Law enforcement

The previous paragraphs naturally lead to introducing our definition of law enforcement, which is also intended broadly here, as the overall framework of policies, regulations and institutions that monitor and ensure the correct application of the law. This includes not only traditional criminal justice agencies – such as the police and the courts – but also specialised regulators in charge, with the supervision of the conduct of private actors in specific industry sectors, such as banking and financial authorities. These regulators often have the power to investigate the conduct of regulated entities and to inflict penalties, agree settlements with them, initiate civil litigation, refer them for prosecution and, sometimes, even prosecute them directly.

The criminal justice system is a complex system of institutions with the two-fold purpose of preventing, detecting, investigating and punishing crime while, at the same time, protecting individuals from abuses of state powers and other unfair treatments (Welsh et al., 2021). The 'justice' in the 'criminal justice' expression is therefore justice not only for victims, but also for the accused, whether they are innocent or not, and the convicted, no matter how serious are the crimes they committed. The activities of the institutions responsible for preventing and punishing crime are limited by several safeguards for the rights and liberties of the accused, usually established by criminal law and criminal procedure, and derived from the broader principles of the rule of law. Criminal procedure plays a crucial role in this respect, establishing the scope of the powers of the relevant institutions and the ways in which they should be exercised. Assessing the performance of criminal justice institutions requires, therefore, to assess not only their ability to identify, apprehend and prosecute offenders, but also their ability to do so fairly and in compliance with due process and fundamental rights.

The main institutions of any criminal justice system include the police, prosecutors, the judiciary (judges and courts), and agencies and staff responsible for the application of the sentence to the convicted such as prison and probation officers. The functions of these institutions are well known. The police are in charge of the prevention and investigation of crime, and the detection and apprehension of the offenders to enable their prosecution before the criminal courts also using force, if necessary, but always within the limits of the law. Prosecutors usually deal with the next stage of the criminal justice process, that is determining the appropriate charges against the accused, preparing cases and presenting them at court. Courts are responsible for deciding whether the defendant is innocent or guilty and, in the latter case, determining the appropriate sentence. Prison and probation officers and other relevant agencies ensure the correct application of such sentencing, and monitor and support the convicted person throughout the sentence.

Apart from these basic roles, criminal justice system can differ considerably from one country to another (Nelken, 2010; Nelken & Hamilton, 2022). First, many countries have different police forces and even different prosecuting agencies, often specialised to respond to specific crime forms. In some systems, such as Italy, prosecutors are also in charge of overseeing the police investigations, while in other systems, such as the UK, investigations are largely conducted by the police. Another main distinction can be drawn between accusatory and inquisitorial systems, and concerns the role of the parties in a criminal trial. In accusatory systems, the prosecution and defence compete against each other to establish the fact and the correct application of the law in court, while judges act as impartial adjudicators and ensure compliance with procedural rules and the rights of the accused. Common law countries such as the US, the UK or Australia traditionally adopt accusatory systems. Inquisitorial systems rely on a more extensive involvement and supervision of judges in finding evidence and establishing the facts to avoid bringing the innocent to trial but also to integrate or complement the investigative powers of the prosecutor. Inquisitorial systems are generally associated with civil law jurisdictions such as France, Italy or Spain. However, this distinction is not always so neat in practice as accusatory systems can borrow elements from inquisitorial ones and vice versa. For instance, research shows that in recent years the Dutch criminal justice system – traditionally an inquisitorial system – and the UK one – traditionally accusatory – have become increasingly similar (Brants & Ringnalda, 2011).

While focused on the punishment of the offender, the criminal justice system also has important preventive functions. Not only does policing include activities such as surveillance or patrolling, that are aimed at preventing crime from happening, but punishment itself has a two-fold preventive function. On the one hand, the threat of punishment as the legal consequence of crime aims to deter all citizens from engaging in criminal behaviours ('deterrence' or 'general prevention'). Such a general deterrent effect of punishment largely depends on the effectiveness of the criminal justice system. On the other hand, the infliction of a punishment on offenders should prevent re-offending, either by incapacitating them – for instance, through a restriction of their freedom – or by facilitating their reintegration in society ('special prevention').

As we said, regulation, regulators and self-regulators (industry bodies and professional associations) play an increasingly important role in law enforcement. The above-mentioned shift towards a decentralised model of crime control through the mobilisation and responsibilisation of the private sector entailed the emergence of regulatory bodies to enforce and supervise compliance with relevant regulatory frameworks. This is, for instance, the case of specialised financial or prudential authorities in charge of the regulation of the banking and financial industry. These regulators complement, integrate and to an extent replace functions of traditional law enforcement authorities. Therefore, assessing the performance of states in social safety also requires an evaluation of the quality and effective enforcement of regulation.

4.4.3. Crime and the future

The most effective crime prevention is that which successfully manages to prevent future crimes from happening in the first place. Predicting future crimes is therefore crucial to successful preventive strategies. There are two rather different, albeit somehow interrelated dimensions to this issue. The first concerns the possibility to predict when, where and how ***well-known*** crime types will be perpetrated in the future, to be able to adopt effective measures to prevent their perpetration. This is the domain of ***predictive crime analysis***. The second dimension concerns the ability to predict how social and technological changes will create opportunities for new, unprecedented crimes in the future. This is the domain of ***future crimes*** research, which uses specific methodologies to anticipate what crime will look like in the future and support law enforcement and policymakers in adopting adequate preventive strategies.

Predictive crime analysis. Predicting when and where crimes will take place facilitates their prevention or detection and is crucial for prioritising police resources (Bowers & Johnson, 2004). The identification and analysis of crime patterns and risk factors by criminological research – often with the support of quantitative data – can make policing more proactive by covering particular 'hot spots' and facilitate a better use and allocation of the limited resources available. Such research seeks to map crime incidents in particular geographical areas (predictive crime mapping) and identify the characteristics of targets and victims of crime as well as the environments in which it takes place with a view to predict where and when similar offences are likely to occur in the future. In particular, decades of empirical research have demonstrated that crime tends to be consistently concentrated in space (the law of crime concentration at places: Weisburd, 2015), and research suggests that the built environment shapes individual behaviours (Brantingham & Brantingham, 1981; Andresen, 2014). These findings make the future locations of crime somewhat predictable (Rosser et al., 2017). Studies in this area have focused, for instance, on street networks and road structure to identify patterns in the distribution of burglary in time and space (Bowers et al., 2004; Bowes & Johnson, 2004; Johnson & Bowers, 2010; Davies & Johnson, 2015).

Law enforcement agencies in different countries, such as the US (Perry et al., 2013) or Germany (Vepřek et al., 2020), use predictive policing techniques and rely on the services of private providers such as PredPol (predpol.com). There is no conclusive evidence on the effectiveness of such techniques (Egbert & Leese, 2020) and the ethical implications of such techniques are still debated (Karppi, 2018). It is important to point out, however, that the effectiveness of predictive policing methods does not only rely on the scientific rigour and reliability of the forecasting models developed by researchers, but also by the way such models are used by police agencies.

Future crimes research. Predictive crime analysis and predictive policing should not be confused with future crimes research. This area of study seeks to predict future criminal threats emerging from social and technological changes using research methods designed to systematically identify possible and desirable futures (Fowles, 1978; Gordon, 1992). In 2016, the Dawes Centre for Future Crime was established at University College London (UCL) with the dual aim of identifying new forms of offending and developing informed strategies to address them (Johnson et al., 2018). Researchers at the Dawes Centre have conducted several studies, often in collaboration with industry,

policymakers and law enforcement agencies, to anticipate how new and developing technologies might create opportunities for crime or inform approaches to combat them. Some of the technologies considered by these studies include the Internet of Things (Blythe & Johnson, 2021), artificial intelligence (Caldwell et al., 2020), cryptocurrencies (Trozze et al., 2022) and the metaverse (Dawes Centre for Future Crime, 2022). The work of the centre also addresses crime threats related to social change, such as the unanticipated crime harms of Covid-19 policies (Dawes Centre for Future Crime, 2021).

The importance of researching future crime cannot be overstated. Criminal justice and crime prevention tend to be very reactive. Criminalisation and even measures specifically designed to prevent crime are usually based on known forms of crime. In fact, they are often adopted as a consequence of the experience of the harmful behaviours they seek to address. Future crime research seeks to make criminal justice and crime policies more proactive by supporting any relevant stakeholders – from industry and the civil society to policymakers, lawmakers and law enforcement – to adopt effective and future-proof preventive measures. Some countries have set up special agencies to explore the future and help government officials use long-term strategic thinking in policymaking. An example is the UK Government Office for Science's Futures, Foresight and Emerging Technologies, which has developed a 'Futures Toolkit' for policymakers (Government Office for Science, 2017). It is foreseeable that similar offices will be adopted by more countries in the future and they will play an increasingly important role in crime prevention and criminal justice.

4.5. THE GENERAL PERFORMANCE OF STATES IN SOCIAL SAFETY: THE INPUTS

Having properly introduced social safety, we can now analyse some secondary data concerning different factors and indicators that will help us assess the performance of different states. We will begin with inputs, that is governments' expenditure and staffing in social safety. For this we will rely on Eurostat's and OECD's datasets on general government expenditure by function (COFOG) (Eurostat, 2022a; OECD, 2022b). We will then move to the outputs: arrests, prosecutions, convictions and prison situations. Here we will mostly rely on the datasets of the United Nations Survey of Crime Trends and Operations of Criminal Justice Systems (UN-CTS) (UNODC, 2022). Finally, we will consider the outcomes: crime rates, perceptions of effectiveness, fairness of law enforcement and quality of government, perceptions of safety and other relevant social factors such as unemployment and inequality. Here a variety of datasets from multiple sources will be considered, including Eurostat, OECD Government at a Glance (GaaG), the Eurobarometer, the World Justice Project (WJP), the World Governance Indicators (WGI), the European Social Survey (ESS), the European Values Survey (EVS) and the World Value Survey (WVS). Timely references to these sources will be provided in the relevant subsections.

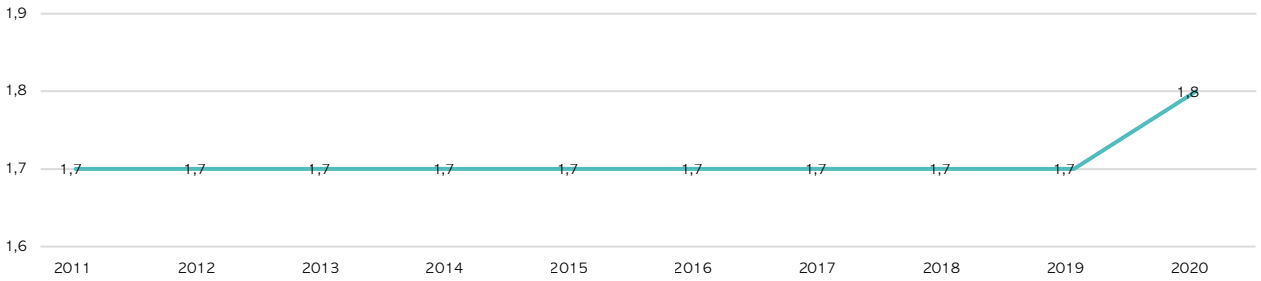
4.5.1. Key findings

States' average expenditure on public order and safety has been consistently around 1.7% of their gross domestic product (GDP) (between EUR 5.5 and EUR 6.5 million on average) between 2011 and 2019, with a slight increase to 1.8% (more than EUR 7.1 million) in 2020. Of this expenditure, 1.0% of GDP was spent on police services, 0.3% on courts, 0.2% on prisons and 0.2% was spent on fire protection services. The countries that spent more money in public safety in that period are Bulgaria (2.52% of the GDP), Slovakia (2.35%), Croatia (2.24%), Poland (2.22%), Romania (2.18%), the US (2.06%), Hungary (2.04%), Latvia (2.3%), Greece (2.3%) and the UK (1.99%). Those that spent less in the same period are Denmark (0.99%), Luxembourg (1.05%), Norway (1.06%), Malta (1.22%), Finland (1.26%), Ireland (1.26%), Sweden (1.31%), Austria (1.34%), Iceland (1.43%) and Germany (1.56) (Figures 1–6).

4.5.2. Public expenditure

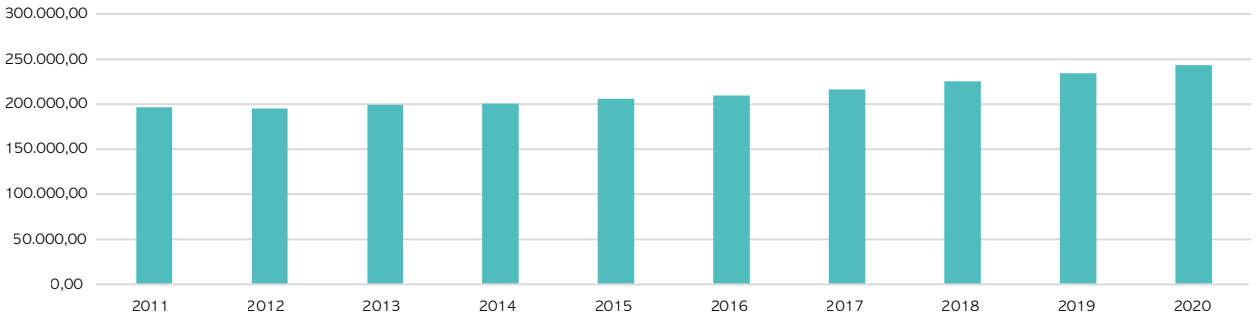
How much do states spend in social safety? Figures to answer this question can be found in OECD's database GaaG (OECD, 2022a) and in Eurostat's database. According to the latest Eurostat data, from 2011 to 2019, every year EU countries have each consistently invested an average of 1.7% of their gross domestic product (GDP) on 'public order and safety', with a slight increase to 1.8% in 2020 (Eurostat 2022b) (Figures 1 and 2). According to Eurostat's classifications, this category includes police services, fire protection, law courts, prisons, and research and development related to public order and safety (Eurostat, 2022c).

Figure 1: Average annual public expenditure in public order and safety in EU countries 2011–2020 (percentage of GDP)



Source: Eurostat 2022

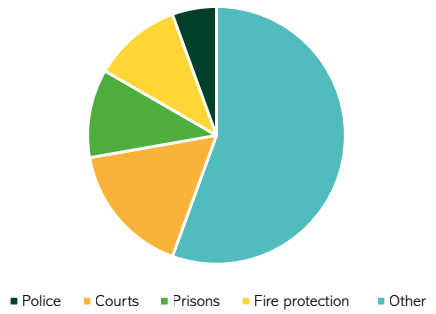
Figure 2: Total public expenditure in public order and safety in all EU Countries 2011–2020 (million euro)



Source: Eurostat 2022

How was this money spent? 1.0% of GDP was spent on police services. Around 0.3% of GDP was spent on courts and 0.2% of GDP on prisons. Another 0.2% was spent on fire protection services (Figure 3).

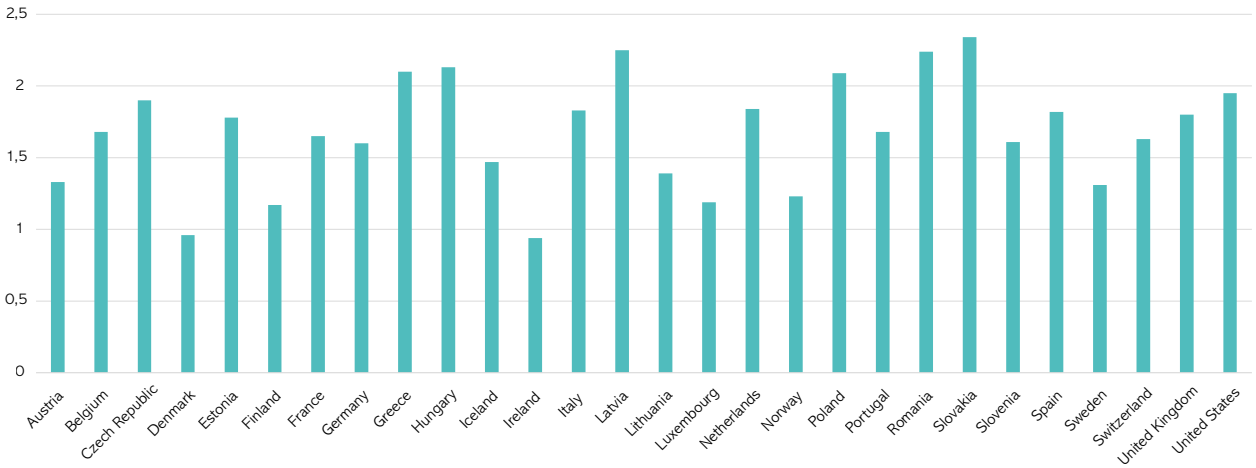
Figure 3: Total public expenditure in public order and safety in all EU countries in 2020 by service (percentage of GDP)



Source: Eurostat 2022

The figures presented are averages across all the countries of the Member States of the European Union from the Eurostat datasets. However, the level of expenditure and its distribution among different services can vary considerably from state to state. According to the OECD datasets, in 2019 the countries that spent more in public order and safety were Slovakia (2.34% of GDP), Latvia (2.25%), Romania (2.24%), Hungary (2.13%), Greece (2.1%), Poland (2.09%), the US (1.95%), the Czech Republic (1.9%) and the Netherlands (1.84%). The countries that spent less were Ireland (0.94%), Denmark (0.96%), Finland (1.17%), Luxembourg (1.19%), Norway (1.23%), Sweden (1.31%), Austria (1.33%), Lithuania (1.39%) and Iceland (1.47%) (Figure 4). However, some countries, such as Buglaria and Croatia, are not included in the OECD datasets.

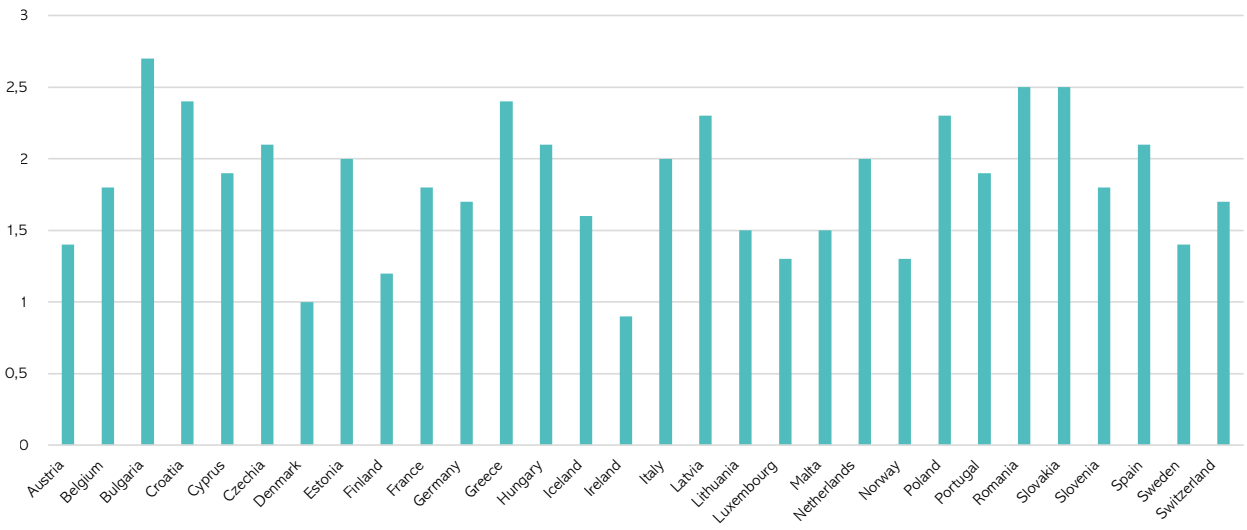
Figure 4: General government expenditure in public order and safety in 2019 (percentage of GDP)



Source: OECD 2022

Data for 2020 are not yet available in the OECD database, but data related to that year are available in the Eurostat database for most countries examined here, except for Australia, Canada, New Zealand and the US. According to this data, in 2020 the level of expenditure on public order and safety was the highest in Bulgaria (2.7% of GDP), Romania and Slovakia (2.5% each) followed by Croatia and Greece (2.4% each), Latvia and Poland (2.3% each). The expenditure on public safety was the lowest in Ireland (0.9%), Denmark (1.05), Finland (1.2%), Luxembourg and Norway (1.3% each), and Austria and Sweden (1.4% each) (Figure 5).

Figure 5: Public expenditure in public order and safety in EU countries in 2020 (percentage of GDP)

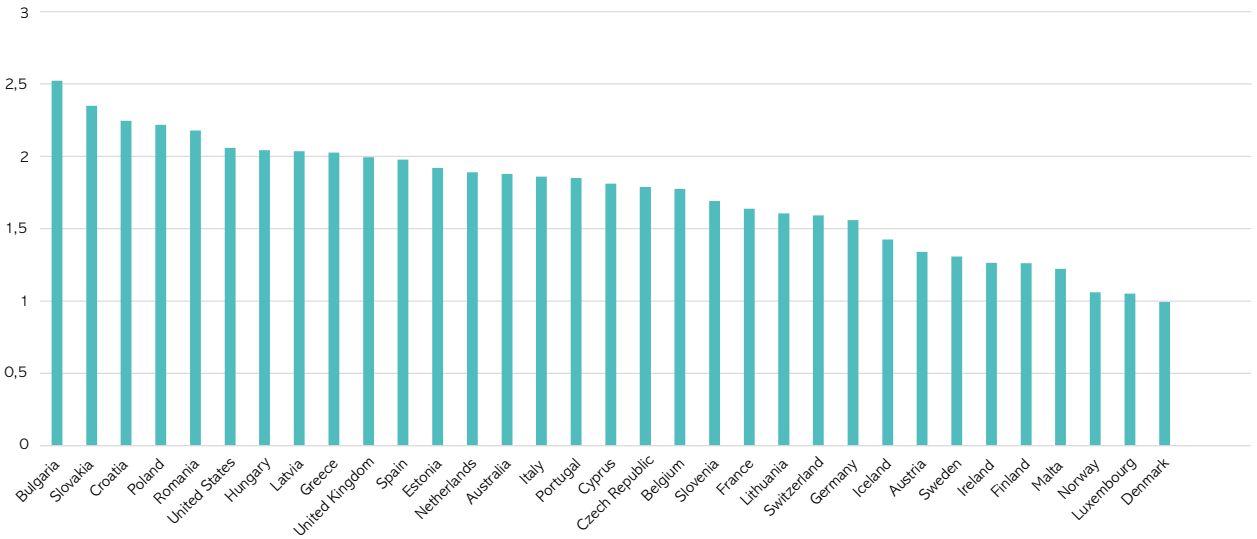


Source: Eurostat 2022

Greece spent the highest amount on police services (1.5% of GDP) – including border and coast guards – followed by Cyprus, Croatia, Romania and Bulgaria (all 1.4%). In the same year, expenditure on law courts – including the operation of courts and the justice system – in the EU was highest in Bulgaria (0.7%) and Poland (0.6%) while for the rest of the reporting countries the ratio ranged between 0.1% and 0.5% of GDP in 2020. Expenditure on prisons ranged between 0.1% and 0.2% of GDP in all countries except the Netherlands (0.4%) and Hungary (0.3%) (Eurostat, 2022b).

A combined reading of OECD and Eurostat data from 2010 to 2020 shows that the countries which on average (mean) spent more money in public safety in that period are Bulgaria (2.52% of GDP), Slovakia (2.35%), Croatia (2.24%), Poland (2.22%), Romania (2.18%), the US (2.06%), Hungary (2.04%), Latvia (2.3%), Greece (2.3%) and the UK (1.99%). Those which spent less in the same period are Denmark (0.99%), Luxembourg (1.05%), Norway (1.06%), Malta (1.22%), Finland (1.26%), Ireland (1.26%), Sweden (1.31%), Austria (1.34%), Iceland (1.43%) and Germany (1.56%) (Figure 6).

Figure 6: Average (mean) public expenditure in public order and safety between 2010 and 2020 (percentage of GDP)



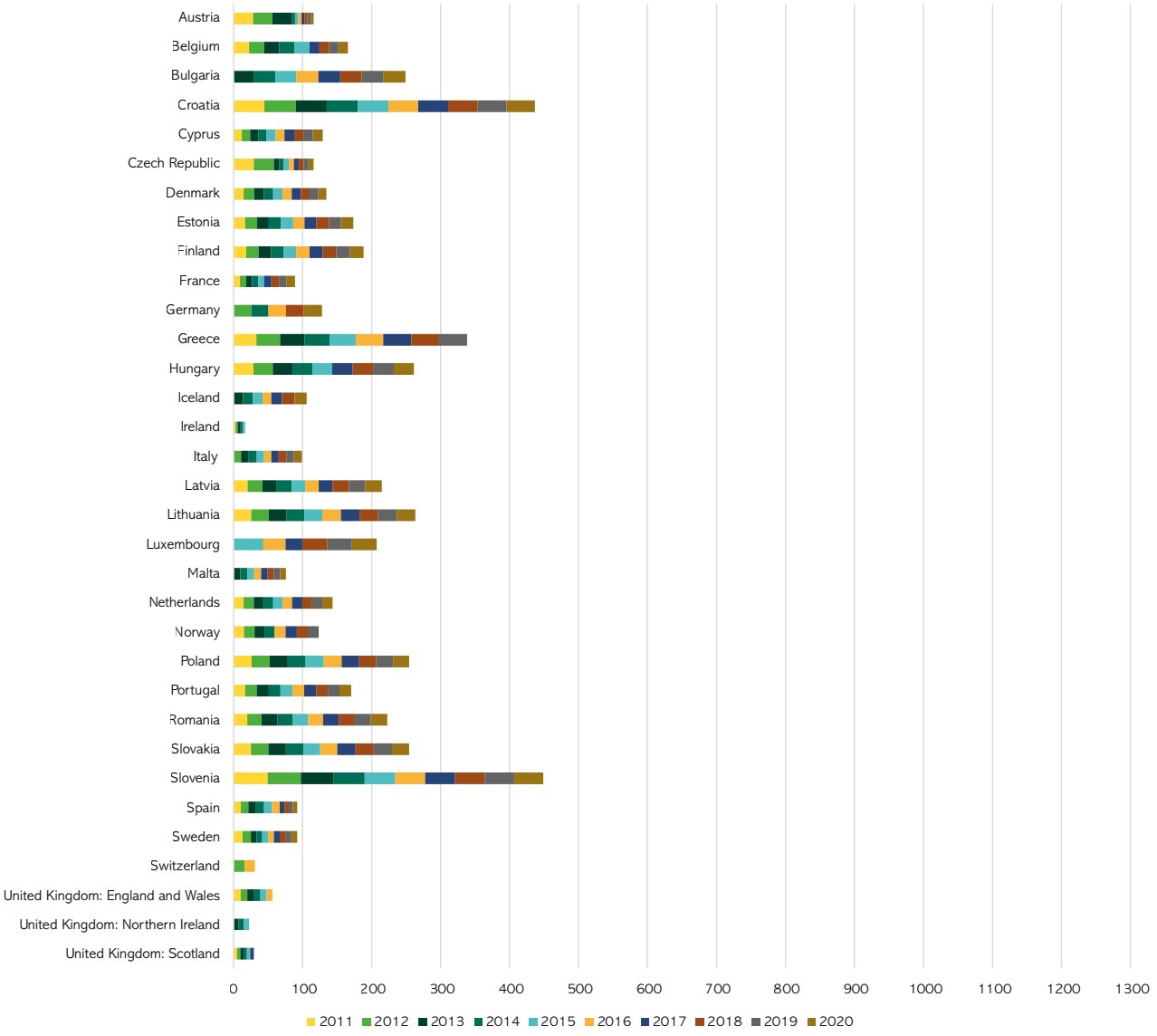
Sources: OECD 2022 and Eurostat 2022

4.5.3. Staffing

In the EU, by far the largest portion of expenditure on public order and safety (72%) was on compensation – wages, salaries and social contributions – for staff working in this field such as police, judges, firefighters and prison guards (Eurostat, 2022b). Eurostat data also provides insights on the proportion of women as police officers, judges and prison personnel across the EU (Eurostat, 2022d). This proportion has generally increased since 2010 and reached its peak in 2020 for police officers (19.5%) and prison personnel (27.0%).

Police. According to Eurostat (2022d), in 2020 there were about 1.49 million police officers in total in the EU. The number of police officers was stable between 2013 and 2018 and has slightly decreased since 2018. From 2018 to 2020 there were 333.4 police officers per 100 000 inhabitants (one per 300 inhabitants) on average. Again, there are big differences between countries. The lowest number of police officers per 100 000 inhabitants was in Finland (134.1), followed by Denmark (192.6) and Sweden (200.1). In eight EU Member States the figure was over 400. The highest numbers were recorded in Cyprus (556.5), Greece (509.0), Croatia (499.3), Malta (459.7) and Portugal (445.1). However, there may be differences between countries over which jobs are counted as 'police' due to variations in how countries organise law enforcement. In the same period, around 1 in 5 police officers was a woman (18.7%) across the EU, but again there are large differences between Member States. The highest percentage of women among police officers was in Latvia (41.1%), followed by Lithuania (39.9%), Estonia (35.4%), the Netherlands (33.7%) and Sweden (32.8%), while the lowest were in Portugal (8.4%), Italy (8.7%) and Bulgaria (11.6%). In 22 countries out of 26 that provided data, the percentage of women among police officers in the period 2018–2020 increased compared with the average of the period 2017–2019 (Eurostat, 2022d) (Figure 7).

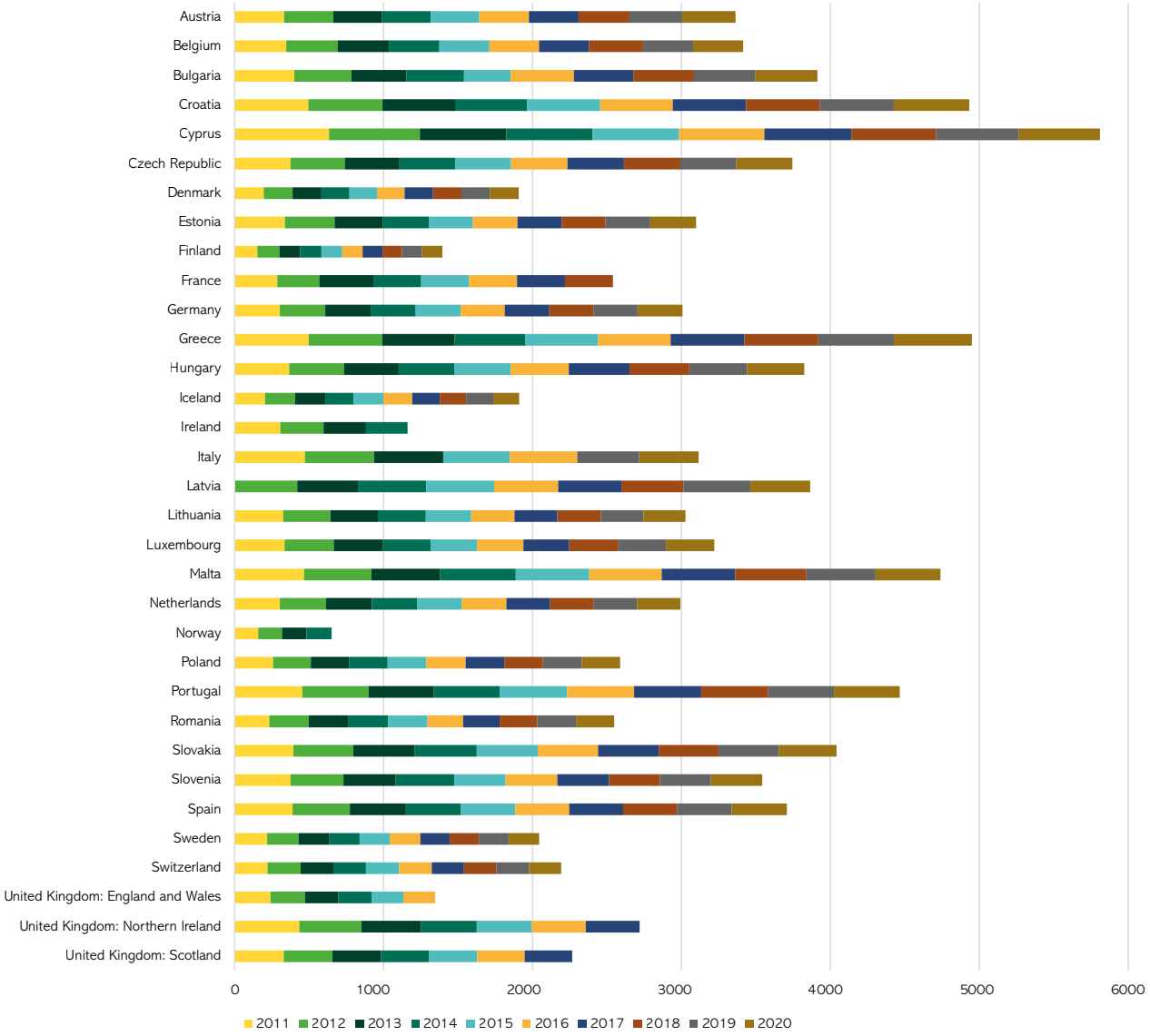
Figure 7: Professional judges per 100 000 inhabitants (2011–2020)



Source: Eurostat 2022

Judiciary. The number of judges in the EU has been relatively stable since 2010 and was 78 000 in 2020. In the EU, from 2018 to 2020 there were 17.6 professional judges per 100 000 inhabitants (one per 5690 inhabitants) on average. The highest number of professional judges per 100 000 inhabitants was in Slovenia (42.7), followed by Croatia (42.0), Greece (40.5), Luxembourg (35.9) and Bulgaria (31.5). There were fewer than 15 professional judges per 100 000 inhabitants in eleven EU Member States (the Netherlands, Cyprus, Belgium, Denmark, France, Italy, Malta, Sweden, the Czech Republic, Spain and Austria). In most EU Member States, more than 50% of professional judges were women, with the exception of Germany (46.6%). Four Member States (Estonia, Ireland, Greece and the Czech Republic) did not provide the breakdown by sex. The percentage of women in the same country may differ between type of judge, function and type of court (Eurostat, 2022d) (Figure 8).

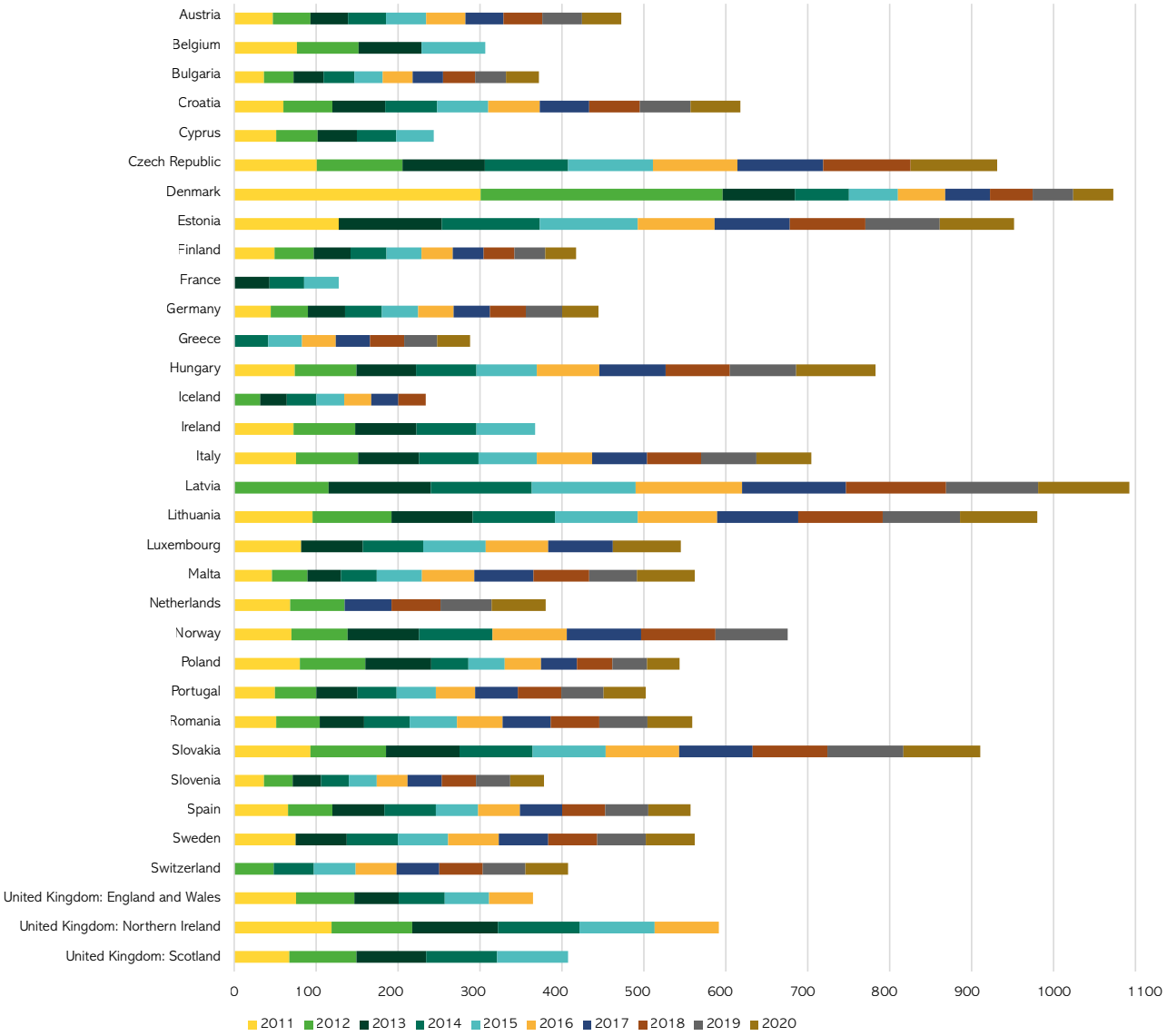
Figure 8: Police officers per 100 000 inhabitants (2011–2020)



Source: Eurostat 2022

Prison officers. Mainly following the falling number of prisoners, the prison personnel in adult prisons decreased between 2013 and 2016 and has remained stable since then. Overall, there were 55.8 prison officials per 100 000 inhabitants (1 per 1792 inhabitants) in the EU as an average in the period between 2018 and 2020. The highest number of prison officials per 100 000 inhabitants was in Latvia (115.4), followed by the Czech Republic (106.3), Lithuania (97.3), Slovakia (92.5) and Estonia (91.3). There were fewer than 50 prison officials per 100 000 inhabitants in seven Member States (Austria, Germany, Poland, Slovenia, Greece, Bulgaria and Finland). In the same period, the highest percentages of women among prison personnel were in Lithuania (45.6%), Sweden (41.5%) and Denmark (41.2%), while the lowest were recorded in Greece (14.2%), Bulgaria (14.8%) and Italy (15.5%). Five Member States (Belgium, Estonia, Ireland, France and Cyprus) did not provide data by sex for the period 2018–2020 (Eurostat 2022d) (Figure 9).

Figure 9: Personnel in adult prisons per 100 000 inhabitants (2011–2020)



Source: Eurostat 2022

4.6. THE OUTPUTS: ARRESTS, PROSECUTIONS, CONVICTIONS AND PRISONS

What are the outputs of these investments in public safety? Outputs are the immediate results of social safety activities relying on the resources invested. Some of the most relevant activities are those involved in the traditional criminal justice process, from the identification and arrest of a suspected person to their prosecution and conviction. Also relevant are data concerning the prison system and its population. We will not examine crime prevention outputs here as there are no useful secondary data immediately available, as crime prevention programmes differ considerably from country to country and their outputs are more difficult to measure and quantify.

We will rely here mostly on the UN-CTS datasets (UNODC, 2022a), which include data on the criminal justice systems of all the countries examined in this study, largely updated to 2020. We will consider data from 2010 to 2020. We will also rely on 2021 data from the Council of Europe's project SPACE II (Council of Europe Annual Penal Statistics on Persons under the Supervision of Probation Agencies) on probation population in prisons of European states (Aebi & Hashimoto, 2022) and on 2020 data from the Council of Europe's European Commission for the Efficiency of Justice (CEPEJ) on disposition times and clearance rates of criminal courts in European states.

Although the UN-CTS database provides some valuable data, there are considerable gaps as data for some of the countries considered here are missing or incomplete; data from some countries is missing for some items or for some years. Notably, data from the UK is particularly fragmentary. Numbers of arrests, prosecutions and convictions in England and Wales are available only until 2016 and for Scotland only until 2013, while those for Northern Ireland are also missing for a number of years. Moreover, often crime rates per population are not available for the UK, making it more difficult to compare the situation in the UK with that of other countries. Data for Ireland and Greece are also largely missing. Prosecution numbers for Germany are missing from 2017 to 2020' these are just some examples. The list of incomplete or missing data is too long to be fully detailed here. As we have explained in the methodology section, we will include below specific warnings on incomplete data and how these can affect data analysis and refrain from any interpretation when insufficient data would make it unreliable. The reader is advised to use particular caution when examining such data and refer to the methodology section for further advice.

Other problems derive from the ways data are collected and classified by different countries, which often relate to differences in their criminal justice systems. For instance, the database includes both number of people prosecuted and people brought to court, but it is evident that for some countries these categories mean the same thing, as the data is identical for both indicators. For other countries, however, the data for each category is different. Another example is the relatively low numbers and rates for prosecution in the US, compared to those of other countries and the overall population of the US. This could be explained by the fact that the US is a federal legal system, whereby most prosecutions are conducted at a state level by local prosecutors. Combining data at federal level with data at state level is not feasible. First, data on individual US states is not available in the datasets considered by this study. Second, each state might collect data and interpret the relevant indicators in very different ways.
Finally, different US states have different laws and institutions, which would make collating and comparing data very difficult. Such operation is therefore beyond the reach of this paper and would require a separate, complex study.

4.6.1. Key findings

The number of persons suspected, arrested or cautioned (PSAC) across all countries between 2010 and 2020 is significantly higher than the number of persons prosecuted, brought to court and convicted. Moreover, the number of PSAC has been declining only slightly in these years, compared to the steeper decline in the number and rates of persons prosecuted, brought to court or convicted. However, there are notable differences in figures for arrests, prosecutions and convictions between different states. Austria, Belgium, Canada, Finland, Germany, Luxembourg, New Zealand and the US have been identifying as suspects, arresting or cautioning an average (mean) of more than 2000 persons per 100 000 inhabitants each year from 2010 to 2020. In most other states, the average (mean) rates of persons suspected, arrested or cautioned per 100 000 inhabitants every year in the same period vary between 1000 and 1800. In most countries, the average (mean) annual prosecution–arrest ratio (percentage of prosecutions per 100 000 inhabitants per PSAC per 100 000 inhabitants) ranges from 50% to 100%, with peaks of 90.2% in the Czech Republic and 94.8% in Slovakia. In some countries, this ratio varies from 40% to 50%, with a minimum of 40.8% in Finland. Only in a few countries are average prosecution rates higher than PSAC rates – Austria (110.6%), Belgium (246), Croatia (266), Cyprus (1702), Denmark (527.8), Italy (176.8) and Poland (102.5) (Figures 10–11 and Tables 2–4). As we shall see below, this apparent anomaly might be the result of the ways in which data on arrests and prosecutions are collected (see next section for a full explanation). Average (mean) annual conviction–prosecution ratios (percentage of convictions for every 100 000 inhabitants per prosecutions for every 100 000 inhabitants) are often above 50%. In many countries, this ratio goes between 80% and 100%. Finland has the highest ratio of 97.6%, followed by Norway (93.5%), Denmark (92.1%) and the US (90.3%). Only in a minority of countries are conviction rates less than 50% of prosecution rates. These countries include the Netherlands (44.2%), Romania (42.3%), Croatia (27.7%), Belgium (26.4%), Italy (14.5%) and Austria (11%) (Figures 12–13 and Table 5).

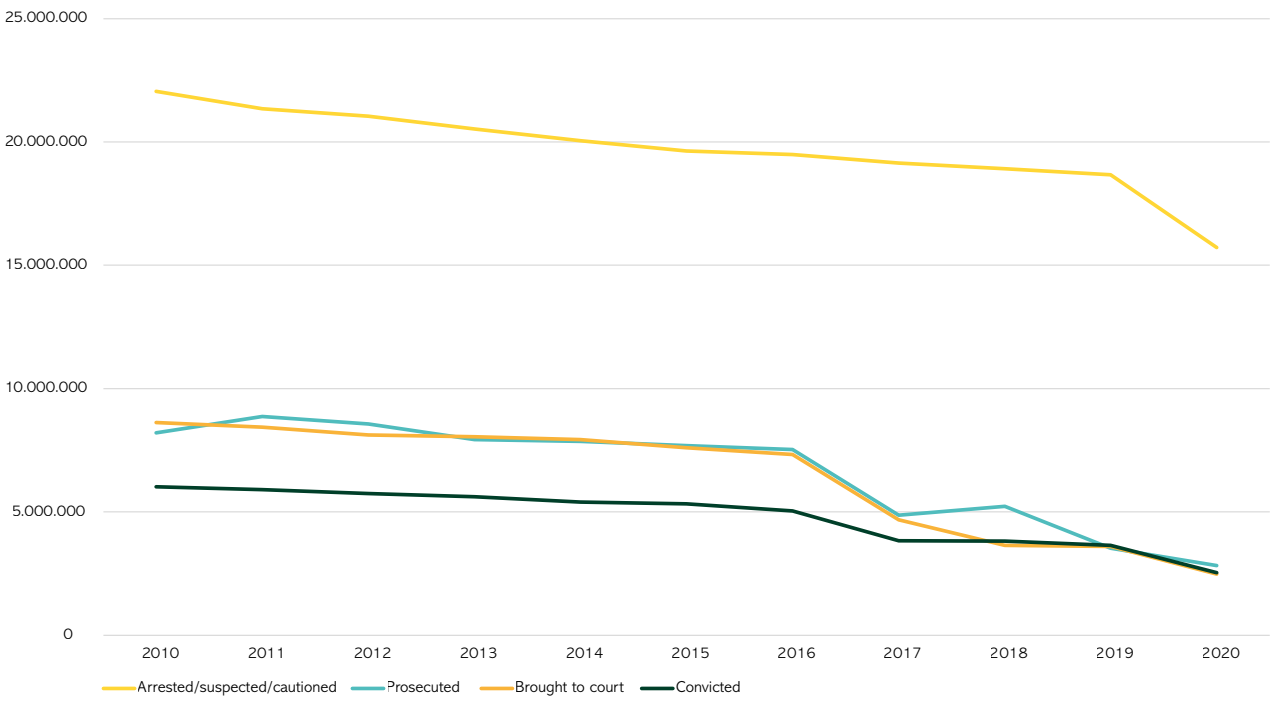
There has been a decline in the total number of persons held in prison in the 35 countries considered here from 3 007 297 inmates in 2010 to 2 286 131 in 2020. The country with the largest prison and the highest average rates of inmates per 100 000 inhabitants between 2010 and 2019 is the US (669), followed by Lithuania (263),

Latvia (233), Estonia (220) and Poland (201) (Figures 14–19). The countries with the lowest average prisoner rates are the Netherlands (71), Slovenia (66), Denmark (65), Sweden (63) and. Between 2015 and 2019, in most countries the population was beyond 90% of the capacity allowed by their prison facilities. In twelve countries the population went above the capacity of the facilities, determining a situation of overcrowding: Cyprus (134.1% of prisoners compared to the official capacity), Italy (121.4%), France, (115.8%), Hungary (112.1%), Greece (109.6%), Romania (105.4%), Czech Republic (104.7%), Slovenia (104.3%), Finland (102.3%), Austria (102.1%) and Portugal (100.1%) (Table 6, Figure 24). As of January 2021, the country with the highest probation prison population was Belgium (555.80 probationers per 100 inmates), followed by Netherlands (389.10), Poland (359.20), Romania (309.80) and Lithuania (286.10). The lowest rates of probationers per inmates are recorded in Bulgaria (56.40), Switzerland (59.60), Norway (88.60), Croatia (100.50) and the Czech Republic (120.90) (Figures 24–26).

4.6.2. Arrest, prosecution, and conviction

When looking at the overall figures of persons suspected or arrested, or cautioned across all countries, two main findings emerge rather clearly. First, the number of persons suspected, arrested, or cautioned (PSAC) is often significantly higher than the number of persons prosecuted, brought to court and convicted. Moreover, the difference between the number of persons suspected, arrested or cautioned and the number of convictions is higher than the difference between prosecutions and convictions. In 2010, 22 054 071 persons were suspected, arrested or cautioned across the countries considered by this study that submitted useful data. In the same year, only 8 199 696 (37.2% of PSAC) were prosecuted, and 6 021 776 were convicted (27.3%) (Figure 10). On the one hand, these figures reflect the breadth and genericity of the category of 'persons prosecuted, arrested or cautioned', which lends itself to include innocent persons, cases that lack evidence, or other legal requirements for prosecution or conviction. On the other hand, they reflect the nature of the criminal justice process, whereby cases individuated as suspected by police authorities are later filtered by prosecutors and courts.

Figure 10: Total number of persons suspected, arrested, prosecuted, brought to court and convicted from 2010 to 2020

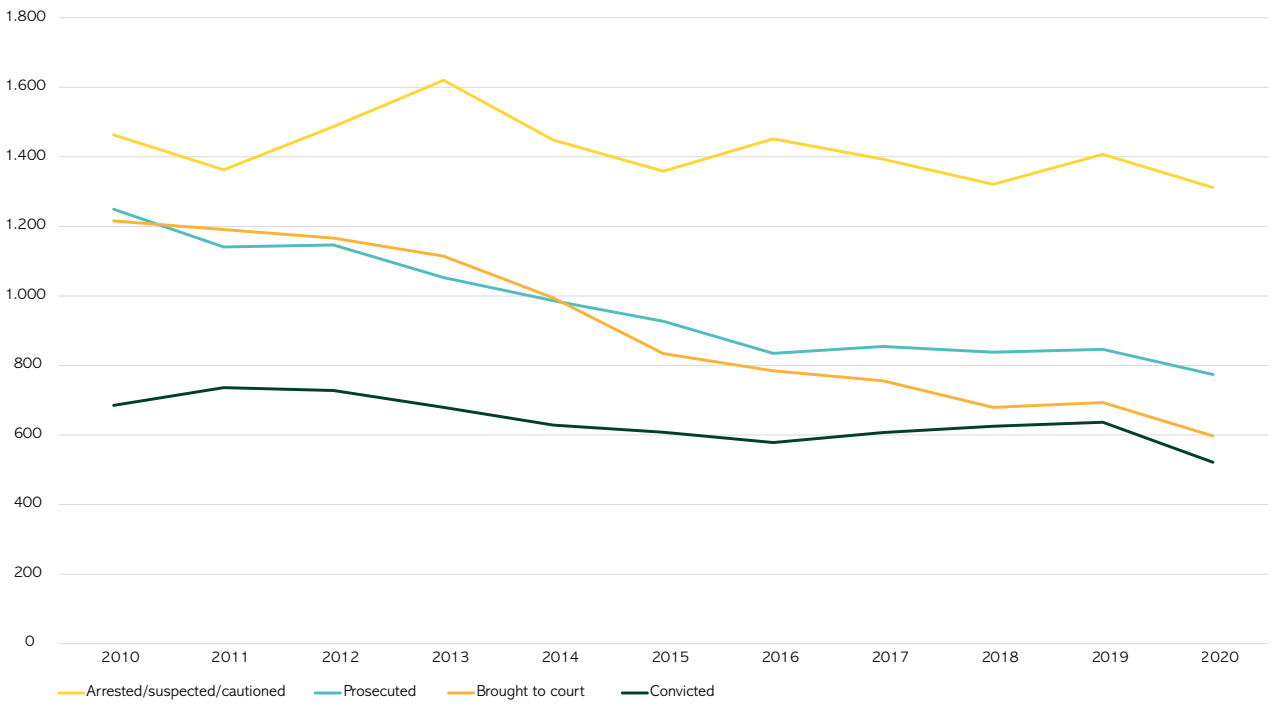


Source: UN-CTS 2022

The second finding is that the number and rates of persons suspected, arrested or cautioned (PSAC) has been declining only slightly, compared to the steeper decline in the number and rates of persons prosecuted, brought to court or convicted. The total number of PSAC in all the 35 countries examined decreased by 15.4% from 2010 to 2019 (from 22 054 071 to 18 665 155), with a further drop to 15 717 522 in 2020, possibly caused by the

coronavirus pandemic. A similar trend is observed in the median rate of PSAC per 100 000 in each country, which declined by 3.8% from the same period (from 1463 in 2010 to 1407 in 2019), with a further drop to 10.3% in 2020 (1312). However, this fall was not constant as in some years these figures increased compared to 2010. Notably, in 2013 the total number of PSAC in all the countries considered spiked to 9 227 914 and the rate of PSAC per 100 000 inhabitants reached 1620. Prosecution and conviction numbers have been falling more consistently and more steeply (Figure 10). From 2010 to 2019, the overall number of prosecutions in the countries considered has decreased by 57%, while convictions have decreased by 39.5%, with further drops in 2010 during the pandemic. These figures are affected by the unavailability of data for England and Wales from 2017 onwards and data on prosecutions from Germany in the same period. The median rates of prosecutions and convictions per 100 000 inhabitants across all the countries that provided data show a decline in prosecution rates of 32.3% from 2010 to 2019 and a decline in conviction rates of 7.1% (Figure 11).

Figure 11: Average (median) of persons suspected, arrested, prosecuted and convicted per 100 000 inhabitants by country from 2010 to 2020



Source: UN-CTS 2022

These two main trends are common across all countries. However, figures for individual states reveal significant differences. The three tables below show rates of PSAC, prosecutions and convictions per 100 000 inhabitants in each country for each year between 2010 and 2020 (Tables 2–4). A general analysis will follow.

Table 2: Persons arrested, suspected or cautioned per 100 000 inhabitants by country 2010–2020

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Australia	1.765,98	1.700,00	1.643,60	1.710,02	1.737,11	1.742,61	1.739,57	1.683,55	1.633,72	1.565,82	1.469,20
Austria	2.821,11	3.041,23	3.037,04	3.040,49	2.969,34	2.887,31	3.088,49	3.068,40	3.243,75	3.399,42	3.068,31
Belgium	2.520,08	2.584,78	2.477,55	2.437,85	2.312,02	1.510,60	1.668,25	1.708,29	1.729,93	1.731,26	2.637,64
Bulgaria	797,39	694,94	628,18	611,67	569,96	567,03	741,81	711,33	687,06	660,26	638,33
Canada	1.922,52	1.823,85	1.800,05	3.009,92	2.867,63	2.795,01	2.783,22	2.791,18	2.760,00	2.677,99	2.277,90
Croatia	722,06	717,09	639,06	522,61	470,42	467,37	444,99	427,29	418,61	452,15	461,99
Cyprus	870,47	555,01	562,53	520,69	486,42	449,45	382,33	393,49	365,52	N/A	N/A
Czech Republic	1.067,50	1.088,11	1.068,17	1.110,81	1.080,08	958,34	876,68	815,59	793,39	802,02	700,43
Denmark	N/A	N/A	N/A	N/A	N/A	618,07	609,77	586,29	591,82	625,10	616,74
Estonia	N/A	1.270,47	1.487,08	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Finland	5.629,24	5.617,07	5.227,41	7.811,77	7.304,95	7.269,98	7.311,26	7.520,65	8.233,93	7.571,60	5.312,49
France	1.823,03	1.854,64	1.812,59	1.731,04	1.732,08	1.791,21	1.745,91	1.763,40	1.813,21	1.799,12	1.668,76
Germany	2.663,47	2.613,11	2.586,20	2.579,83	2.639,04	2.896,58	2.872,24	2.580,35	2.491,43	2.440,83	2.373,58
Greece	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hungary	1.650,59	1.583,88	1.495,88	1.475,57	1.219,24	N/A	996,12	939,66	540,56	1.402,62	1.434,93
Iceland	N/A	1.204,13	1.139,60	N/A	1.144,88	1.193,08	1.611,03	1.751,52	1.878,16	1.893,89	1.672,67
Ireland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Italy	1.462,85	1.511,80	1.559,62	1.625,62	1.623,67	1.587,94	1.473,20	1.448,13	1.433,85	1.411,49	1.325,42
Latvia	1.208,86	1.171,61	1.188,44	1.082,32	1.086,52	1.163,10	759,62	734,20	694,02	698,57	673,52
Lithuania	695,81	700,52	868,35	1.021,02	1.031,53	914,94	730,01	974,83	859,43	849,53	914,05
Luxembourg	4.051,86	4.610,91	4.888,72	5.035,26	5.310,98	5.017,46	4.795,21	4.039,61	4.839,93	4.704,82	4.433,88
Malta	1.086,76	1.214,93	1.225,91	1.253,10	1.229,46	1.254,04	1.234,58	1.249,50	1.318,37	1.192,39	1.209,63
Netherlands	2.316,32	2.250,45	2.168,14	2.033,63	1.884,71	1.183,10	1.100,68	1.013,73	972,83	980,98	861,05
New Zealand	5.113,22	4.760,27	4.344,43	3.803,04	N/A	2.452,52	2.416,37	2.182,38	2.045,08	1.947,20	1.913,39
Norway	734,53	748,70	720,58	1.620,49	1.579,03	1.545,05	1.523,55	1.393,68	1.320,67	1.289,21	1.289,11
Poland	1.346,61	1.363,24	1.309,38	1.127,16	954,60	839,77	822,40	814,20	888,38	893,65	820,90
Portugal	1.971,81	1.953,68	1.955,35	1.856,05	1.729,71	1.774,17	1.682,20	1.756,09	1.704,55	1.494,09	1.298,88
Romania	1.187,17	1.046,75	1.178,76	1.190,28	1.043,24	926,09	978,92	964,28	1.007,18	1.032,53	889,12
Slovakia	963,12	980,29	988,14	993,28	940,34	854,16	797,98	787,66	759,69	739,21	665,32
Slovenia	985,35	934,88	899,40	890,54	883,68	774,48	754,55	742,39	749,77	775,60	744,47
Spain	688,00	802,74	785,35	798,64	748,05	809,25	782,84	799,10	833,42	868,99	885,06
Sweden	1.346,63	1.289,33	1.229,84	1.830,54	1.797,96	1.791,98	1.738,22	1.786,92	1.812,84	1.885,04	1.979,65
Switzerland	1.560,66	1.513,02	1.562,30	1.573,88	1.448,62	1.464,05	1.451,77	1.418,45	1.435,12	1.422,35	1.346,28
UK - England and Wales	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
UK - Northern Ireland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
UK - Scotland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
United States	4.246,48	3.982,52	3.883,84	3.572,09	3.516,40	3.364,85	3.300,84	3.246,84	3.152,27	3.064,81	2.305,86

Table 3: Persons prosecuted per 100 000 inhabitants by country 2010–2020

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Australia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Austria	3.315,69	3.359,01	3.369,79	3.353,70	3.247,96	3.491,75	3.544,98	3.553,11	3.381,52	3.452,20	3.165,26
Belgium	5.836,35	5.789,92	5.334,25	5.216,92	5.189,77	4.935,34	4.770,99	4.710,36	4.761,51	5.052,63	5.771,27
Bulgaria	743,57	773,35	674,72	648,04	594,52	539,76	537,88	522,17	472,49	457,04	444,14
Canada	1.268,42	1.196,38	1.152,70	1.097,37	995,31	980,90	985,42	942,31	838,39	826,27	N/A
Croatia	N/A	1.628,76	1.537,94	1.367,37	1.247,51	1.403,94	1.466,66	1.428,60	1.329,66	1.304,58	1.175,86
Cyprus	10.592,50	12.334,59	11.376,28	9.122,05	10.921,06	8.272,19	7.083,56	6.015,17	5.068,86	5.939,56	N/A
Czech Republic	959,83	972,57	975,11	998,23	976,37	862,83	799,01	725,68	719,34	723,36	633,77
Denmark	7.408,30	7.716,49	7.433,41	1.456,95	1.378,20	1.691,76	1.568,26	1.511,72	1.727,19	1.719,75	1.684,33
Estonia	826,51	844,54	791,06	723,39	655,56	611,79	647,47	548,81	470,63	456,61	405,57
Finland	3.914,36	3.841,61	3.606,28	3.432,53	3.236,31	3.380,55	2.897,91	1.554,59	1.563,24	1.559,68	1.509,41
France	N/A	1.089,85	1.063,02	1.048,09	1.034,48	1.026,89	1.045,98	1.040,75	1.085,58	1.083,68	934,95
Germany	1.259,49	1.241,05	1.185,86	1.152,81	1.133,68	1.113,47	1.095,72	N/A	N/A	N/A	N/A
Greece	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hungary	1.008,14	889,60	778,21	803,67	814,23	770,16	757,87	701,76	390,29	1.120,15	1.156,03
Iceland	N/A	605,00	801,80	867,07	757,17	725,24	702,27	683,62	718,42	821,15	774,51
Ireland	1.847,45	1.674,56	1.414,02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Italy	2.632,16	2.589,49	2.617,30	2.622,93	2.729,27	2.658,53	2.549,51	2.347,64	3.070,56	N/A	N/A
Latvia	516,18	615,68	655,53	606,23	453,39	503,59	537,57	501,51	486,14	493,41	489,50
Lithuania	585,02	597,91	665,99	762,56	765,34	670,60	609,51	875,06	754,23	689,19	662,05
Luxembourg	N/A	N/A	N/A	N/A	N/A	N/A	2.802,17	2.394,27	1.728,28	1.777,08	1.512,52
Malta	N/A	377,53	372,44	681,23	664,36	622,06	394,41	527,70	N/A	N/A	N/A
Netherlands	1.249,30	1.361,87	1.327,14	1.224,97	1.233,02	1.109,60	1.097,60	1.003,38	975,14	1.078,64	N/A
New Zealand	2.793,51	2.468,91	2.257,17	2.032,21	1.827,80	1.535,52	1.528,03	1.483,25	1.378,37	1.296,39	1.208,67
Norway	562,21	579,10	550,21	1.313,05	1.263,59	1.236,08	1.228,35	1.090,96	1.038,11	988,74	921,34
Poland	1.434,43	1.465,12	1.395,37	1.325,87	1.143,12	1.035,44	797,08	710,12	709,36	756,50	689,00
Portugal	1.172,00	1.141,07	1.146,83	1.056,83	772,16	872,63	834,91	759,66	679,08	655,47	503,40
Romania	278,18	299,85	295,34	326,39	251,26	295,65	736,76	673,21	683,65	688,57	624,98
Slovakia	991,01	961,56	999,10	994,13	914,46	805,28	719,20	728,32	655,56	624,92	583,66
Slovenia	718,43	676,02	633,63	621,15	594,88	583,86	549,03	532,89	426,21	427,49	426,42
Spain	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sweden	1.524,87	1.474,84	1.408,82	913,58	871,70	859,85	816,64	834,58	853,87	866,13	898,92
Switzerland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
UK - England and Wales	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
UK - Northern Ireland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
UK - Scotland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
United States	32,34	32,93	29,87	28,76	25,42	24,88	23,88	23,63	26,58	28,25	22,28

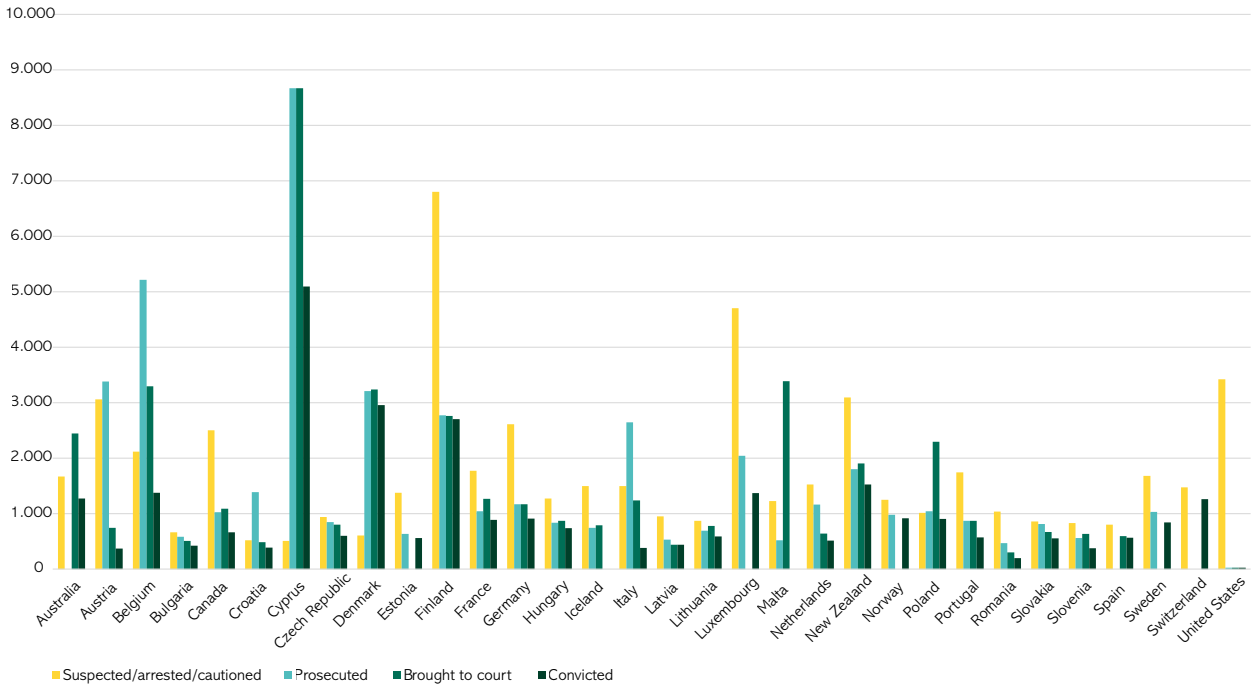
Table 4: Persons convicted per 100 000 inhabitants by country 2010–2020

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Australia	1.484,51	1.299,50	1.242,58	1.251,97	1.301,06	1.304,39	1.299,80	1.317,21	1.254,46	1.216,27	1.041,00
Austria	456,53	431,31	418,02	402,33	382,81	370,08	348,11	348,60	339,17	330,89	284,09
Belgium	1.288,91	1.297,29	1.473,33	1.271,80	1.047,43	1.170,47	383,80	2.086,61	1.999,61	1.753,46	N/A
Bulgaria	526,19	555,83	518,08	467,94	439,56	385,94	395,71	363,25	339,96	334,12	315,02
Canada	853,81	808,67	788,11	757,93	628,46	621,90	613,96	575,70	507,56	496,64	N/A
Croatia	585,81	561,15	492,89	401,30	363,11	306,46	327,35	297,02	292,75	321,89	289,92
Cyprus	6.803,15	7.717,83	6.303,27	5.316,97	5.962,70	4.659,40	3.873,22	3.685,48	3.321,56	3.335,21	N/A
Czech Republic	670,53	663,98	675,45	736,56	687,61	618,49	578,43	523,49	510,50	520,09	453,43
Denmark	1.402,63	1.657,22	1.786,45	3.657,48	3.696,29	3.430,87	3.322,33	3.104,09	3.178,02	3.469,24	3.803,63
Estonia	685,46	752,58	728,41	642,65	582,71	560,70	578,73	508,87	411,44	388,11	346,47
Finland	3.840,45	3.764,76	3.527,67	3.358,70	3.168,71	3.314,90	2.838,16	1.495,58	1.499,70	1.499,52	1.456,35
France	1.085,39	1.049,34	1.068,56	1.044,83	1.000,60	989,07	724,60	720,18	716,49	732,69	616,48
Germany	1.006,18	999,08	955,76	931,25	919,31	904,16	897,72	866,27	856,95	872,72	834,61
Greece	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hungary	899,97	860,07	763,26	715,14	793,64	733,67	735,02	706,44	686,90	661,28	546,05
Iceland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ireland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Italy	428,80	446,46	434,08	410,49	375,74	364,76	326,68	320,93	356,26	N/A	N/A
Latvia	454,30	439,15	432,19	421,82	455,81	478,46	453,08	474,71	445,28	423,97	369,31
Lithuania	447,91	444,22	546,07	649,07	685,11	589,15	536,69	634,63	706,07	636,46	589,94
Luxembourg	N/A	N/A	N/A	N/A	N/A	N/A	1.455,81	1.612,73	1.357,90	1.231,38	1.198,77
Malta	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Netherlands	588,33	557,78	523,34	547,33	526,14	539,87	481,70	482,16	460,42	448,85	N/A
New Zealand	2.176,84	1.965,16	1.803,69	1.644,79	1.495,27	1.381,81	1.387,58	1.370,26	1.279,34	1.192,14	1.077,16
Norway	288,67	265,71	240,16	1.319,98	1.270,33	1.253,81	1.187,27	1.127,65	1.077,40	1.027,19	1.009,73
Poland	1.188,76	1.165,60	1.122,47	975,79	818,41	715,86	791,98	661,59	752,93	863,65	N/A
Portugal	734,01	736,19	752,51	679,56	506,77	573,50	551,44	505,11	454,25	440,57	345,04
Romania	204,63	233,95	243,17	234,11	203,79	212,17	165,28	180,10	165,10	173,94	163,65
Slovakia	576,93	556,67	647,79	665,45	619,11	546,23	499,96	483,31	538,88	521,00	465,09
Slovenia	412,22	388,29	428,85	569,91	470,57	397,89	337,77	314,05	304,36	300,96	240,84
Spain	529,10	544,54	539,10	523,80	520,90	505,39	609,97	640,93	643,14	644,12	497,65
Sweden	1.471,07	1.440,11	1.363,69	669,48	625,89	607,72	576,04	579,23	607,37	624,81	683,18
Switzerland	1.310,91	1.213,81	1.295,69	1.320,76	1.325,75	1.311,58	1.293,49	1.243,60	1.244,90	1.217,05	1.092,88
UK - England and Wales	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
UK - Northern Ireland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
UK - Scotland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
United States	29,04	29,51	28,30	26,46	24,70	22,79	21,68	21,23	22,35	23,94	19,97

We can group states according to the average (mean) number of PSAC per 100 000 inhabitants each year from 2010 to 2020. A first group of states have been identifying as suspects, arresting, or cautioning an average (mean) of more than 2000 persons per 100 000 inhabitants each year from 2010 to 2020. This group includes Austria, Belgium, Canada, Finland, Germany, Luxembourg, New Zealand and the US. Among these states, the country with the highest number is Finland, with an average of 6801 persons, followed by the US (3422 persons), New Zealand (3098) and Austria (3060). Such high figures might depend on various factors related to the legal system of each country or the way in which that country collects data. Countries with low legal thresholds for arrests are bound to have more arrests than countries with higher thresholds. Some countries might adopt restrictive notions of a 'suspected person' or 'cautioning' causing figures to be lower, while others might adopt extensive versions of the same notions leading to higher figures. However, while in the US and New Zealand rates have been decreasing by 27.8% and 61.9% respectively from 2010 to 2019, in Finland they have increased from 5629 in 2010 to 7571 in 2019, with a peak of 8233 in 2018. A similar pattern can be observed in Canada, although with considerably lower figures. Between 2010 and 2012, no more than 1922 persons were suspected, arrested or cautioned in Canada each year. The number suddenly increased to 3009 in 2013 and slightly decreased in the following years reaching 2677 persons in 2019 and 2277 in 2020. Figures have been more consistent in other countries within this group. In Luxembourg, for instance, more than 4000 persons per 100 000 inhabitants have been consistently suspected of a crime, arrested or cautioned each year with a peak of 5310 in 2014. In Austria, the average number has been oscillating around 3000 persons between 2010 and 2020, with the lowest figure 2821 in 2010 and the highest being 3399 in 2019. In Germany, figures vary from a minimum of 2440 in 2019 (2373 in 2020) to a maximum of 2896 in 2015. In Belgium, figures show a split between the period from 2010 to 2014, when rates have oscillated between 2584 (in 2011) and 2312 (in 2014) and the period between 2015 and 2019, when rates have been significantly lower (1510 in 2015 and 1731 in 2019). Interestingly, the highest rate since 2010 was recorded in 2020, during the pandemic (2637).

In the majority of states, the average (mean) rates of persons suspected, arrested or cautioned per 100 000 inhabitants every year between 2010 and 2020 varied between 1000 and 1800. This group includes Australia, Estonia, France, Hungary, Iceland, Italy, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Sweden and Switzerland. Here again, there are no consistent patterns between different states. In various countries, including Australia, the Netherlands and Portugal, rates have been decreasing in varying degrees. The steepest decrease is that of the Netherlands, with rates steadily falling year by year from 2316 in 2010 to only 980 in 2019 (861 in 2020). The causes of such decline in the Netherlands are difficult to pinpoint. Data on the total number of persons suspected, arrested or cautioned in this country every year from 2010 to 2020 show a considerable and sudden fall between 2014 (318 375 PSAC) and 2015 (200 400 PSAC). Such a big fall is not mirrored in the total numbers of prosecutions and convictions in those years, suggesting that the decline in PSAC figures might depend either on changes in the legal regime of arrests and cautions or on the introduction of a new method of collecting the relative data. In a few of these countries, such as France, Italy and Switzerland, rates have been oscillating without a clear trend and without excessive departures from the average. Only in a few countries have the rates been increasing. This is the case, for instance, of Sweden (from 1346 in 2010 to 1979, 64 in 2020), Iceland (from 1205 in 2011 to 1672 in 2020). In other countries, patterns are less clear and regular (Figure 12).

Figure 12: Average (mean) persons suspected, arrested, prosecuted and convicted by country per 100 000 inhabitants from 2010 to 2020



Source: UN-CTS 2022

Considerable differences can also be found when comparing prosecution rates to PSAC rates, and conviction rates to prosecution rates (Table 5). In most countries, the average (mean) rates of prosecutions per 100 000 inhabitants every year are lower than the average (mean) rates of PSAC. However, exact ratios vary considerably from country to country. In most countries, there are fewer prosecutions than arrests. Average prosecutions rates are often between 50% and 100% of the average PSAC rates, with peaks of 90.2% in the Czech Republic and 94.8% in Slovakia. In some countries, the percentage of prosecutions ranges from 40% to 50%, with a minimum of 40.8% in Finland. The US stands out with an extremely low figure of 0.8% – an average of 27 prosecutions every 3,422 arrests, but this might depend on the way data is collected at federal and state levels. Only in a few countries are average prosecution rates higher than PSAC rates – Austria (110.6%), Belgium (246%), Croatia (266%), Cyprus (1702%), Denmark (527.8%), Italy (176.8%) and Poland (102.5%). A comparative look at the figures in Tables 2 and 3 will show that these figures are not the result of distortions related to the way the average is calculated, as rates of prosecution for individual years are higher than those of PSAC for the same year in each of these countries. How could there be more prosecutions than arrests in one year? Higher prosecution rates could depend on many factors such as a statutory system of mandatory prosecution (whereby prosecutors must prosecute every suspected criminal case they are aware of), a larger number of criminal offences for which arrest or caution is not required or allowed, but also differences or anomalies in the record and collection of data. In this respect, first of all we need to consider that often the persons suspected, arrested or cautioned in one year are not necessarily prosecuted in that year. As a result, the figures of prosecutions in one year might concern persons arrested in previous years. Moreover, different countries might adopt more or less restrictive interpretations of the notion of 'person suspected' or 'cautioned', with a consequent impact on the respective data. Some countries might count only arrests under the category of PSAC, while others might country every suspected person whether arrested or not. Some countries might count as an autonomous prosecution each criminal charge brought against the same person for offences occurred within the same episode for which there would be only one arrest, such as a series of theft followed by threats or violence against victims and the police. Some figures, however, such as the high volume of prosecutions in Cyprus, are such a departure from those in any other country they would warrant further investigation. In some cases, an analysis of the figures for each year suggests that the high average across the whole period considered (2010–2020) might depend on changes in the way data were collected or the definitions of certain indicators are interpreted. For instance, in Denmark annual prosecution rates per 100 000 inhabitants were consistently more than 7000 from 2010 to 2012 and they suddenly dropped to less than 2000 from 2013 onwards. Changes in legal frameworks and definitions can also affect such data.

As far as convictions are concerned, in most countries there are fewer convictions than prosecutions. Average (mean) conviction rates are often more than 50% of average prosecution rates. In many countries, they are between 80% and 100%. Finland has the highest ratio of 97.6%, followed by Norway (93.5%), Denmark (92.1%) and the US (90.3%). Only in a minority of countries are conviction rates less than 50% of prosecution rates. These countries include the Netherlands (44.2%), Romania (42.3%), Croatia (27.7%), Belgium (26.4%), Italy (14.5%) and Austria (11%). High conviction rates might denote efficiency but also weaker rule-of-law safeguards, which make prosecution easier. On the other hand, lower conviction rates might denote some possible problems – for instance, the courts might be unable to keep up with the volume of prosecutions, or prosecutors might be unable to properly investigate and collect evidence for all cases, or the law might somehow hinder convictions – but also higher rule-of-law safeguards, such as due process and individual rights and freedoms.

Table 5: Average (mean) prosecution–arrest ratios and conviction–prosecution ratios** per year and per country between 2010 and 2020*

Average (mean) annual prosecution-arrest ratios* and conviction-prosecution ratios per country between 2010 and 2020**

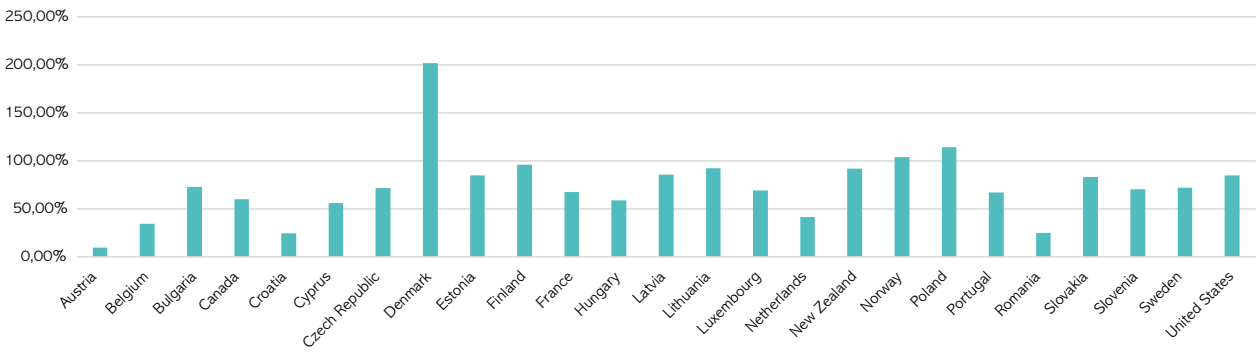
Country	Prosecution-arrest ratios	Conviction-prosecution ratios
Australia	N/A	N/A
Austria	110,6%	11,0%
Belgium	246,0%	26,4%
Bulgaria	87,7%	72,4%
Canada	41,1%	64,7%
Croatia	266,0%	27,7%
Cyprus	1702,0%	58,8%
Czech Republic	90,2%	71,0%
Denmark	527,8%	92,1%
Estonia	46,0%	88,6%
Finland	40,8%	97,6%
France	58,9%	84,8%
Germany	44,7%	78,1%
Greece	N/A	N/A
Hungary	65,6%	88,2%
Iceland	49,7%	N/A
Ireland	N/A	N/A
Italy	176,8%	14,5%
Latvia	56,0%	82,7%
Lithuania	79,9%	84,7%
Luxembourg	43,4%	67,1%
Malta	42,5%	N/A
Netherlands	76,5%	44,2%
New Zealand	58,1%	84,7%
Norway	78,3%	93,5%
Poland	102,5%	86,9%
Portugal	50,0%	65,4%
Romania	45,0%	42,3%
Slovakia	94,8%	68,2%
Slovenia	67,8%	67,3%
Spain	N/A	N/A
Sweden	61,2%	81,7%
Switzerland	N/A	N/A
United Kingdom	N/A	N/A
United States	0,8%	90,3%

* Percentage of persons prosecuted every 100,000 inhabitants per persons suspected/arrested/cautioned every 100,000 inhabitants
** Percentage of persons convicted every 100,000 inhabitants per persons prosecuted every 100,000 inhabitants

Source: UN-CTS 2022

However, averages are not always representative of the situation of certain countries in particular years. The 2019 conviction–prosecution ratios, for instance, are in line with the average for some countries but depart starkly from it for some others (Figure 13). Austria remains the country with the lowest ratio (9.59%) together with Croatia (24.67%). Romania recorded a much lower ratio than the average (25.26%) and Belgium a slightly higher one (34.7%). The 2019 data for countries with an average ratio close to 100% tend to reflect the average with minor variations, for instance, Finland (96.14%) or Norway (103.89%). Among the countries with the highest average ratio, Denmark reported a significant departure from the average, with a conviction–prosecution ratio of 201.73% in 2020. However, this high percentage appears to be related to the sudden decrease of prosecutions from more than 7000 between 2010 and 2012 to less than 2000 between 2013 and 2020, and a corresponding sudden increase of convictions from fewer than 2000 between 2010 and 2012 to more than 3000 between 2013 and 2020. These sudden changes might relate to some legal reform or changes in the way data were collected.

Figure 13: Conviction–prosecution ratios by country 2019

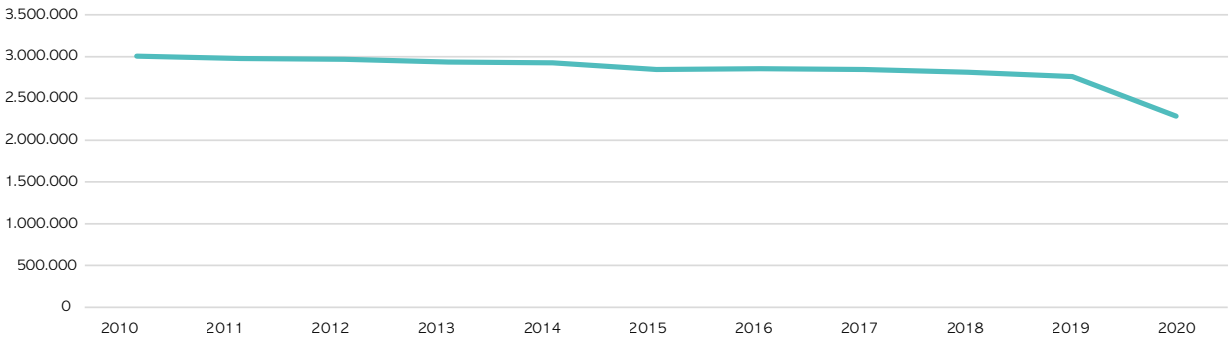


Source: UN-CTS 2022

4.6.3. Prisons and probation

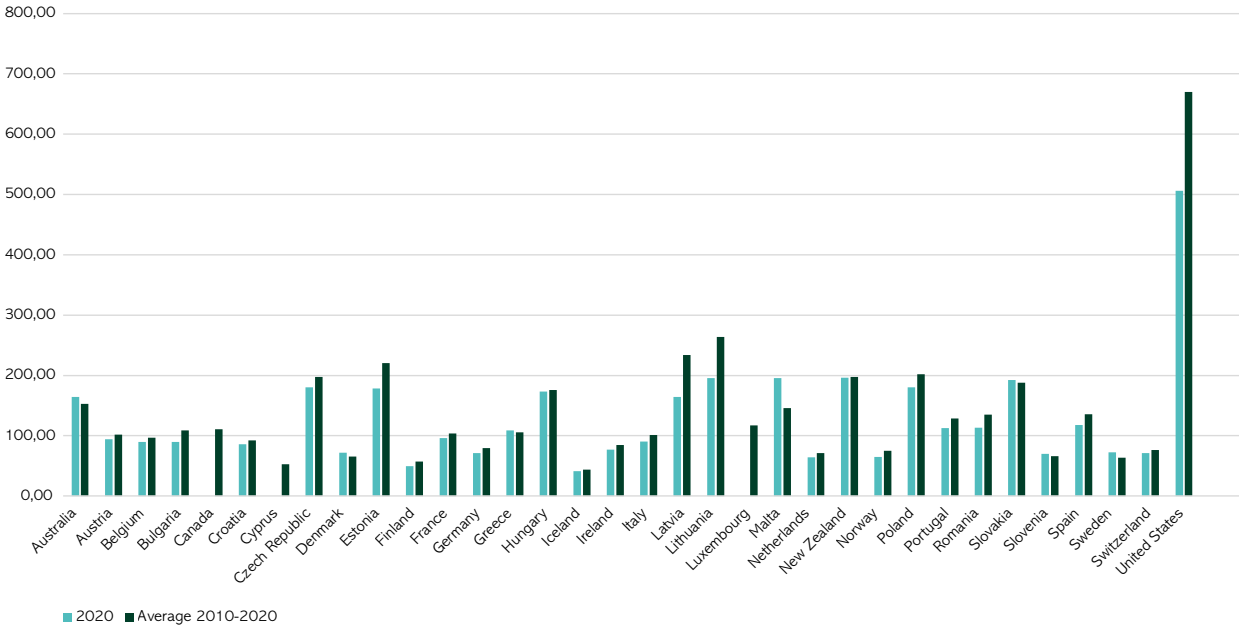
Prison population. By persons held in prisons or inmates, we mean here persons held in prisons, penal institutions or correctional institutions on a specified day excluding non-criminal prisoners held for administrative purposes (e.g. immigration-related detention), according to the definition used by UNODC (2022b). This includes both sentenced prisoners (either with a final decision or awaiting the outcome of an appeal) and unsentenced prisoners who are untried, pre-trial or awaiting a first instance decision on their case. The data show that there has been a decline in the total number of persons held in prison in the 35 countries considered in this study from 3 007 297 inmates in 2010 to 2 764 197 inmates in 2019. In 2020, the number sharply decreased to 2 286 131 (Figures 14–15).

Figure 14: Total prison population 2010–2020



Source: UN-CTS 2022

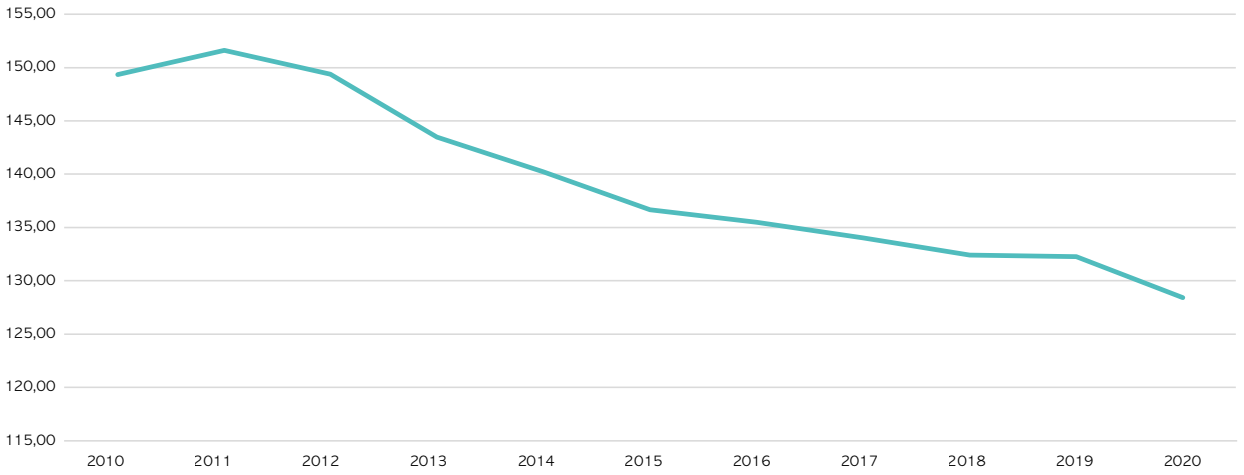
Figure 15: Persons held in prison per 100 000 inhabitants in 2020 and average (mean) from 2010 to 2020



Source: UN-CTS 2022

The average (mean) prisoner rates across all these countries have been declining even more steeply – from 149 inmates per 100 000 inhabitants to 132 in 2019 (128 in 2020) (Figure 16).

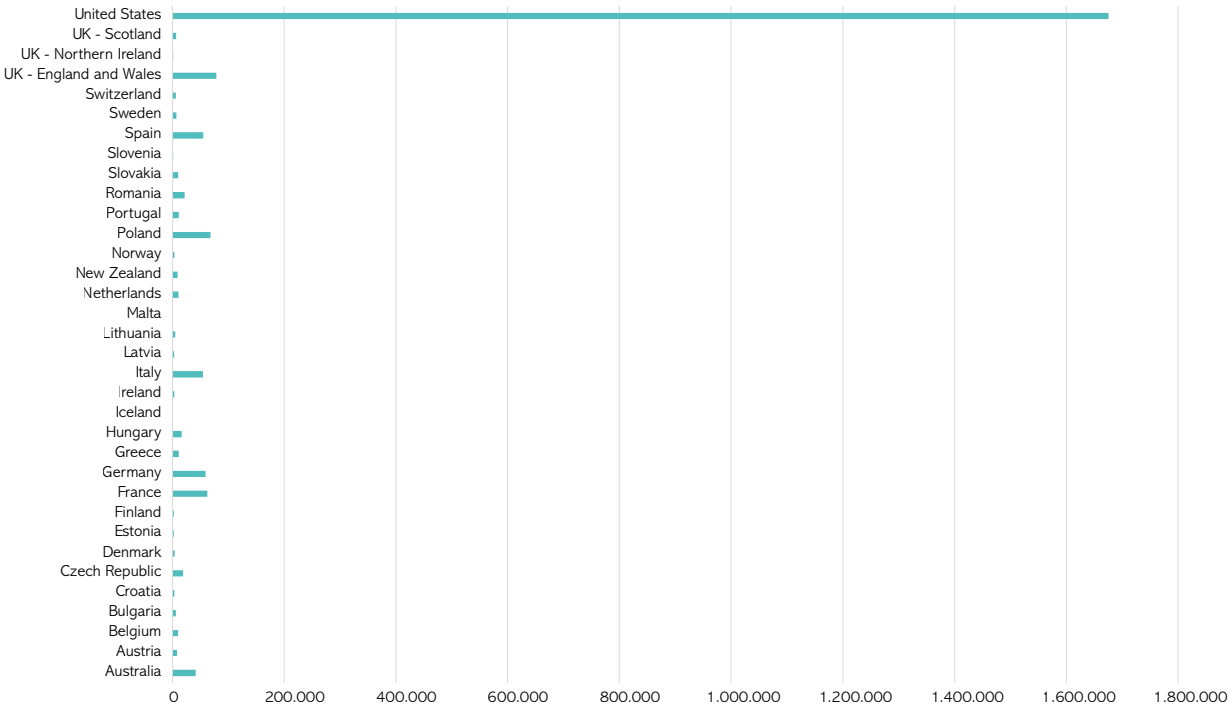
Figure 16: Average (mean) of persons held in prison per 100 000 inhabitants every year across all states 2010–2020



Source: UN-CTS 2022

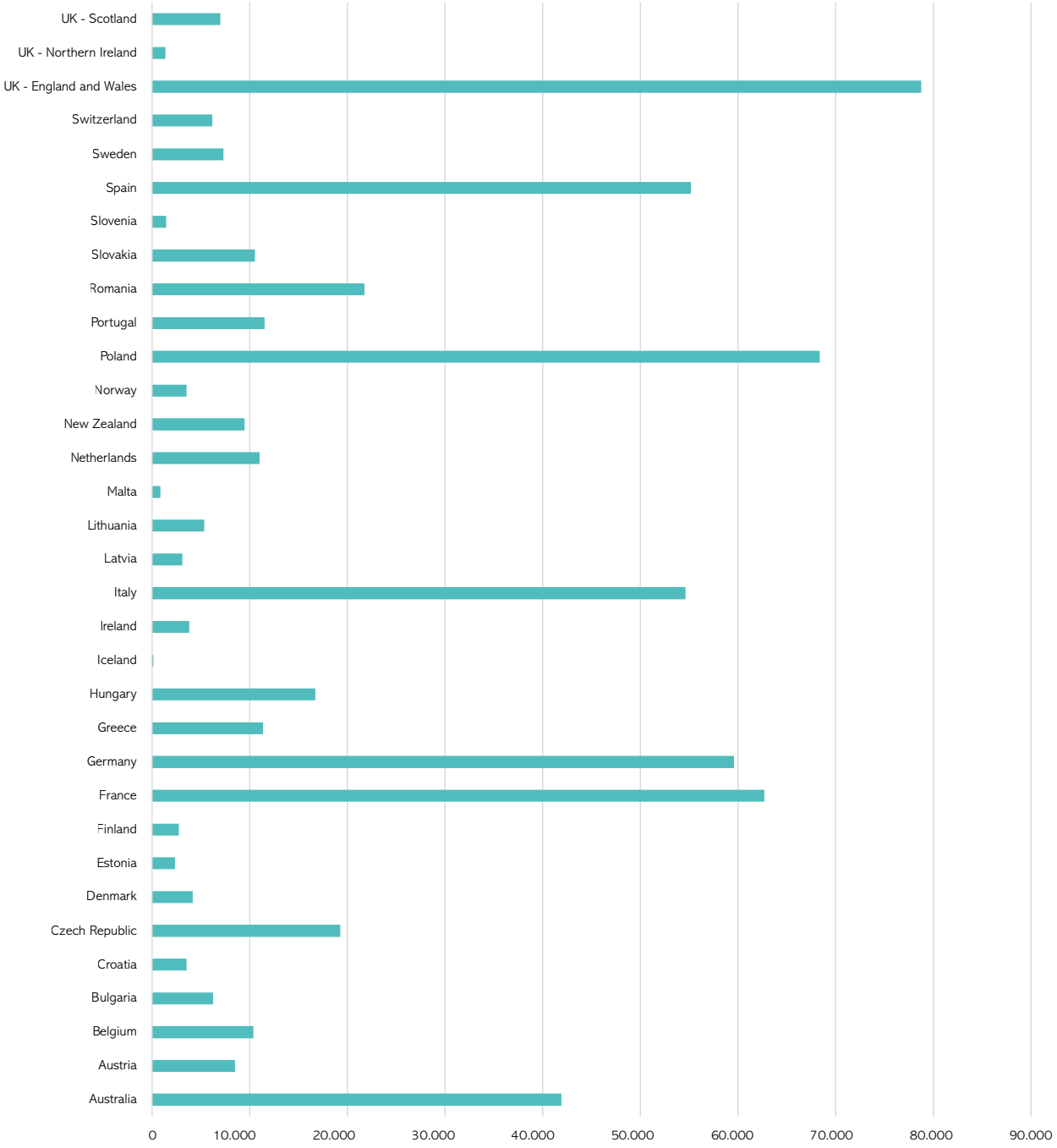
The most evident finding here is that majority of these inmates (73.3% in 2020) are held in the US (Figures 17 and 18).

Figure 17: Total prison population by country in 2020



Source: UN-CTS 2022

Figure 18: Total prison population by country (excluding the US) in 2020



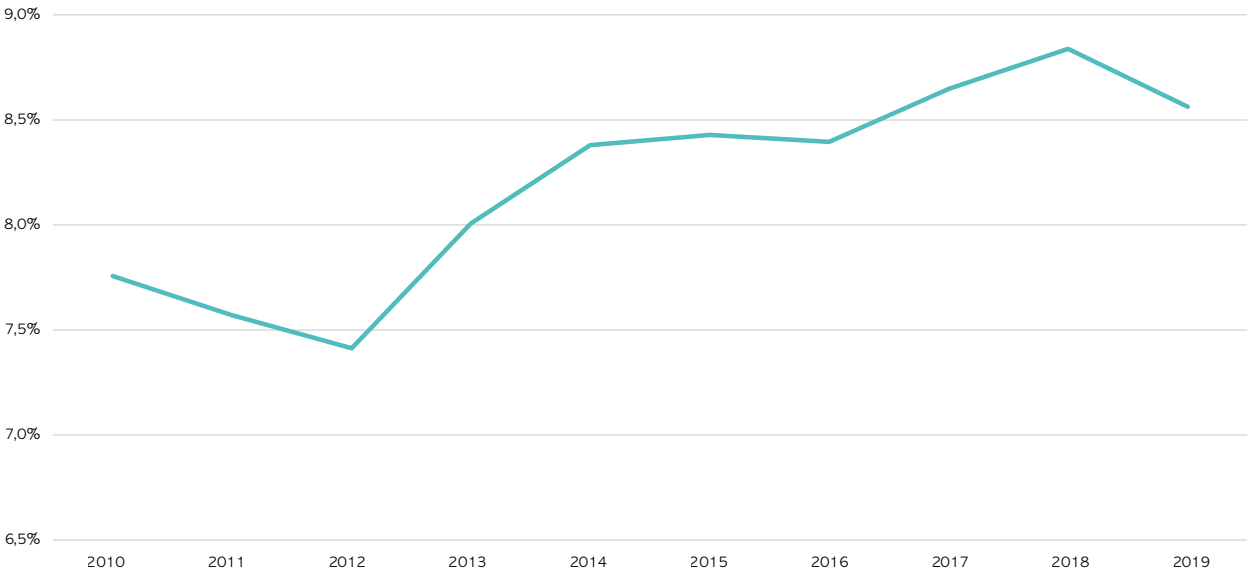
Source: UN-CTS 2022

This is not only because of the larger population of the US, but also because of the comparatively higher rates of inmates per 100 000 inhabitants in the US. In 2019, the average rate of persons held in prison across the 35 countries examined here (excluding the UK, for which data is unavailable) was 132 inmates per 100 000 inhabitants. In the same year, in the US such rate was 630 inmates per 100 000 inhabitants (Figure 12). From 2010 to 2020 the average US rate was 669. These figures amount to almost three times those recorded in Lithuania – the country with the average second highest rates from 2010 to 2020 (263 inmates per 100 000 on average). The countries with the highest average prisoner rates per 100 000 inhabitants following the US and Lithuania from 2010 to 2020 are Latvia (233), Estonia (220), Poland (201), New Zealand (197), the Czech Republic (197) and Slovakia (188). The countries with the lowest average prisoner rates are the Netherlands (71), Slovenia (66), Denmark (65), Sweden (63), Finland (57), Cyprus (52) and Iceland (43) (Figure 15).

Fluctuations in prisoner numbers might depend on several factors. According to Eurostat, a net increase in the number of prisoners is due to a number of new prison sentences higher than the number of releases, following a rise in serious crimes across Europe (Eurostat, 2022d). After an increase in serious crimes followed by more convictions with longer sentences, the increase in the number of prisoners may remain on a higher level for a while, even after the crime rate drops. In addition, large declines in the number of prisoners can be caused by decriminalisation, amnesties and pardons (Eurostat, 2022d).

The total share of women in prisons between 2010 and 2020 across the 35 countries examined has been oscillating between 7.4% (in 2012) and 8.8% (in 2018). Overall, this share has been increasing, although not consistently (Figure 19).

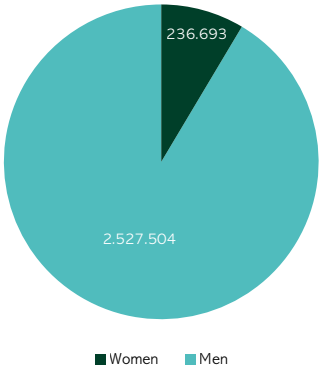
Figure 19: Percentage of women held in prison 2010–2020



Source: UN-CTS 2022

In 2019 (the latest year for which data is available), in these countries only 236 693 women were held in prison compared to an overall prison population of 2 764 197 inmates (Figure 20).

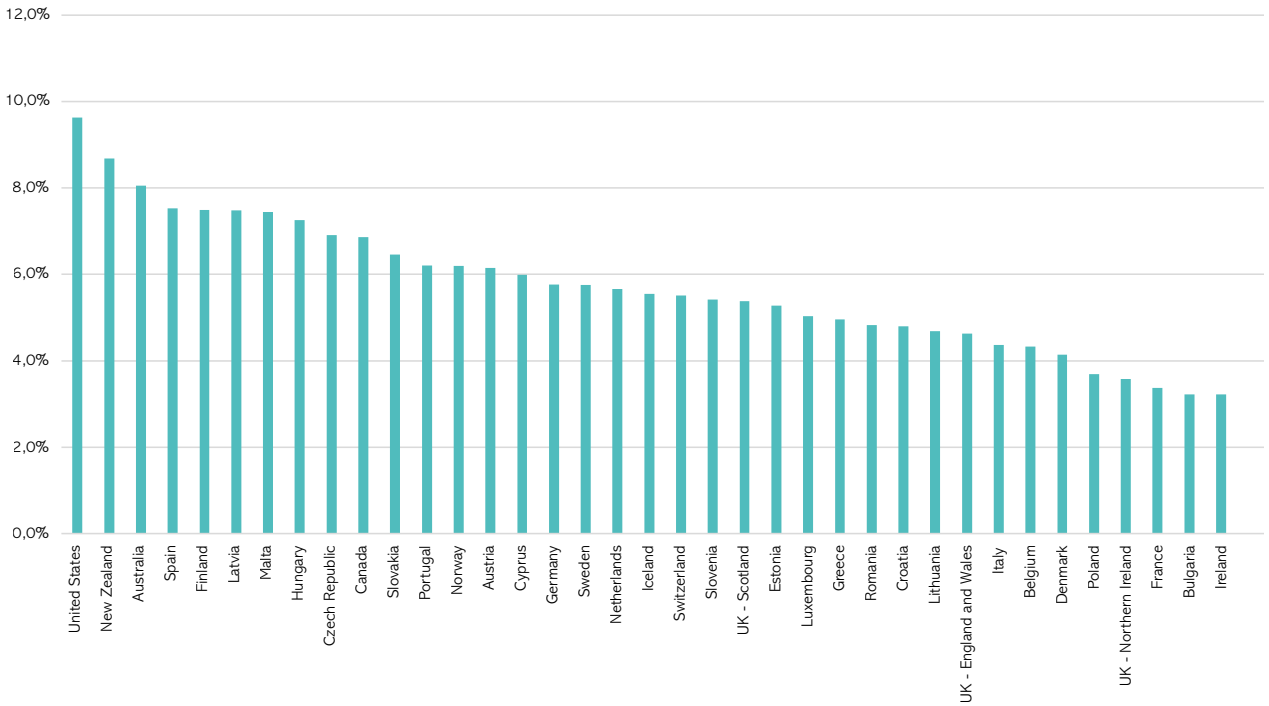
Figure 20: Total share of women held in prison in 2019



Source: UN-CTS 2022

The US retains the record of the share of women in prison, which from 2010 to 2020 amounts to an average (mean) of 9.6% of the prison population, followed by New Zealand (8.7%), Australia (8.0%), Spain, Finland, and Latvia (all at 7.5%), Malta (7.4%), and Hungary (7.3%). The lowest shares are found in Ireland (3.2%), Bulgaria (3.2%), France (3.4%), Northern Ireland (3.6%) and Poland (3.7%). In the other countries the percentage of women held in prison varies from 4.1% (Denmark) to 6.9% (Canada and the Czech Republic) (Figure 21).

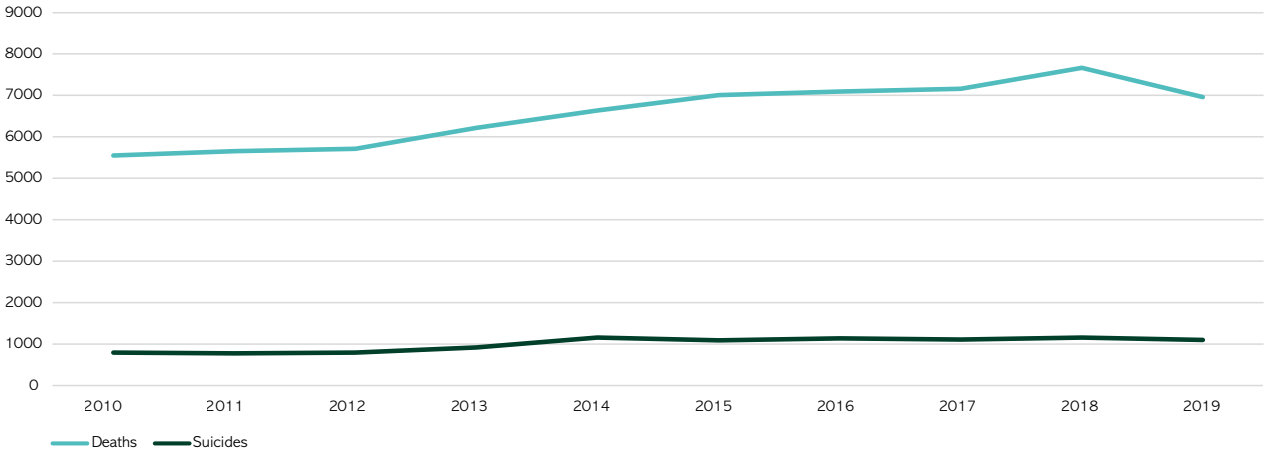
Figure 21: Average (mean) annual share of women held in prison 2010–2020



Source: UN-CTS 2022

Deaths and suicides in prison. The total number of deaths in prison in the countries examined here have increased – with some oscillations – from 5555 in 2010 to 6957 in 2019 – and so has the number of suicides – from 798 in 2010 to 1099 in 2019 (Figure 22).

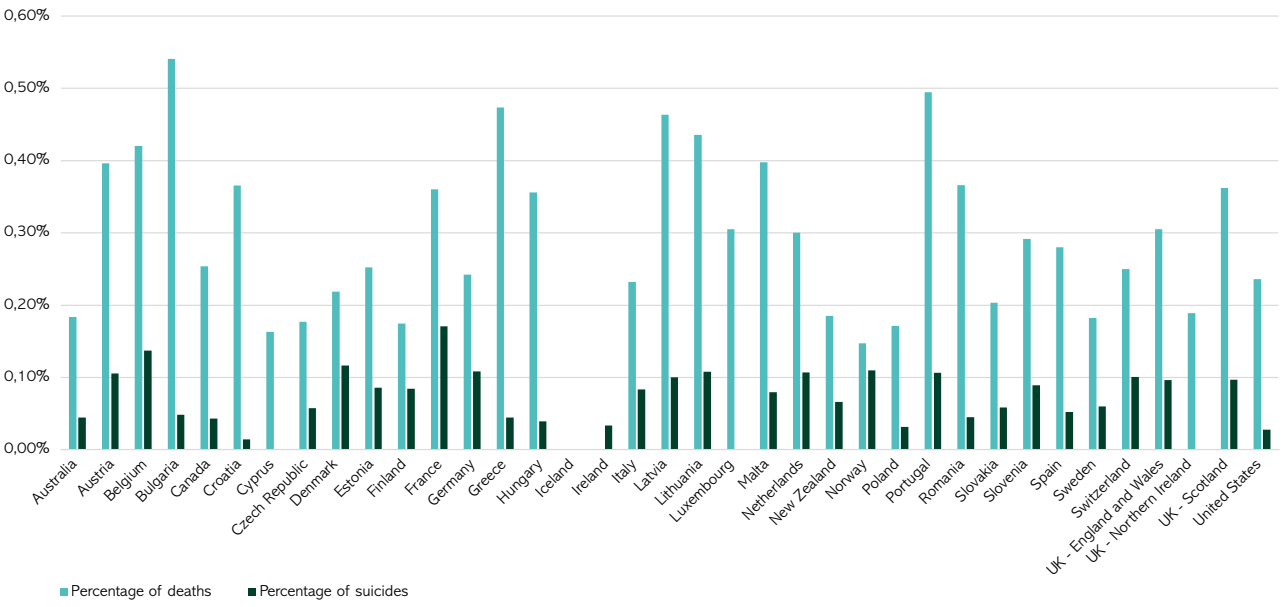
Figure 22: Total deaths and suicides in prison 2010–2019



Source: UN-CTS 2022

The average (mean) percentage of deaths and suicides per average prison population from 2010 to 2019 varies from country to country. The highest percentages of deaths are recorded in Bulgaria (0.54%), Portugal (0.49), Greece (0.47), Latvia (0.46) and Lithuania (0.44%). The lowest percentages are recorded in Iceland (0%), Norway (0.15%), Cyprus (0.16%), Finland and Poland (0.17% each), the Czech Republic, Sweden and Australia (0.18% each). The highest average percentage of suicides per average prison population between 2010 and 2020 is recorded in France (0.17%), Belgium (0.14%), Denmark (0.12%), followed by countries such as Switzerland, with rates between 0.10% and 0.11%, England and Wales, Scotland, Latvia, Switzerland, Austria, Portugal, the Netherlands, Lithuania, Germany and Norway. The lowest rates of suicides are recorded in Iceland, Luxembourg (both 0%), Croatia (0.1%), the US, Poland and Ireland (0.03% each) (Figure 23).

Figure 23: Average (mean) death and suicide rates in prison 2010–2020



Source: UN-CTS 2022

Prison facilities, capacity and overcrowding. Between 2015 and 2019 (depending on when the latest data is available for each country), in most countries the prison population was beyond 90% of the capacity allowed by their prison facilities (Table 6).

*Table 6: Prison facilities, official prison capacity and prison population by country in 2019**

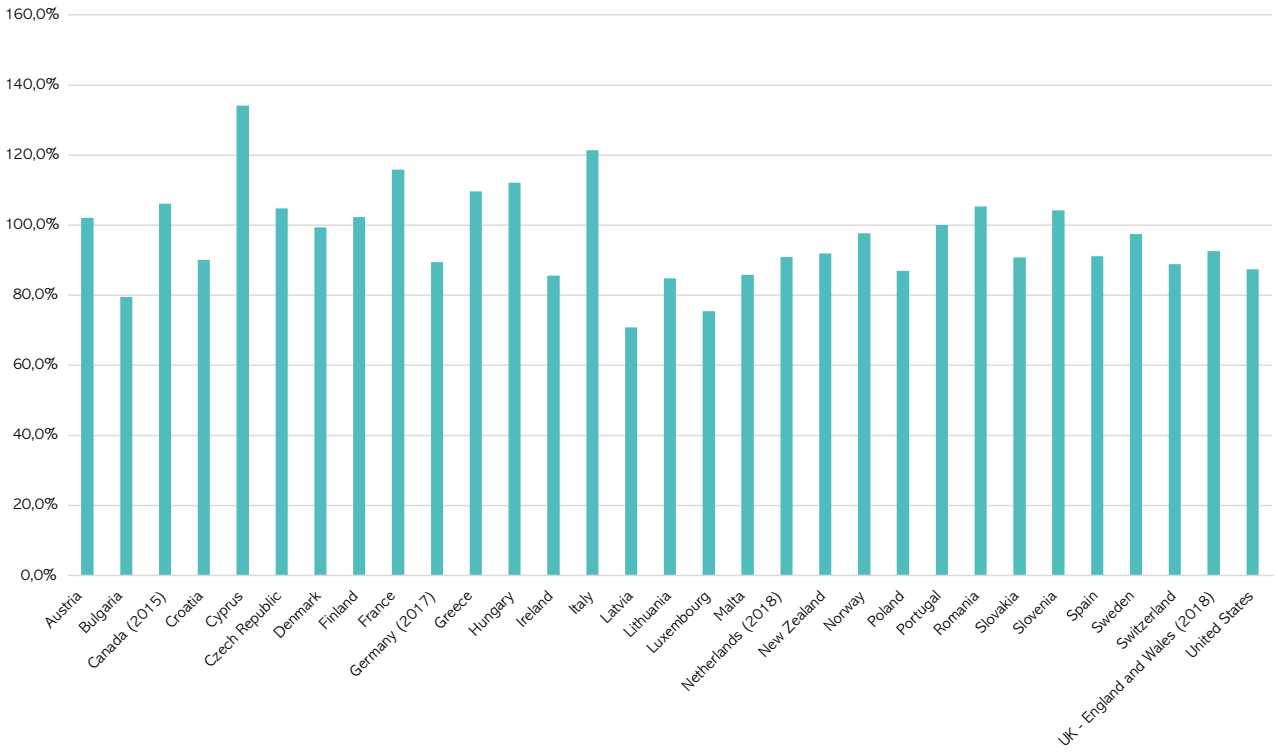
Country	Prison facilities	Official prison capacity	Prison population
Australia (2017)	114	N/A	42.118
Austria	28	8.883	9.072
Belgium	N/A	N/A	10.559
Bulgaria	70	8.105	6.448
Canada (2015)	243	38.771	41.169
Croatia	24	3.919	3.533
Cyprus	1	566	759
Czech Republic	35	20.096	21.048
Denmark	58	3.947	3.920
Estonia	3	N/A	2.487
Finland	26	2.878	2.945
France	266	61.080	70.739
Germany (2017)	180	73.603	65.841
Greece	N/A	9.935	10.891
Hungary	30	14.866	16.664
Iceland	5	N/A	158
Ireland	N/A	4.695	4.017
Italy	230	51.252	62.232
Latvia	9	4.822	3.414
Lithuania	10	7.236	6.138
Luxembourg	2	711	536
Malta	1	878	754
Netherlands (2018)	48	12.376	11.251
New Zealand	N/A	10.633	9.776
Norway	37	3.646	3.561
Poland	151	85.750	74.612
Portugal	49	12.934	12.947
Romania	45	19.522	20.578
Slovakia	18	11.625	10.555
Slovenia	14	1.339	1.396
Spain	84	64.235	58.517
Sweden	76	6.895	6.719
Switzerland	100	7.390	6.568
UK - England and Wales (2018)	119	88.491	81.904
UK - Northern Ireland (2018)	3	N/A	1.509
UK - Scotland	N/A	N/A	8.205
United States	N/A	2.134.500	1.864.800

* For some countries, data from 2019 is not available. We used the latest useful data instead

Source: UN-CTS 2022

Some countries went below this threshold: Latvia (70.8%), Luxembourg (75.4%), Bulgaria (79.6%), Lithuania (84.8%), Ireland (85.6%), Malta (85.9%), Germany (89.5%), Poland (87%), the US (87.4%) and Switzerland (88.9%). In twelve countries the population went above the capacity of the facilities, introducing a situation of overcrowding. Overcrowded prisons were those in Cyprus (134.1% of the official capacity), Italy (121.4%), France (115.8%), Hungary (112.1%), Greece (109.6%), Romania (105.4%), the Czech Republic (104.7%), Slovenia (104.3%), Finland (102.3%), Austria (102.1%) and Portugal (100.1%) (Figure 21).

*Figure 24: Ratio of official prison capacity to prison population 2019**



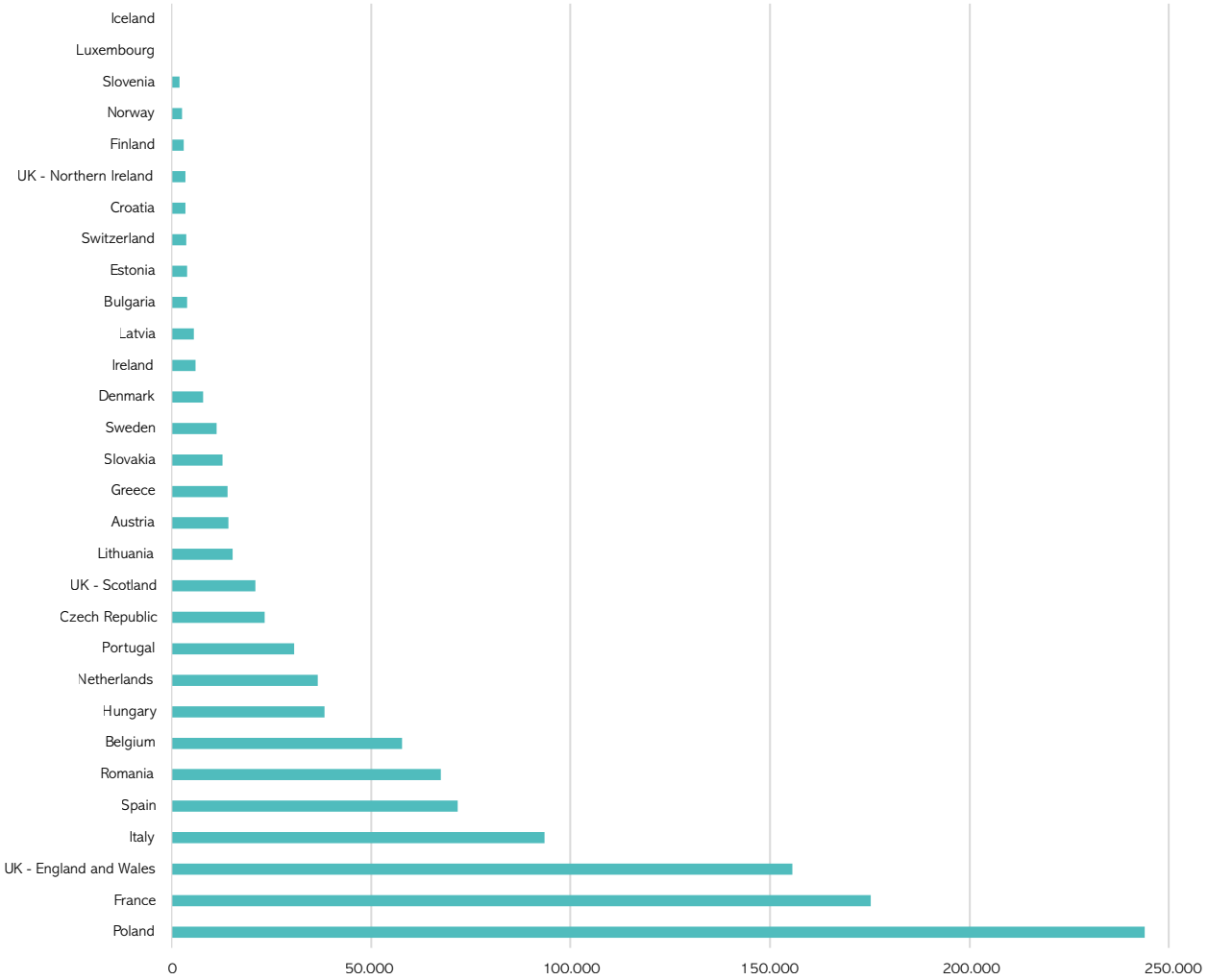
*For some countries, data from 2019 is not available. We used the latest useful data instead.

Source: UN-CTS 2022

Probation. In 2022, the Council of Europe's project SPACE II (Council of Europe Annual Penal Statistics on Persons under the Supervision of Probation Agencies) presented the findings of a survey of the probation population in prisons of many European states (Aebi & Hashimoto, 2022). According to the Council of Europe's definition, probation 'relates to the implementation in the community of sanctions and measures, defined by law and imposed on an offender. It includes a range of activities and interventions, which involve supervision, guidance and assistance aiming at the social inclusion of an offender, as well as at contributing to community safety' (Council of Europe, 2010, Appendix I). 'Community sanctions and measures' are defined as 'sanctions and measures which maintain suspects or offenders in the community and involve some restrictions on their liberty through the imposition of conditions and/or obligations. The term designates any sanction imposed by a judicial or administrative authority, and any measure taken before or instead of a decision on a sanction, as well as ways of enforcing a sentence of imprisonment outside a prison establishment' (Council of Europe, 2017, Appendix). Recording and interpreting data on probation rates is as difficult as any other crime statistics, as countries have different legal definitions and methods to count and collect their data.

According to SPACE II's data, as of January 2021, the country with the highest probation population rates was Poland (644.6 probationers per 100 000 inhabitants). Poland also had the highest number of probationers (243 901) (Figure 25).

Figure 25: Total probationers by country in 2021

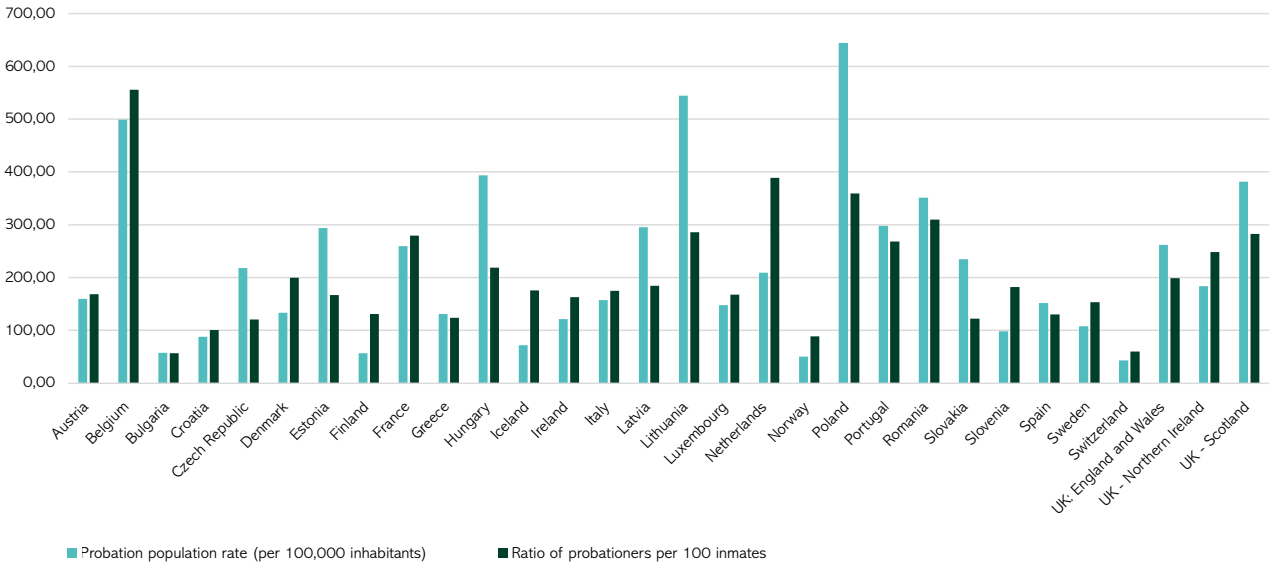


Source: SPACE II 2022

Very high probation population rates were also recorded in Lithuania (544.5), Belgium (498.8), Hungary (393.7), Scotland (381.6) and Romania (351.6). In a number of countries, probation population rates were between 200 and 300 probationers per 100 000 inhabitants (Portugal, Latvia, Estonia, England and Wales, France, Slovakia, the Czech Republic and the Netherlands). All the other countries had lower rates, with the lowest recorded in Switzerland (43.5), Norway (50.2), Finland (56.7), Bulgaria (57.5), Iceland (71.6), Croatia (87.9) and Slovenia (97.9) (Figure 26).

But what is the ratio between probationers and the prison population? The highest ratios were recorded in Belgium (555.80 probationers per 100 inmates), the Netherlands (389.10), Poland (359.20), Romania (309.80), Lithuania (286.10), Scotland (282.90), France (279.70), Portugal (268.50), Northern Ireland (248.60) and Hungary (219.10). It is worth noticing that some of these countries – France, Hungary, the Netherlands, Portugal and Romania – are also countries that reported overcrowding. The lowest rates of probationers per inmates are recorded in Bulgaria (56.40), Switzerland (59.60), Norway (88.60), Croatia (100.50), the Czech Republic (120.90), Slovakia (122.40), Greece (123.50), Spain (130.20), Finland (131.10) and Sweden (153.60) (Figure 26).

Figure 26: Probation population rates (per 100 000 inhabitants) and ratio of probationers per 100 inmates in 2021



Source: SPACE II 2022

4.6.4. Disposition times and clearance rates

How efficient are criminal courts? This question requires consideration of two main issues. First, how long courts take to solve pending cases – that is, the ratio between pending cases and resolved cases in days (disposition time). Second, how many cases do they clear compared to incoming cases – that is, the ratio between resolved and incoming cases (clearance rate). The Council of Europe's European Commission for the Efficiency of Justice (CEPEJ) collects data on these two indicators, organised according to the different stages of criminal trials: first instance, second instance (appeal) and supreme court.

In 2020, the fastest average (mean) disposition times (under 90 days) across the three instances were recorded in the Czech Republic (48 days), Estonia (50.7), Hungary (56), Scotland (71), Bulgaria (71), Iceland (73), Norway (76), Germany (77) and Lithuania (86). Some of these countries, also had very high average (mean) clearance rates: Germany (104), Norway (102.7) and Hungary (101). Other countries with high average clearance rates were Malta (122%), Greece (109 – but data is available only for second instance trials), Croatia (108.7), Poland (102.7), Slovenia (102) and Cyprus (101.5). There are many reasons why clearance rates can be higher than 100% in a particular year. Apart from issues or differences in the collection or submission of data, a possible explanation is that the cases cleared in one year are not necessarily the same cases that have been opened in that year. As a result, countries that have accumulated a backlog of cases in the previous years might be clearing it in the following years, thus closing more cases than they opened in one year. The countries with the longest average (mean) disposition times across the three instances were Malta (668.5 days), Italy (634 – with a peak of 1167 days only for the second instance), Cyprus (332), France (272.5), the Netherlands (249.3) and Luxembourg (226). Among these, Italy and the Netherlands also had relatively low average clearance rates (94.3% and 95% respectively). Other countries with low average clearance rates were Iceland (86.3%), the UK (87.5% for England and Wales, 89% for Scotland and 91% for Northern Ireland), Spain (90.7), Ireland (91.3), Switzerland (93.7) and Sweden (95) (Table 7).

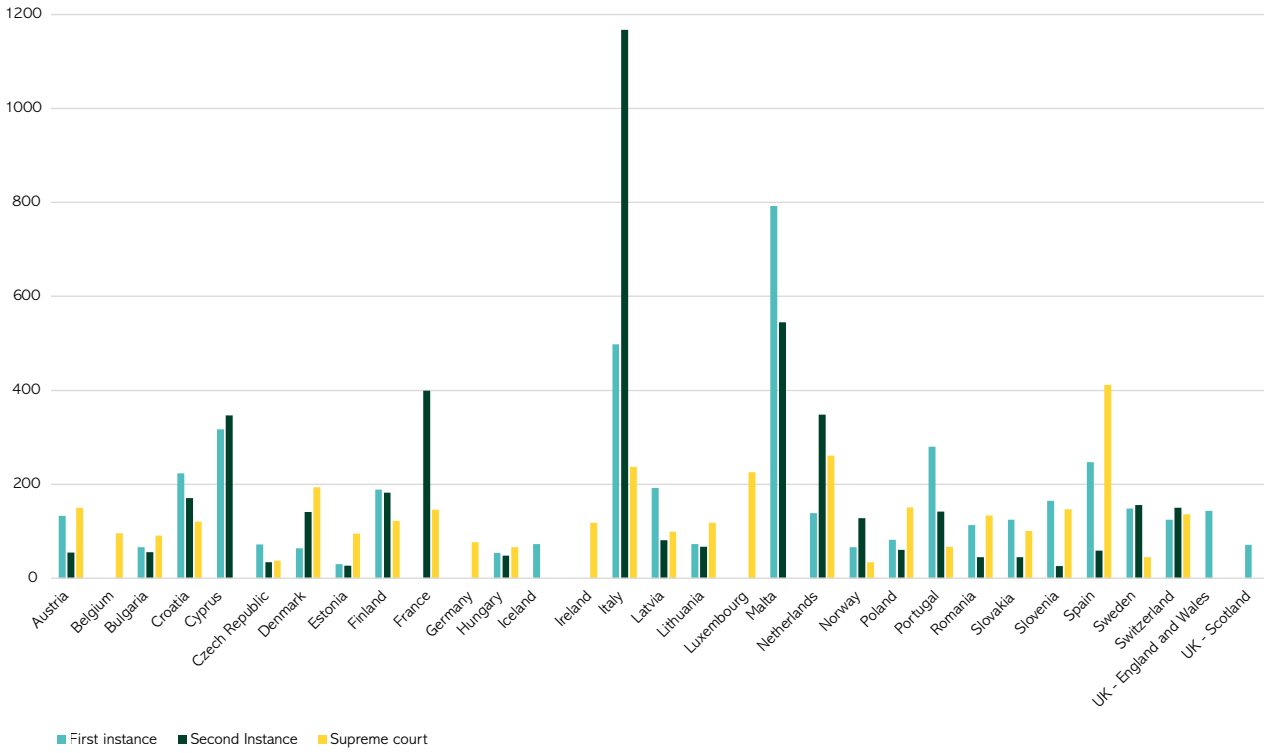
Table 7: Average (mean) disposition times and clearance rates (first instance, second instance and supreme court) in 2020

Country	Disposition time	Clearance rates
Australia	N/A	N/A
Austria	112,667	100,3%
Belgium	96,000	99,0%
Bulgaria	71,000	100,0%
Canada	N/A	N/A
Croatia	171,667	108,7%
Cyprus	332,000	101,5%
Czech Republic	48,000	100,3%
Denmark	133,000	98,7%
Estonia	50,667	95,3%
Finland	164,333	95,3%
France	272,500	99,0%
Germany	77,000	104,0%
Greece	N/A	109,0%
Hungary	56,000	101,0%
Iceland	73,000	86,3%
Ireland	118,000	91,3%
Italy	634,000	94,3%
Latvia	124,000	95,7%
Lithuania	86,000	99,3%
Luxembourg	226,000	98,3%
Malta	668,500	122,0%
Netherlands	249,333	95,0%
New Zealand	N/A	98,0%
Norway	76,000	102,7%
Poland	98,000	102,7%
Portugal	163,000	97,3%
Romania	97,333	100,7%
Slovakia	90,333	99,7%
Slovenia	112,667	102,0%
Spain	239,333	90,7%
Sweden	116,667	95,0%
Switzerland	137,000	93,7%
UK - England and Wales	144,000	87,5%
UK - Northern Ireland	N/A	91,0%
UK - Scotland	71,000	89,0%
United States	N/A	N/A

Source: CEPEJ 2022

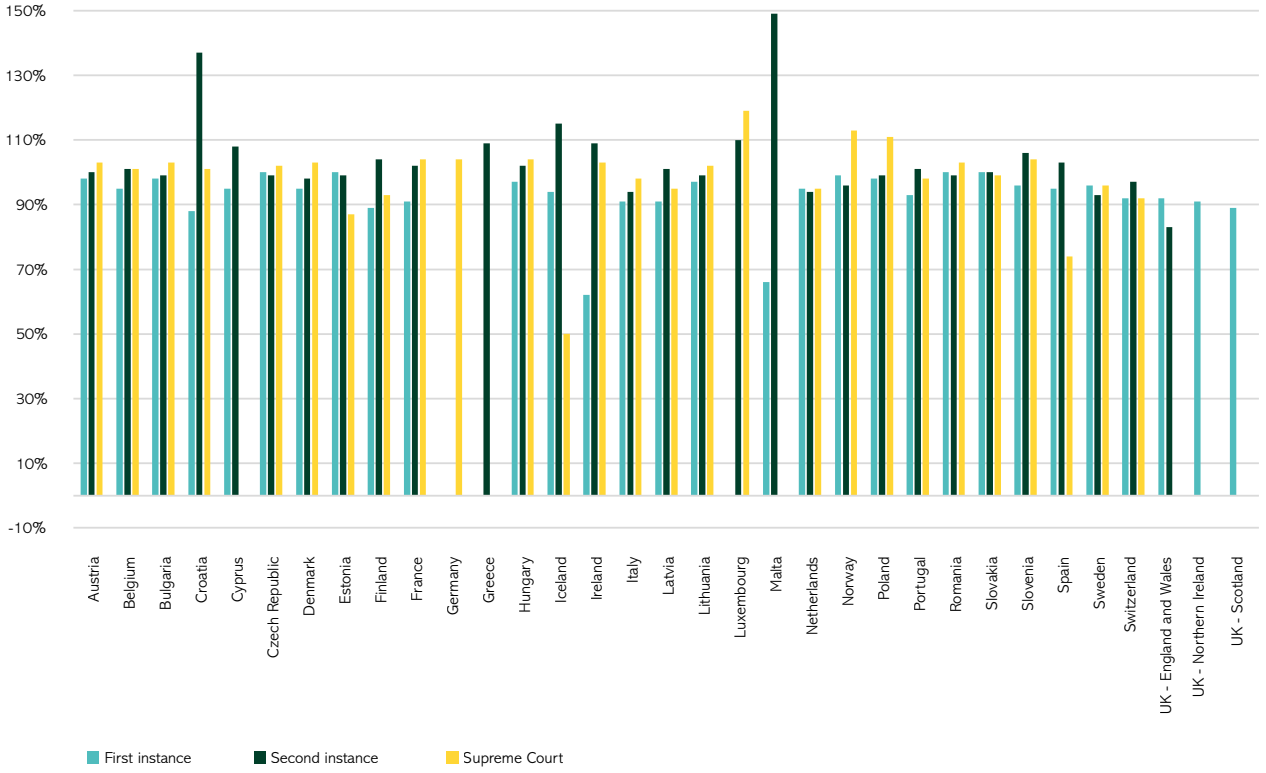
The figures below provide a more detailed visualisation of disposition times and clearance rates for each instance of trial in each country (Figures 27 and 28).

Figure 27: Disposition times in 2020 (in days)



Source: CEPEJ 2022

Figure 28: Clearance rates in 2020



Source: CEPEJ 2022

These figures should not be interpreted as sure indicators of efficiency of the criminal justice system. A country might have very fast disposition times because court practices are sloppy and there are few procedural safeguards for individual rights and liberties to slow down the process. Or a country might have high clearance rates because most prosecutions are unfounded and easily dismissed by the courts, which might suggest inefficiency in the prosecution system.
In this respect, extremely fast disposition times and high clearance rates require cautious assessment, as they might depend on rather summary and potentially unfair judicial proceedings. Nevertheless, specific data for certain countries is pointing at some potential dysfunction which also requires closer inspection. This is the case, for instance, of Italy, where 1167 days are required to dispose of a second instance trial, or Iceland which seems to have accumulated a considerable backlog for supreme court trials.

4.7. THE OUTCOMES: FROM CRIME RATES TO PUBLIC TRUST

After having assessed the inputs and the outputs in social safety, the next step is to assess whether the intended outcomes have been achieved. Such outcomes include not only a reduction in crime rates, but also a removal of social or environmental conditions that can lead to crime or illegality, effectiveness of law enforcement and other crime control agencies, effectiveness of the rule of law, social perceptions of safety and trust in public institutions.

4.7.1. Key findings

Crime rates. The most committed crime from 2010 to 2020 across all the countries examined here is theft, followed by burglary, but figures for both offences have been declining in years. Such decline has coincided with a rise in fraud, some of which are enabled or facilitated by cyberspace. In 2020, a total of 27 447 homicides were reported across the countries examined, an increase of 30% compared to the total homicides in 2010 (21 103) and 21.7% compared to 2019 (22 550). The highest average (mean) annual homicide rates from 2010 to 2020 are recorded in Lithuania (5.23 homicides per 100 000 inhabitants), followed by the US (5.04), Latvia (3.56) and Estonia (3.37), and Canada (1.69). The lowest average homicide rates in that period are recorded in Switzerland (0.58), Luxembourg (0.64), Iceland (0.66) and Slovenia (0.67). High average rates of sexual violence between 2010 and 2020 are recorded in Sweden (approximately 170 cases per 100 000 inhabitants on average), England and Wales (160.72), Northern Ireland (145.51), Scotland (170.85), Iceland (137.44) and New Zealand (100.51). England and Wales have the highest average (mean) rates of serious assaults (715.89 cases per 100 000 inhabitants) from 2010 to 2020. Belgium is next with an average of 610.3 cases, followed by New Zealand (391.28), France (388.71), Luxembourg (296.97) and Australia (290.28). The lowest average rates are recorded in Portugal (6.06), Lithuania (6.74), Estonia (6.92) and Switzerland (6.97). Robberies are in steady and steep decline across all the countries examined. Belgium has the highest average (mean) rates of robberies per population between 2010 and 2019 (193 robberies per 100 000 inhabitants), followed by Spain (158.21), Portugal (147.3), France (129.93) and the US (102.81). The lowest rates are recorded in Cyprus (9.76), Slovakia (12.8), Slovenia (15.24), Iceland (15.65) and Hungary (18.9). Economic crimes such as fraud, money laundering and corruption are more difficult to assess due to the lack or incompleteness of data. The available data suggest that most frequent of these economic crimes is fraud. From 2016 to 2018, more than 3 million frauds were recorded every year across most of the countries considered in this study (Figures 29–37 and Tables 8–16).

Income inequality, unemployment, young people leaving education, and social values. The US had consistently higher levels of inequality between 2013 and 2019 than any other country, followed by Bulgaria, where inequality has been growing steadily from 2010 (0.33) to 2019 (0.4). The UK also had consistently high levels of inequality growing from 0.35 in 2010 to 0.37 in 2019. The country with the lowest level of inequality is Slovakia, where inequality has been decreasing from 0.27 in 2010 to 0.22 in 2019. Low levels of inequality are also reported in Slovenia (0.24–0.25 from 2010 to 2019), the Czech Republic (0.25–0.26), Iceland (0.25–026), Norway (0.25–0.27), Sweden (0.27–0.28), Austria (0.27–0.28) and Hungary (0.27–0.29). The countries with the highest unemployment rates from 2010 to 2020 were Greece, Spain and Portugal. In 2018, the lowest levels of unemployment were recorded in the Czech Republic (2.02%), Germany (2.98), Norway (3.88), Iceland (3.93) and Switzerland (4.82). In 2021, an average of 9.7% of young people aged 18–24 in the EU were early leavers – that is, individuals who completed

at most a lower secondary education and were not in further education or training during the four weeks preceding the labour force survey. Of these, 42.3% were employed, 34% were not employed but wanted to work, and the remaining 23.7% were not employed and did not want to work. Social values can also affect criminal motivations. The crime perceived as the least justifiable across the countries for which data is available is stealing, followed by public bribery and violence against other persons. Respondents showed much higher levels of acceptance of fraudulent offences such as cheating on taxes and benefit fraud (claiming government benefits to which one is not entitled) (Figures 38–41 and Tables 17–20).

Effectiveness of law enforcement and regulation. In 2021, the country that was rated first for the effectiveness of the criminal justice was Norway, followed by Finland, Denmark, Austria, Sweden, Germany, the Netherlands and New Zealand. The worst-scoring country was Bulgaria, followed by Hungary, Croatia, Greece, Romania, Slovenia and Slovakia. Economic powers such as the US, France and Italy did not score particularly well, placing themselves midway through the rankings. The highest-ranking countries for general effectiveness of regulatory enforcement are Denmark, Norway, Finland, New Zealand, Germany, Luxembourg, the Netherlands, Sweden, Austria and Australia. The lowest-scoring countries are Hungary, Bulgaria, Greece, Croatia, Romania, Malta, Portugal, Poland and Italy. The highest general scores in order and security were recorded in Ireland, Luxembourg, Norway, Sweden, Malta, Denmark and Finland. The lowest scores were recorded in Greece, Italy, France, Bulgaria, Portugal, and the US (Figures 42–57 and Tables 21–22).

Perceptions of safety and trust in law enforcement. Around 68% of the Europeans interviewed in the 2017 Eurobarometer survey agreed that the EU is a secure place to live, while 82% felt their own country is a secure place to live. The highest percentages were recorded Finland (97%), Portugal (97%), Malta (97%), the Netherlands (96%), Luxembourg (96%), Slovenia (95%), Denmark (93%) and Estonia (93%). The lowest were recorded in the UK (70%), Italy (71%), France (71%), Bulgaria (72%), Romania (80%), Cyprus (81%) and Belgium (81%). Around 90% of interviewed Europeans feel their own city is a secure place to live. Most of the countries recorded 90% positive answers or more. Malta recorded the highest percentage of positive answers (99%), followed by Finland (98%), Portugal (98%), the Netherlands (97%), Slovenia (97%), Luxembourg (96%) and Denmark (96%). Only a few countries fell below 90%: Cyprus (89%), the UK (89%), France (88%), Hungary (87%), Greece (87%), Romania (87%), Italy (83%) and Bulgaria (82%). Around 91% of interviewed Europeans feel their neighbourhood is a secure place to live. The highest percentages of positive answers were recorded in Finland (99%), Portugal (98%), the Netherlands (98%), Malta (97%), Slovenia (97%), Luxembourg (97%), Denmark (97%) and Ireland (97%). Only a few countries fell below 90%: Bulgaria (81%), Italy (84%), Romania (87%), Greece (89%) and France (89%) (Figures 58–59 and Tables 23–24).

European citizens appear to have more trust in and confidence in the police rather than the legal and judicial systems. The highest percentage of citizens who have confidence in the local police in 2019 were Switzerland (95%), Iceland (93%), Austria (89%), Germany (89%), Finland (87%), Luxembourg (87%) and Norway. The lowest percentages were recorded in Latvia (58%), Greece (68), Poland (70%), Slovakia (72%), Lithuania (72%), Hungary (72%), Estonia (72%) and Sweden (73%). The highest average (median) levels of trust in the police between 2018 and 2020 were recorded in Finland (8.5 out of 10), Denmark, Norway, Austria, Germany, Iceland, Switzerland and Estonia (all 8 out of 10). The countries with the higher average (median) levels of trust in the police also tend to have high levels of trust in the legal system. These include Finland, Denmark, Norway (all 8 out of 10), and Austria, Germany, Iceland, Switzerland and the Netherlands (7 out of 10). The lowest levels are found in Croatia (2 out of 10), Bulgaria (3), Portugal, Slovakia, and Slovenia (4 each). In 2019, the country with the highest proportion of citizens having confidence in the judicial system was Norway (89%), followed by Denmark (87%), Switzerland (82%), Finland (76%), and Luxembourg (76%). The countries with the lowest percentages were Italy (28%), Slovenia (31%), Ireland (31%), Slovakia (43%), Poland and Hungary (44% each) (Figures 61–64).

4.7.2. Crime rates

As we said above, crime rates are particularly difficult to analyse and compare for many reasons, including missing data and different legal definitions of various crimes. We will refrain, therefore, from drawing inferences, comparisons or correlations when the data will not allow us to do so. Instead, we will provide a more descriptive account of some data available. Although less ambitious, such an account can still be very informative and helpful to give some direction for at least future research or analysis for academia and policymakers.

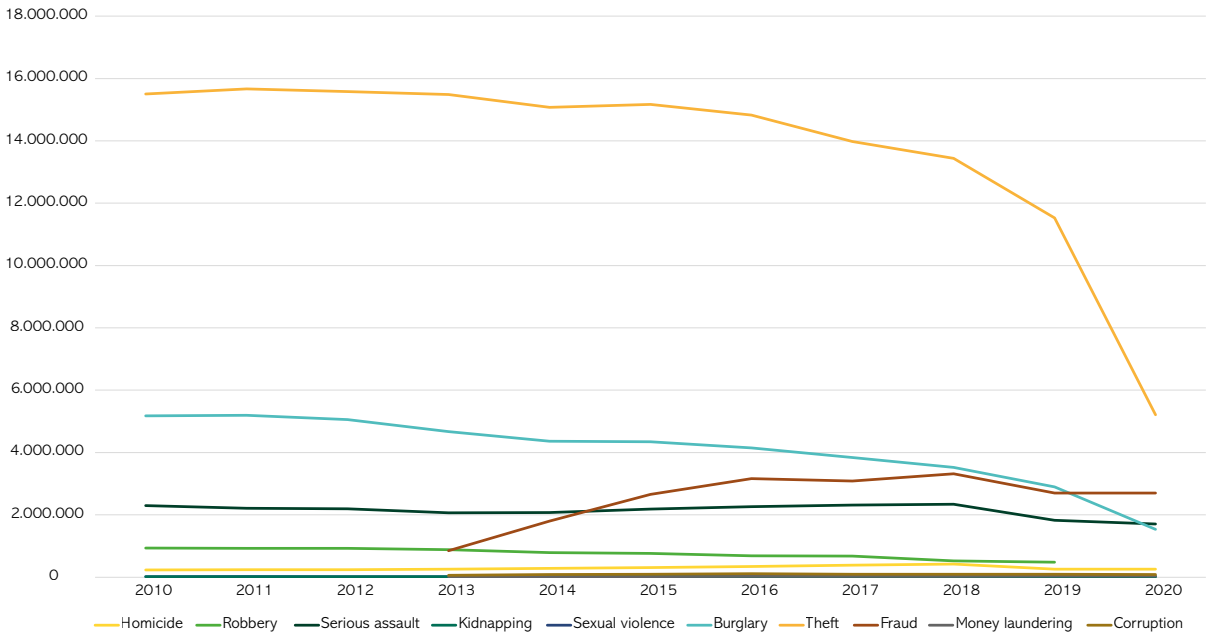
For this part of the analysis, we will mostly rely on the United Nations Survey of Crime Trends and Operations of

Criminal Justice Systems (UN-CTS) data on the following categories of crime: homicide, serious assault, sexual violence, kidnapping, robbery, burglary, theft, fraud, money laundering and corruption. Despite their richness, these datasets contain several limitations, gaps and inconsistencies. First, they generally include data as recorded by the police or other law enforcement agencies. This cannot be a reliable measure of actual crime levels, as not all crime is detected or recorded by such agencies. Secondly, not all countries submit data consistently. For instance, the UK submitted only sporadic data on crime-population rates and mostly submitted crime counts (number of crimes recorded), which makes comparisons with other countries more difficult. Other states did not submit data for some years, which prevents an accurate calculation of totals or averages (mean or median).

Whenever possible, we integrated the UN-CTS datasets with Eurostat data. However, while doing this we noticed that although both datasets are based on the International Classification of Crime for Statistical Purposes (ICCS) (UNODC, 2015) and figures are largely the same, some countries have submitted different data for some offences. For instance, Luxembourg's figures on sexual violence in UN-CTS datasets do not match those in Eurostat datasets. Finally, the most complete datasets concern rather traditional crimes, while data on more modern and serious types of crime are rather neglected. This explains why we cannot consider some of these crimes in our analysis. Data on cybercrime are especially poor: only a handful of countries submitted data on cyber-related child pornography or acts intended to induce fear or emotional distress, and only for a handful of years. This prevents any meaningful comparative analysis. Data on financial crime is also limited. Eurostat crime statistics do not cover fraud, money laundering and corruption. UN-CTS data on fraud (including cyber-related fraud), money laundering and corruption offences starts from 2013 and only for a few states, while many others only started submitting their data later. We therefore had to limit our analysis of these crimes only to the most recent years, for which the datasets are more complete. Further limitations will be highlighted throughout the analysis.

Theft and burglary. According to UN-CTS datasets, the most committed crime from 2010 to 2020 across all the countries examined here is theft, followed by burglary (Figure 29).

Figure 29: Total recorded crimes 2010–2020 (all countries)



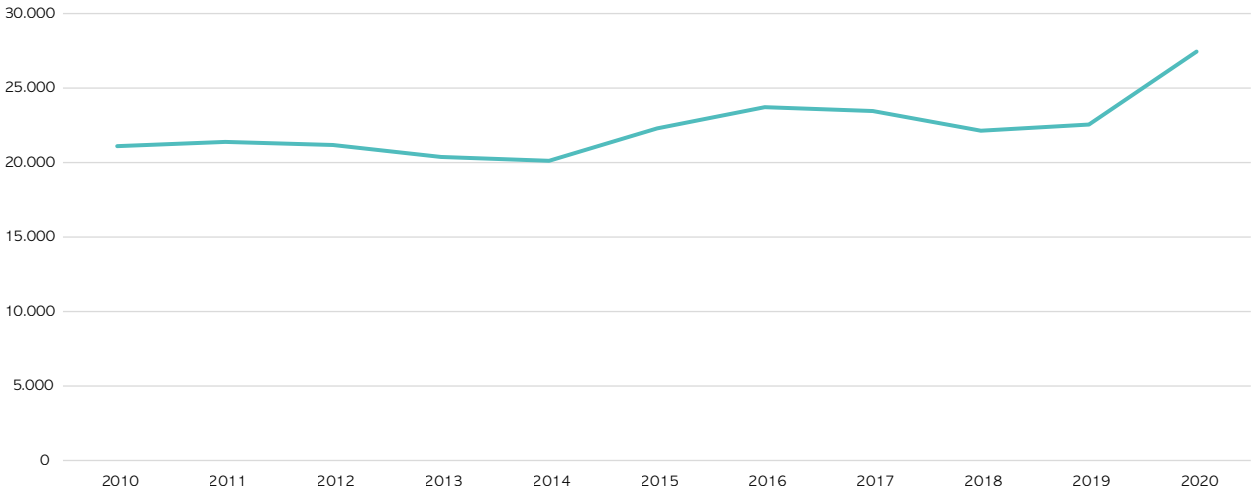
Source: UN-CTS 2022

However, figures for both burglary and theft have been declining in years, with an expected steep fall in 2020, probably due to the pandemic. In 2010, a total of 15 506 680 thefts across the 35 countries was recorded. This figure fell to 11 527 088 in 2019 and to 5 209 038 in 2020. In 2010, a total of 5 172 699 burglaries were recorded. In 2019, the total count of burglaries declined to 2 895 935, reaching 1 533 763 in 2020. However, the steepness of decline in thefts from 2018 and burglaries from 2019 depends on missing data from the UK, which usually records very high counts of such offences (more than 1.5 million thefts in 2016 and 2017 and more than 420 000 burglaries in 2017 and 2018).

The decline in thefts and burglaries seems to have coincided with a rise in fraud, some of which enabled or facilitated by cyberspace. The number of frauds in the states that provided useful data rose from 850 956 in 2013 to over 3 million from 2016 to 2018 and 2 700 718 in 2019. The count did not fall much during the pandemic (2 696 649 frauds were recorded in 2020), as fraud can also be committed online. Indeed, an average (mean) of 20% of these frauds are cyber-related and the highest number of cyber-related frauds was recorded in 2020 (689 812). It is impossible, however, to draw any conclusion on the actual incidence of cyber-related fraud from the UN-CTS datasets, as data from most countries is missing for most years and the inconsistency of the data provided by the states that did submit some makes any assessment difficult. For instance, together with Germany, Sweden is one of the countries that has submitted the highest numbers of cyber-related frauds (172 668 in 2018), but Sweden did not submit any data in 2019 or 2020, and this can seriously affect the total number of frauds recorded across all countries.

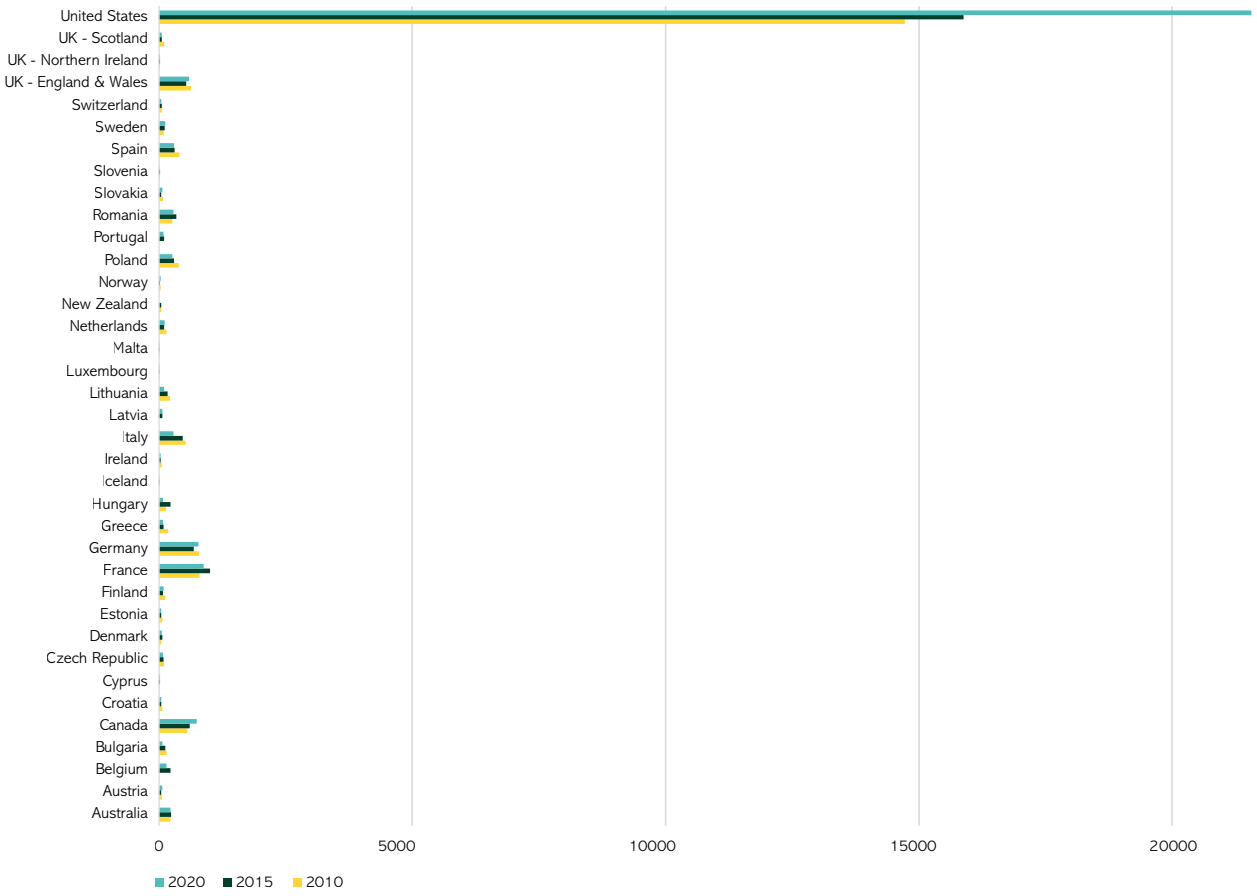
Homicide. In 2020, a total of 27 447 homicides were reported across the countries examined, an increase of 30% compared to the total homicides in 2010 (21 103) and 21.7% compared to 2019 (22 550) (Figures 30 and 31).

Figure 30: Total recorded homicides 2010–2020 (all countries)



Source: UN-CTS 2022

Figure 31: Total recorded homicides by country 2010, 2015 and 2020



Source: UN CTS 2022

The state with the highest counts of homicides is the US (from 14 722 in 2010 to 21 570 in 2020 – an increase of 46.5% compared to 2019). Of course, this is due to the considerably larger population of the US compared to any other country examined here. However, the highest average (mean) homicide rates per year from 2010 to 2020 are recorded for Lithuania (5.23 homicides per 100 000 inhabitants). The US has the second highest homicide rates with an average (mean) of 5.04 homicides per 100 000 inhabitants between 2010 and 2020. Latvia and Estonia come next, with an average of 3.56 and 3.37 homicides per 100 000 inhabitants, followed by Canada (1.69), Finland (1.63) and Bulgaria (1.50). The lowest average homicide rates in that period are recorded in Switzerland (0.58), Luxembourg (0.64), Iceland (0.66), Slovenia (0.67), Spain (0.70), the Netherlands (0.71), Norway (0.72), Italy (0.72) and Austria (0.75). The other countries range from 0.81 to 1.45 on average (Table 8).

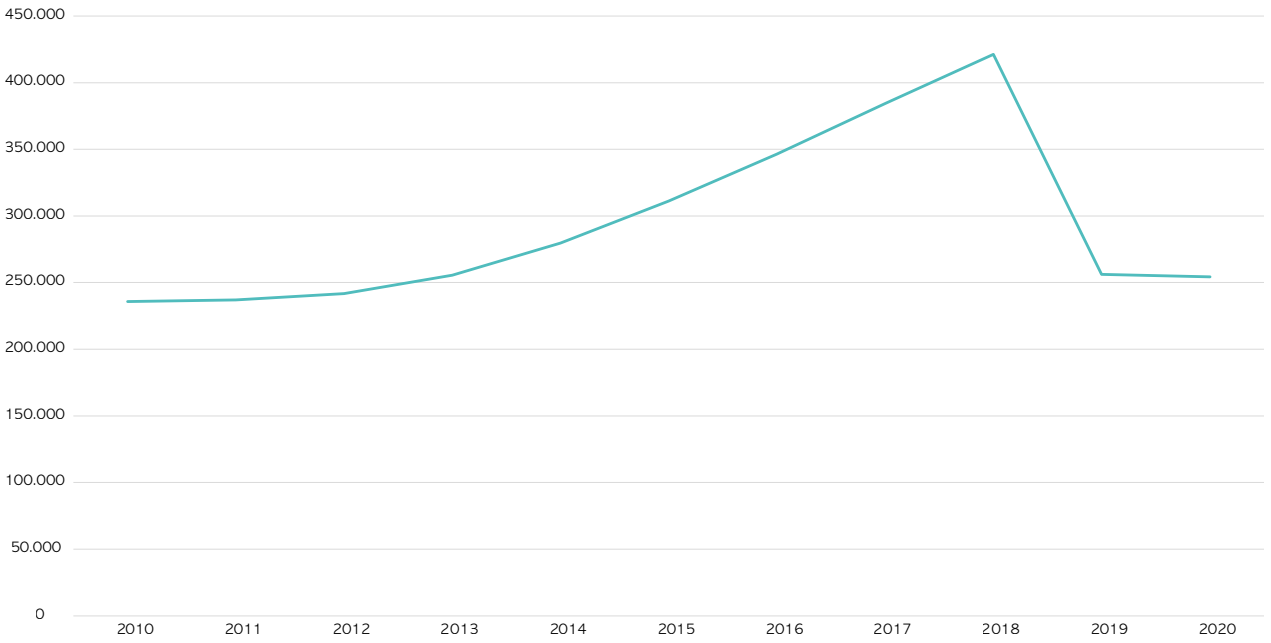
Table 8: Total homicides and average (mean and median) annual homicide rates (per 100 000 inhabitants) 2010–2020

Country	Total homicides	Mean homicide rates	Median homicide rates
Australia	2.548,00	0,97	0,99
Austria	717,00	0,75	0,72
Belgium	1.916,00	1,43	1,42
Bulgaria	1.190,00	1,50	1,50
Canada	6.720,00	1,69	1,69
Croatia	468,00	1,00	1,05
Cyprus	142,00	1,11	1,11
Czech Republic	858,00	0,78	0,81
Denmark	625,00	1,00	0,98
Estonia	491,00	3,37	3,17
Finland	982,00	1,63	1,61
France	9.233,00	1,31	1,27
Germany	8.239,00	0,91	0,91
Greece	1.304,00	1,11	0,94
Hungary	1.520,00	1,41	1,47
Iceland	24,00	0,66	0,62
Ireland	411,00	0,90	0,82
Italy	4.798,00	0,72	0,77
Latvia	699,00	3,56	3,49
Lithuania	1.701,00	5,23	5,35
Luxembourg	39,00	0,64	0,65
Malta	69,00	1,45	1,39
Netherlands	1.326,00	0,71	0,73
New Zealand	471,00	1,14	0,98
Norway	405,00	0,72	0,54
Poland	3.448,00	0,82	0,76
Portugal	977,00	0,94	0,90
Romania	2.901,00	1,33	1,30
Slovakia	744,00	1,24	1,20
Slovenia	153,00	0,67	0,68
Spain	3.598,00	0,70	0,66
Sweden	1.088,00	1,01	1,08
Switzerland	531,00	0,58	0,56
United Kingdom	7.524,00	1,06	1,00
United States	177.925,00	5,04	4,95

Source: UN-CTS 2022

Sexual violence. Sexual violence is also increasing. Sexual violence is defined by the International Classification of Crime for Statistical Purposes (ICCS) as any unwanted sexual act, attempt to obtain a sexual act, or contact or communication with unwanted sexual attention without valid consent or with consent as a result of intimidation, force, fraud, coercion, threat, deception, use of drugs or alcohol, or abuse of power or from a position of vulnerability. This includes rape, sexual assault and any other acts of sexual violence (UNODC, 2015, 2022c). In 2010, the total of sexual violence offences across the countries examined amounted to 235 722. This figure steadily grew to 421 193 in 2018. Data from the US is missing, so the actual numbers are probably much higher than these figures (Figure 32).

Figure 32: Total recorded sexual violence offences 2010–2020 (all countries)



Source: UN-CTS 2022

The apparent decrease in 2019 and 2020 once again depends on the lack of data for those years from the UK, which has the highest counts of all the countries considered here, growing from 53 377 in 2010 to 178 356 in 2018. The UK has also very high rates of sexual violence cases per 100 000 inhabitants between 2010 and 2020, with an average (mean) of approximately 160.72 cases in England and Wales, 145.51 in Northern Ireland and 170.85 in Scotland. But annual figures can be much higher: 258.05 cases per 100 000 inhabitants were recorded in England and Wales in 2017, 179.79 in Northern Ireland and 214.75 in Scotland, and these figures increased to 274.81, 193.02 and 233.68 respectively the following year. Very high rates are also recorded in Sweden (approximately 170 cases per 100 000 inhabitants on average). The next highest average rates are found in Iceland (137.44), New Zealand (100.51), Australia (93.07), Norway (79.74) and Canada (79.28). The lowest rates are found in Cyprus (3.8), Greece (4.3), Italy (8.01), Poland (8.12) and Romania (8.20) (Table 9).

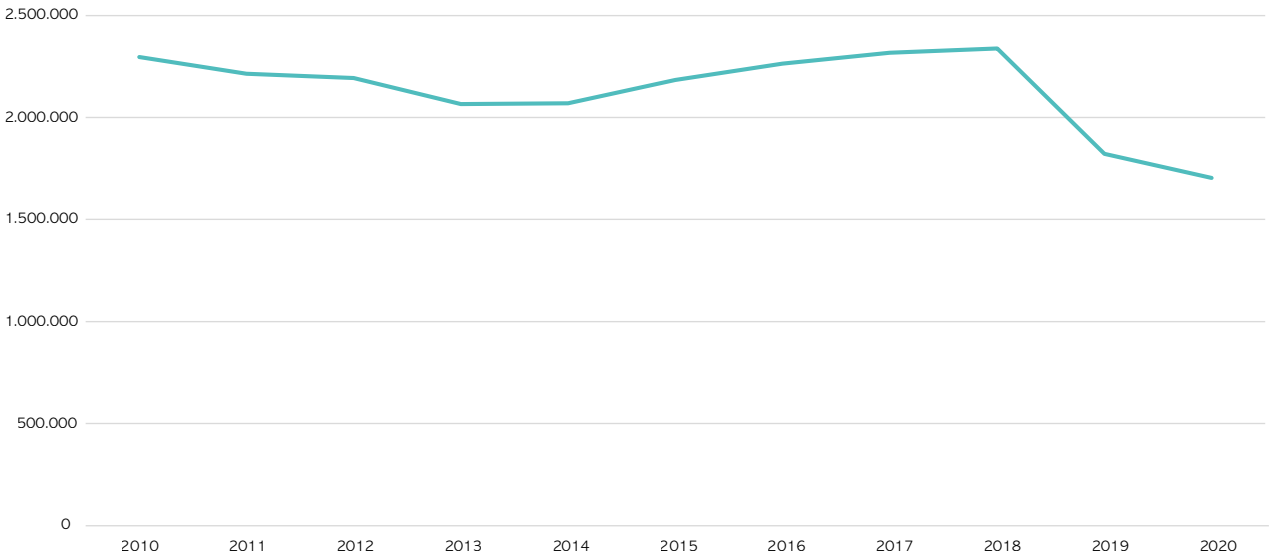
Table 9: Total sexual violence offences and average (mean and median) sexual violence rates (per 100 000 inhabitants) 2010–2020

Country	Total sexual violence offences	Mean sexual violence rates	Median sexual violence rates
Australia	249.207	93,07	92,39
Austria	43.466	45,33	45,34
Belgium	85.137	67,98	67,00
Bulgaria	6.841	8,69	8,66
Canada	316.778	79,28	76,99
Croatia	6.158	13,17	13,82
Cyprus	464	3,80	3,12
Czech Republic	15.742	13,47	13,44
Denmark	36.978	55,51	50,70
Estonia	3.489	26,11	25,93
Finland	35.615	57,74	57,86
France	403.164	53,52	52,58
Germany	408.120	44,83	44,81
Greece	4.784	4,30	4,33
Hungary	12.821	14,24	8,03
Iceland	5.070	137,44	139,89
Ireland	25.822	49,61	49,59
Italy	53.201	8,01	7,85
Latvia	3.615	16,47	15,82
Lithuania	3.288	10,60	8,72
Luxembourg	3.385	54,66	56,27
Malta	984	20,81	20,49
Netherlands	63.481	35,31	28,06
New Zealand	53.060	100,51	106,09
Norway	46.481	79,74	81,78
Poland	33.849	8,12	8,06
Portugal	25.781	22,47	23,02
Romania	18.238	8,20	8,41
Slovakia	6.813	11,40	12,14
Slovenia	3.864	16,87	16,93
Spain	108.690	20,84	20,26
Sweden	186.863	170,09	172,28
Switzerland	34.937	37,05	34,54
UK - England and Wales	813.305	160,72	161,30
UK - Northern Ireland	23.448	145,51	149,08
UK - Scotland	80.461	170,85	167,01
United States	N/A	N/A	N/A

Source: UN-CTS 2022

It is difficult to compare these figures as they can be affected by a multitude of factors such as legal definitions, different cultural attitudes, the efforts put in by law enforcement authorities in investigating and prosecuting sexual offences. So, growing or higher rates of sexual violence might depend on more victims willing to report sex offences and a better ability of law enforcement authorities to detect and record to them, whereas low figures might depend on the lack of criminalisation of certain acts or the lack of willingness or ability of law enforcement to focus on them. Serious assault. After a fall from a total of 2 296 652 serious assaults across the countries examined in 2010 to a total of 2 070 252 in 2014, the overall number of serious assaults started increasing again from 2015 onwards, reaching a count of 2 338 625 in 2018. There is an apparent inversion in this trend in 2019 and 2020 (Figure 33). However, as for sexual violence, the lack of data from the UK in 2019 and 2020 prevents a reliable assessment of the trends in these years.

Figure 33: Total recorded serious assault offences 2010–2020 (all countries)



Source: UN-CTS 2022

In fact, the UK has the highest average (mean) rates of serious assaults among all the countries examined. An average of 715.89 cases per 100 000 inhabitants from 2010 to 2020 was recorded only in England and Wales. Belgium is next with an average of 610.3 cases, followed by New Zealand (391.28), France (388.71), Luxembourg (296.97) and Australia (290.28). The lowest average rates are recorded in Portugal (6.06), Lithuania (6.74), Estonia (6.92) and Switzerland (6.97) (Table 10).

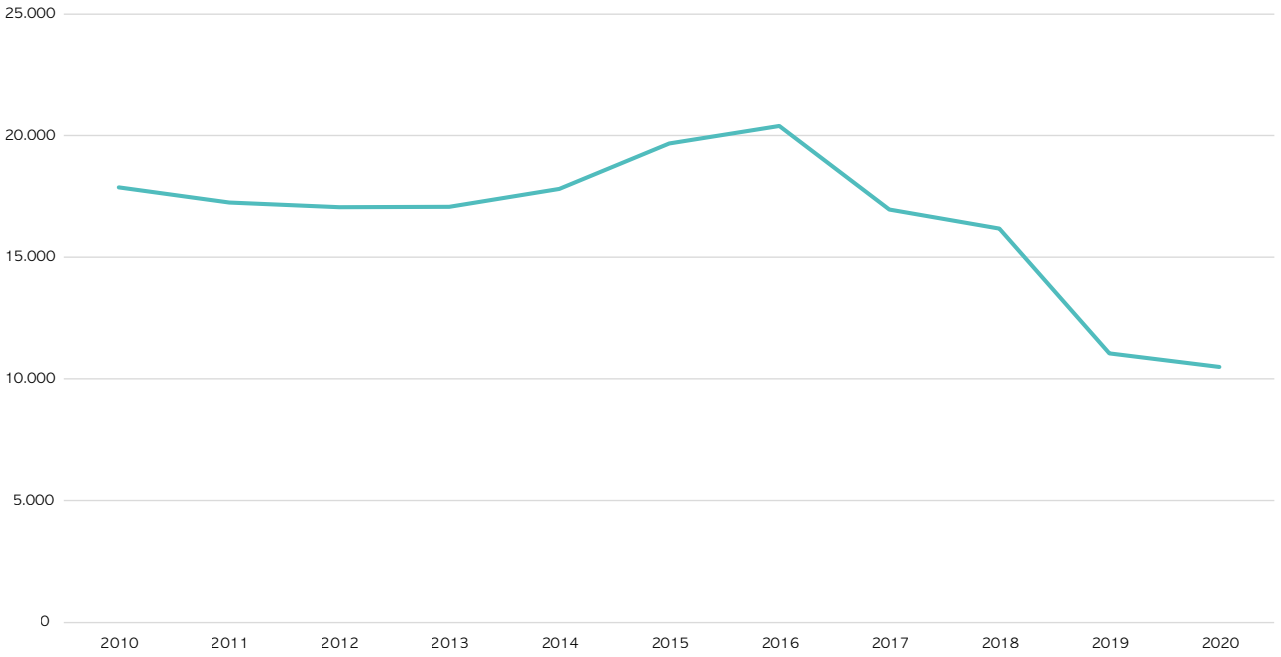
Table 10: Total serious assault offences and average (mean and median) serious assault rates (per 100 000 inhabitants) 2010–2020

Country	Total serious assault offences	Mean serious assault rates	Median serious assault rates
Australia	3.349.431	290,28	289,46
Austria	40.064	42,17	42,28
Belgium	740.600	610,30	593,38
Bulgaria	28.657	36,03	34,98
Canada	610.307	151,19	152,22
Croatia	8.955	19,36	19,04
Cyprus	1.627	12,90	12,35
Czech Republic	108.317	98,64	49,21
Denmark	26.835	44,16	30,97
Estonia	901	6,92	7,45
Finland	19.942	33,36	29,63
France	2.796.658	388,71	373,19
Germany	1.476.442	164,46	165,15
Greece	16.413	14,18	14,64
Hungary	82.078	141,10	141,65
Iceland	997	26,16	26,93
Ireland	74.652	151,72	90,35
Italy	718.100	110,16	109,40
Latvia	8.468	38,86	33,51
Lithuania	2.139	6,74	6,77
Luxembourg	14.332	296,97	131,29
Malta	2.048	43,40	42,90
Netherlands	217.396	126,52	30,86
New Zealand	224.102	391,28	358,40
Norway	25.919	47,07	44,64
Poland	89.082	21,96	20,86
Portugal	6.888	6,06	5,66
Romania	63.309	31,15	6,46
Slovakia	20.349	35,14	35,44
Slovenia	18.673	83,47	77,72
Spain	213.021	42,09	38,81
Sweden	55.458	51,67	49,43
Switzerland	6.415	6,97	6,97
UK - England and Wales	3.667.038	715,89	700,05
UK - Northern Ireland	10.873	63,99	61,82
UK - Scotland	35.340	69,69	71,09
United States	8.686.099	243,00	245,29

Source: UN-CTS 2022

Kidnapping. Kidnapping is the least frequent crime across all state and its numbers and rates are decreasing steadily. In 2010, 17 871 cases were recorded across all the countries and the count fell to 11 053 in 2019 (10 496 in 2020) (Figure 34). There is no available data for the US.

Figure 34: Total recorded kidnapping offences 2010–2020 (all countries)



Source: UN-CTS 2022

Most countries record very modest rates of kidnapping cases. For these states, the average (mean) rates between 2010 go from 0 to 2 cases per 100 000 inhabitants. A few states have considerably higher rates. These include Belgium (10.46), Canada (10.23), Luxembourg (8.34), New Zealand (6.89), Germany (5.88) and France (4.31) (Table 11). Of course, these variations might depend on different legal definitions of 'kidnapping' or different ways to record it. Rates are not available for the UK.

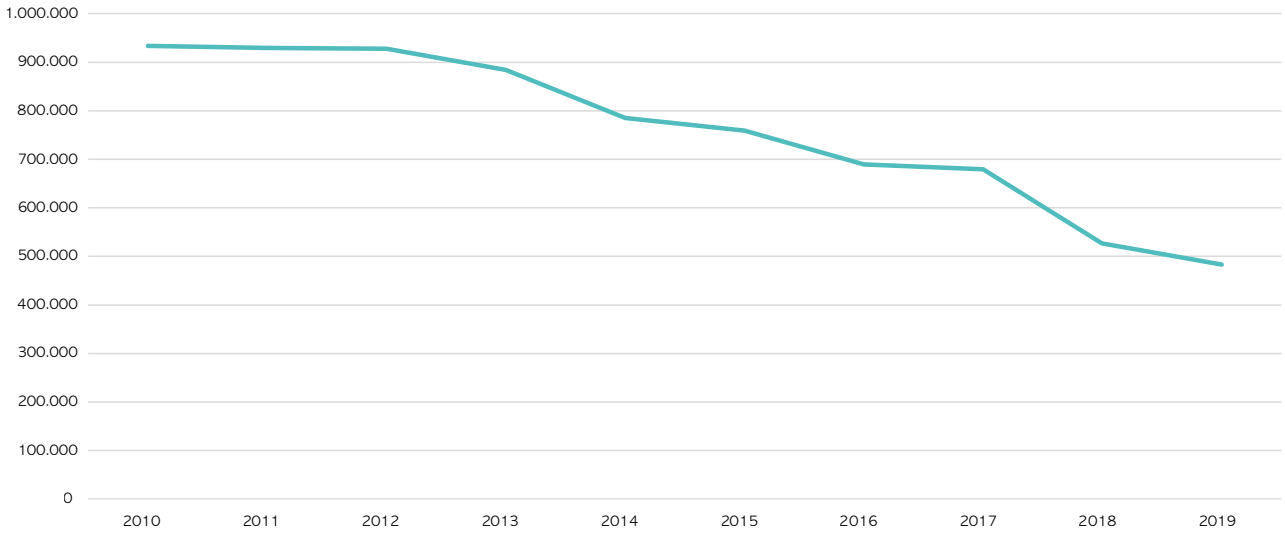
Table 11: Total kidnapping offences and average (mean and median) kidnapping rates (per 100 000 inhabitants) 2010–2020

Country	Total kidnapping offences	Mean kidnapping rates	Median kidnapping rates
Australia	3.349.431	2,37	2,28
Austria	40.064	0,06	0,05
Belgium	740.600	10,46	10,40
Bulgaria	28.657	1,15	1,04
Canada	610.307	10,23	10,13
Croatia	8.955	0,07	0,02
Cyprus	1.627	1,26	1,21
Czech Republic	108.317	0,12	0,11
Denmark	26.835	N/A	N/A
Estonia	901	0,03	0,00
Finland	19.942	0,03	0,02
France	2.796.658	4,31	3,55
Germany	1.476.442	5,88	5,94
Greece	16.413	0,93	0,79
Hungary	82.078	0,07	0,05
Iceland	997	N/A	N/A
Ireland	74.652	1,92	1,77
Italy	718.100	0,44	0,48
Latvia	8.468	0,51	0,46
Lithuania	2.139	0,74	0,00
Luxembourg	14.332	8,34	8,85
Malta	2.048	0,00	0,00
Netherlands	217.396	2,91	2,78
New Zealand	224.102	6,89	6,79
Norway	25.919	N/A	N/A
Poland	89.082	0,46	0,36
Portugal	6.888	3,65	3,58
Romania	63.309	1,64	1,56
Slovakia	20.349	1,17	1,55
Slovenia	18.673	0,21	0,19
Spain	213.021	0,21	0,21
Sweden	55.458	N/A	N/A
Switzerland	6.415	0,04	0,04
UK - England and Wales	3.667.038	N/A	N/A
UK - Northern Ireland	10.873	N/A	N/A
UK - Scotland	35.340	N/A	N/A
United States	8.686.099	N/A	N/A

Source: UN-CTS 2022

Robberies. Robberies are in a steady and steep decline across all the countries examined. Their total number decreased by 48.3% between 2010 and 2019 – from 933 659 to 482 723 – although this is partially affected by missing data from England and Wales, and Northern Ireland in 2018 and 2019. Data for 2020 is missing (Figure 35).

Figure 35: Total recorded robberies 2010–2020



Source: UN-CTS

While the highest number of robberies is recorded, as expected, in the US – probably due to the largest population – Belgium has the highest average (mean) rates of robberies per population between 2010 and 2019 – an average of 193 robberies per 100 000 inhabitants – followed by Spain (158.21), Portugal (147.3), France (129.93) and the US (102.81). The lowest rates are recorded in Cyprus (9.76), Slovakia (12.8), Slovenia (15.24), Iceland (15.65) and Hungary (18.9) (Table 12).

Table 12: Total robberies and average (mean and median) robbery rates (per 100 000 inhabitants) 2010–2020

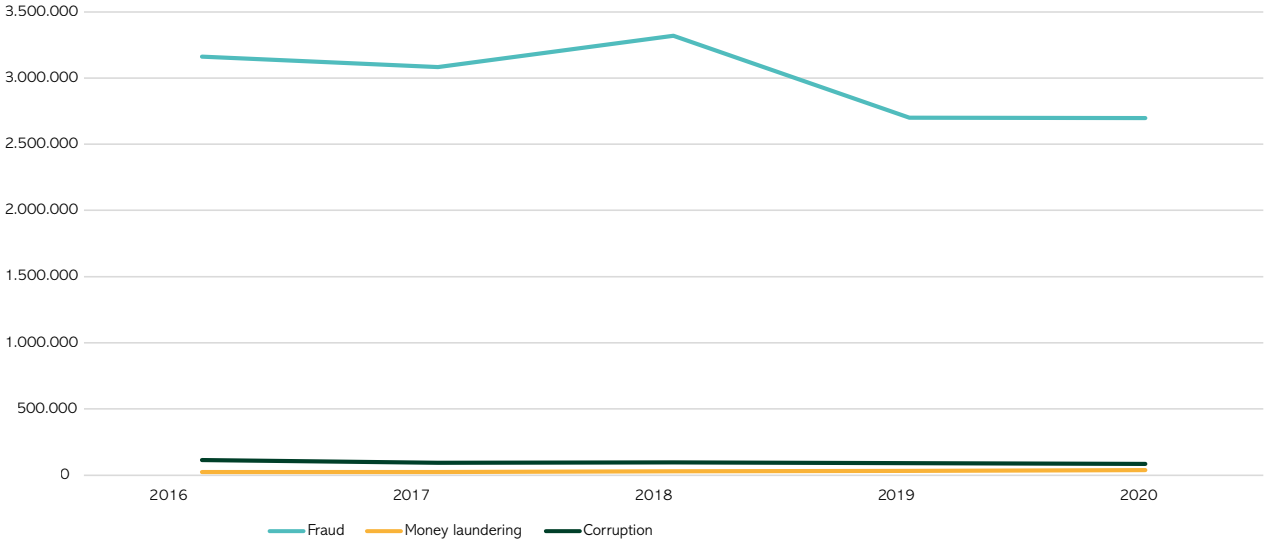
Country	Total robberies	Mean robbery rates	Median robbery rates
Australia	101141	48,03	41,93
Austria	33839	39,23	39,88
Belgium	194446	193,10	195,42
Bulgaria	22723	31,28	29,57
Canada	199034	70,40	63,89
Croatia	11866	27,92	29,28
Cyprus	1121	9,76	8,88
Czech Republic	25012	23,61	21,56
Denmark	24916	44,07	39,63
Estonia	2955	31,91	34,54
Finland	16319	29,87	29,97
France	829593	129,93	169,64
Germany	436939	53,45	55,22
Greece	49399	46,19	43,03
Hungary	18601	18,90	17,33
Iceland	517	15,65	15,20
Ireland	25018	53,64	54,69
Italy	425331	70,73	61,43
Latvia	7356	40,18	40,03
Lithuania	16213	54,28	55,52
Luxembourg	3966	90,25	88,50
Malta	2154	50,16	47,96
Netherlands	113177	67,09	59,66
New Zealand	24538	59,53	57,02
Norway	11714	22,96	19,28
Poland	128406	33,67	31,63
Portugal	153653	147,30	149,45
Romania	33637	16,89	15,94
Slovakia	6947	12,80	11,22
Slovenia	3145	15,24	13,54
Spain	741090	158,21	146,21
Sweden	88229	90,84	87,18
Switzerland	30278	37,33	25,63
UK - England and Wales	511567	NA	NA
UK - Northern Ireland	8204	NA	NA
UK - Scotland	15754	NA	NA
United States	3277686	102,81	102,64

Source: UN-CTS 2022

Economic crime. As we mentioned earlier, there are less data available on economic crime. The UN-CTS database includes some datasets on fraud, money laundering and corruption – defined according to the ICCS classifications. Fraud is defined as obtaining money or other benefit, or evading a liability through deceit or dishonest conduct. Money laundering is defined as the conversion or transfer of property, knowing that such property is the proceeds of crime, for the purpose of concealing or disguising the illicit origin of such property or helping any person who is involved in the commission of the predicate offence to evade the legal consequences of their actions, as well as the concealment or disguise of the true nature, source, location, disposition, movement or ownership of rights with respect to the property. Corruption is broadly defined as any unlawful acts defined in the United Nations Convention against Corruption and other national and international legal instruments against corruption. These acts include not only bribery, but also embezzlement, abuse of functions, trading in influence, illicit enrichment and all other acts of corruption not mentioned above (UNODC, 2015, 2022d). Unfortunately, the UN-CTS data concerning these offences are very fragmented until 2015, so we will focus only on the years from 2016 to 2020.

The most frequent of these economic crimes is fraud (Figure 32). From 2016 to 2018, more than 3 million frauds were recorded every year across the countries considered in this study, except for Iceland, Northern Ireland and Switzerland, which did not provide any data. A decrease in such figures can be observed in 2019 (2 700 718) and 2020 (2 696 649), but this might depend again on missing data from England and Wales, which recorded more than 600 000 frauds per year from 2016 to 2018. Data from Scotland and Luxembourg for those years are also missing and from the Netherlands it is missing from 2017 onwards (Figure 36).

Figure 36: Total recorded fraud, money laundering and corruption offences 2010–2020 (all countries)



Source: UN-CTS 2022

However, figures for individual countries suggest that fraud is increasing year after year in most countries, with the exception of Australia, Bulgaria, Cyprus, Germany, Hungary, Lithuania, New Zealand, Slovakia and the US. In these countries, fraud counts and fraud rates have been either relatively stationary or decreasing. Some significant decrease was recorded in Germany (from 937 891 fraud cases in 2014 to 840 783 in 2019 and 832 966 in 2020), Hungary (from 36 837 in 2019 to 16 936 in 2019 and 15 451 in 2020), Slovakia (from 5357 in 2013 to 2264 in 2019 and 1984 in 2020), Slovenia (from 8213 in 2013 to 3952 in 2019 and 3379 in 2020) and the US (from 143 500 in 2013 to 112 700 in 2019).

It is difficult to pinpoint the reasons for such variations. For instance, in Australia fraud counts have irregularly oscillated between 10 100 and 12 447 from 2013 to 2020, settling at 11 976 in 2019 and 11 553 in 2020. However, in those very years media and official inquiries exposed widespread misconduct – including fraudulent behaviours such as deceiving financial advice, mis-selling of financial products, forgery of signature and documents – across the entire banking industry. The scandal triggered an investigation by a specially appointed Royal Commission, but not many prosecutions as one of the problems emerged was uncertainty about the legality of certain practices (Pasculli, 2021). So, it might well be that the official statistics do not include the practices that the Royal Commission identified as dishonest but that were not investigated recorded by law enforcement as fraud. Another potential issue is the changing nature of fraud. For instance, despite the steady fall of fraud counts in the US, recent data from the Federal Trade Commission show that consumers reported losing more than $5.8 billion to fraud in 2021, an increase of more than 70% over the previous year, of which more than $2.3 billion was caused by imposter scams, and about $392 million caused by online shopping scams (FTC, 2022).

When it comes to fraud rates, the highest number of frauds per 100 000 inhabitants is recorded in Sweden (with an average rate of 2695.37 frauds per year from 2016 to 2020), followed by Germany (1033.69), Denmark (792.59), Finland (736.18), Belgium (613.43) and Spain (588.78). The lowest rates are recorded in Cyprus (19.68), Greece (33.26), the US (37.23), Bulgaria (38.47), Slovakia (44.23), Australia (46.56) and Romania (55.65) (Table 13). Here again, however, the example of the Australian banking scandal shows that low rates might depend on different legal definitions or ineffective enforcement, rather than from the absence of fraudulent practices.

Table 13: Fraud rates (per 100 000 inhabitants) by country 2016–2020

Country	2016	2017	2018	2019	2020
Australia	46,01	45,20	48,78	47,52	45,31
Austria	372,03	397,40	425,79	554,18	604,13
Belgium	489,65	507,85	575,25	687,56	806,84
Bulgaria	50,41	47,45	40,42	30,04	24,05
Canada	N/A	N/A	N/A	N/A	N/A
Croatia	90,43	63,09	74,29	79,85	61,07
Cyprus	19,83	20,85	19,09	18,44	20,21
Czech Republic	92,63	82,25	79,22	85,87	74,26
Denmark	687,79	766,50	753,60	825,16	929,94
Estonia	127,99	118,31	109,83	136,76	139,08
Finland	814,67	640,86	646,42	728,36	850,65
France	305,75	268,20	277,60	319,59	356,30
Germany	1.093,81	1.101,34	1.011,48	997,36	964,47
Greece	35,70	30,78	30,26	30,63	38,94
Hungary	461,40	260,94	217,10	174,87	159,94
Iceland	N/A	N/A	N/A	N/A	N/A
Ireland	104,39	82,97	94,47	115,74	118,72
Italy	300,19	319,86	361,00	401,35	469,20
Latvia	90,46	77,03	91,16	82,86	91,77
Lithuania	99,32	105,40	99,35	108,02	98,74
Luxembourg	170,73	99,34	106,91	N/A	N/A
Malta	114,65	179,71	234,94	186,43	183,68
Netherlands	370,99	N/A	N/A	N/A	N/A
New Zealand	64,71	68,35	64,20	61,51	61,71
Norway	406,80	375,26	422,11	391,01	350,44
Poland	285,99	339,99	309,67	369,59	365,12
Portugal	188,68	222,90	233,20	302,91	362,89
Romania	N/A	51,90	53,81	58,57	58,33
Slovakia	42,48	52,55	48,29	41,49	36,34
Slovenia	211,31	192,74	188,03	190,12	162,54
Spain	392,43	460,04	619,33	700,98	771,15
Sweden	2.210,86	2.560,00	3.020,67	2.923,19	2.762,12
Switzerland	195,99	168,25	205,50	223,00	242,48
United Kingdom	N/A	N/A	N/A	N/A	N/A
United States	39,78	38,21	36,69	34,25	N/A

Source: UN-CTS 2022

It is difficult to assess how much of these frauds are cyber-related, due to the very scant data available. Moreover, even these data are rather inconsistent – suggesting very different trends in the few countries that submitted them (Table 14). It is difficult and premature to try to draw any inferences from these data, except that states should perhaps commit to additional efforts to record and submit data concerning online frauds.

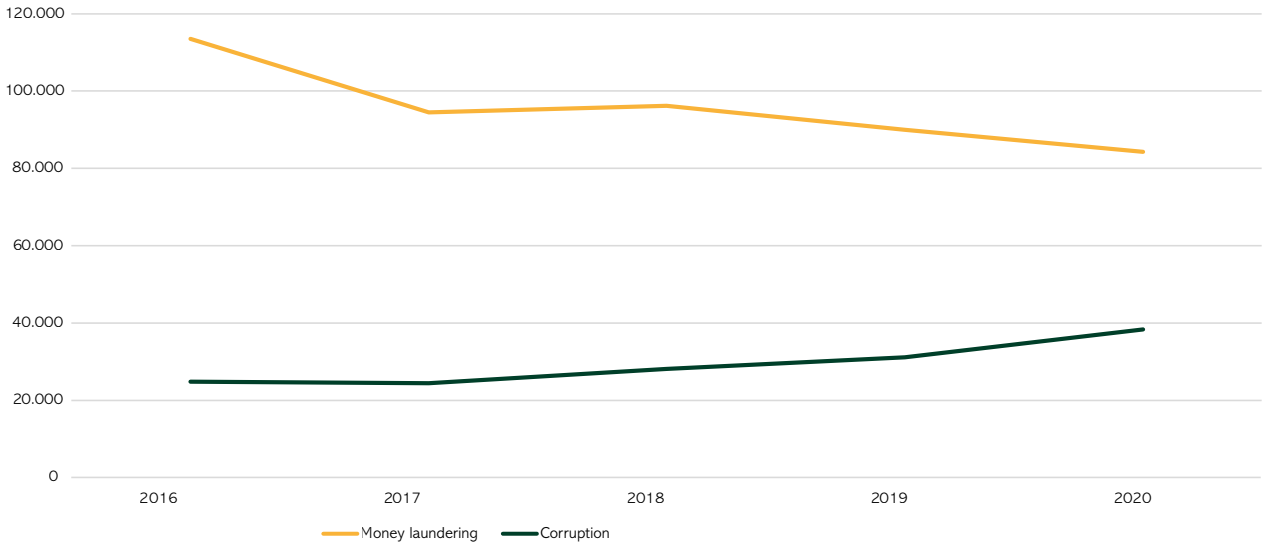
Table 14: e-Fraud rates (per 100 000 inhabitants) by country 2016–2020

Country	2016	2017	2018	2019	2020
Australia	N/A	N/A	N/A	N/A	N/A
Austria	110,5711861	11,97292215	15,97051887	61,83063342	117,7273939
Belgium					
Bulgaria	1,566006912	1,506521973	1,715920194	1,385691125	1,439170922
Canada	N/A	N/A	N/A	N/A	N/A
Croatia	32,4335036	26,63257824	31,51760643	43,21721018	23,16535729
Cyprus	N/A	N/A	N/A	N/A	N/A
Czech Republic	22,40351796	23,41878119	25,71800633	36,59764288	35,57761139
Denmark	N/A	N/A	N/A	N/A	N/A
Estonia	N/A	N/A	N/A	N/A	N/A
Finland	N/A	N/A	N/A	N/A	N/A
France	N/A	N/A	N/A	N/A	N/A
Germany	223,2882127	226,3532558	247,5024997	261,3478451	279,3972043
Greece	8,393637679	10,34112563	13,76132316	6,015208739	11,4265912
Hungary	N/A	N/A	N/A	N/A	N/A
Iceland	N/A	N/A	N/A	N/A	N/A
Ireland	N/A	N/A	N/A	N/A	N/A
Italy	54,53070722	75,94395027	99,14841816	129,7157402	163,1062164
Latvia	N/A	N/A	N/A	N/A	N/A
Lithuania	16,26548032	16,76378769	20,34791362	17,61105017	20,53417508
Luxembourg	N/A	N/A	N/A	N/A	N/A
Malta	N/A	N/A	0,682974582	N/A	N/A
Netherlands	N/A	N/A	N/A	N/A	N/A
New Zealand	N/A	N/A	N/A	N/A	N/A
Norway	N/A	N/A	N/A	N/A	N/A
Poland	84,69245142	90,08732234	96,47803487	123,7681678	129,2903287
Portugal	N/A	N/A	N/A	N/A	N/A
Romania	N/A	N/A	N/A	N/A	N/A
Slovakia	0,47776544	0,477247851	1,045292908	1,301078319	1,135605387
Slovenia	6,267461509	8,524389627	10,53981161	26,69997027	21,64572963
Spain	151,9359286	202,7893287	292,0017991	407,9078444	546,9322786
Sweden	1299,3896	1354,148631	1731,592528	N/A	N/A
Switzerland	N/A	N/A	N/A	N/A	N/A
United Kingdom	N/A	N/A	N/A	N/A	N/A
United States	N/A	N/A	N/A	N/A	N/A

Source: UN-CTS 2022

Data on money laundering and corruption are also fragmented. Data for the UK are missing, apart from some figures for Scotland and one isolated entry for England and Wales in 2016 which recorded the unlikely figure of 0 cases of money laundering. Data from the US are also missing. As two of the world financial superpowers, the UK and the US are particularly vulnerable to the risk of money laundering and corruption offences, so the lack of data from these countries prevents an exhaustive assessment. The available data suggests that recorded money laundering and corruption offences are considerably fewer than frauds. Corruption figures are higher, but in decline. Money laundering ones are lower but on the rise (Figure 37). In 2016, 113 523 corruption offences were recorded across the countries that provided useful data. This figure declined to 89 950 in 2019 and 84 303 in 2020. As for money laundering, in 2016 24 774 cases were recorded. These increased to 31 073 in 2019. A rather steep increase was recorded even during the pandemic, as the count reached 38 368 in 2020. Besides, money laundering can also be perpetrated entirely online, for instance using cryptocurrencies (Trozze et al., 2022). However, there is no data available on cyber-related money laundering.

Figure 37: Total recorded money laundering and corruption offences 2010–2020 (all countries)



Source: UN-CTS 2022

As for as rates per population, the available data suggests that Sweden has the highest corruption rates – at an average (mean) of 207.83 corruption offences per 100 000 inhabitants from 2016 to 2020. Denmark is second, with an average rate of 79.05 in the same period, followed by Finland (69.11), Slovenia (54.18), Switzerland (42.85), Austria (40.85) and Australia (34.93). The lowest average rates are recorded in Iceland (0.11), Ireland (0.12), Luxembourg (0.51), Norway (0.94), Portugal (1.59) and Cyprus (1.99) (Table 15).

Table 15: Corruption rates (per 100 000 inhabitants) by country 2016–2020

Country	2016	2017	2018	2019	2020
Australia	36,02	36,38	35,01	35,26	31,97
Austria	45,32	40,25	41,10	41,15	36,45
Belgium	3,12	3,28	9,54	8,36	6,99
Bulgaria	N/A	N/A	N/A	N/A	N/A
Canada	N/A	N/A	N/A	N/A	N/A
Croatia	21,50	18,19	12,39	19,01	13,11
Cyprus	3,50	2,63	1,43	1,33	1,08
Czech Republic	27,87	25,59	24,34	21,88	15,77
Denmark	91,85	64,84	84,02	87,67	66,87
Estonia	N/A	N/A	N/A	N/A	N/A
Finland	66,70	64,68	69,64	71,58	72,93
France	3,11	3,00	3,58	3,54	3,55
Germany	7,91	4,66	4,78	4,97	4,98
Greece	N/A	8,53	6,25	5,86	5,82
Hungary	11,95	13,17	23,05	18,65	24,61
Iceland	N/A	N/A	0,12	0,10	0,12
Ireland	N/A	0,08	0,12	0,10	0,12
Italy	35,12	5,89	5,43	5,59	6,12
Latvia	14,54	9,48	12,55	18,57	9,65
Lithuania	26,34	26,32	19,81	17,94	20,24
Luxembourg	0,86	0,17	0,50	N/A	N/A
Malta	1,15	0,69	1,82	0,91	3,62
Netherlands	40,66	39,60	38,86	38,43	33,97
New Zealand	N/A	N/A	N/A	N/A	N/A
Norway	0,88	1,55	0,67	0,87	0,74
Poland	18,67	19,54	26,47	16,47	19,83
Portugal	1,47	1,71	1,62	1,66	1,51
Romania	7,08	27,65	22,45	21,12	17,75
Slovakia	2,39	1,93	3,07	2,77	2,49
Slovenia	66,19	55,88	46,76	51,16	50,90
Spain	2,45	2,42	2,09	1,89	1,63
Sweden	213,88	212,98	210,91	205,42	195,96
Switzerland	44,74	40,08	43,25	43,23	42,96
United Kingdom	N/A	N/A	N/A	N/A	N/A
United States	N/A	N/A	N/A	N/A	N/A

These figures are partly at odds with the rankings of the Transparency International Corruption Perceptions Index (CPI) (2021). According to this index, all the countries with highest recorded corruption rates are some of the countries in the world with the lowest perception of corruption. Denmark and Finland are ranked first in CPI, followed by Norway (4), Sweden (4), Switzerland (7), Austria (13) and Australia (18). This might indicate that these countries might in fact be accurately detecting, investigating and recording many episodes of corruption, whereas in corruption-ridden countries recorded corruption rates might be lower due to ineffective investigations and enforcement.

As far as money laundering is concerned, the highest average (mean) rates per 100 000 inhabitants from 2016 to 2020 are recorded in Iceland (62.52), followed by Sweden (55.87), Scotland (42.67, but some years are missing), New Zealand (32.68), Belgium (18.97) and Switzerland (17.58). Disregarding the UK which submitted an unlikely rate of 0 only for 2016, the lowest recorded rates are found in Greece (0.29), Portugal (0.31), Bulgaria (0.55), Spain (0.60), Canada (0.71) and Croatia (0.73) (Table 16).

Table 16: Money laundering rates (per 100 000 inhabitants) by country 2016–2020

Country	2016	2017	2018	2019	2020
Australia	N/A	N/A	N/A	N/A	N/A
Austria	6,42	7,05	7,49	4,80	5,85
Belgium	7,77	7,92	11,79	19,69	47,66
Bulgaria	0,43	0,63	0,54	0,44	0,69
Canada	0,65	0,89	0,63	0,71	0,65
Croatia	1,38	0,14	0,63	0,99	0,51
Cyprus	N/A	N/A	N/A	N/A	N/A
Czech Republic	11,11	8,77	7,31	5,86	5,19
Denmark	0,07	1,97	1,83	4,47	20,44
Estonia	5,17	3,11	7,63	14,33	1,58
Finland	6,73	8,58	7,71	8,17	10,72
France	1,41	1,56	1,95	2,27	2,91
Germany	14,04	12,12	10,41	11,69	10,67
Greece	0,24	0,27	0,25	0,34	0,33
Hungary	0,52	0,89	2,48	1,94	3,12
Iceland			30,89	72,26	84,40
Ireland	N/A	N/A	N/A	N/A	N/A
Italy	2,98	3,20	3,23	3,27	3,07
Latvia	6,08	6,30	10,16	17,57	22,00
Lithuania	1,11	0,74	1,96	1,88	3,05
Luxembourg					
Malta	17,66	13,24	7,51	8,17	23,78
Netherlands	3,37	3,59	4,11	5,28	8,08
New Zealand	36,46	31,33	30,25		
Norway	2,17	2,19	1,76	2,60	2,90
Poland	0,89	0,98	1,26	3,40	1,71
Portugal	0,17	0,24	0,30	0,35	0,46
Romania	4,82	3,24	2,25	3,32	1,25
Slovakia	2,13	2,15	2,04	1,14	1,41
Slovenia	2,46				
Spain	0,56	0,56	0,58	0,63	0,66
Sweden	20,04	31,67	68,06	67,48	92,12
Switzerland	7,91	9,54	14,37	20,63	35,47
UK - England and Wales	N/A	N/A	N/A	N/A	N/A
UK - Northern Ireland	N/A	N/A	N/A	N/A	N/A
UK - Scotland	20,00	32,00	76,00		
United Kingdom	0,00				
United States	N/A	N/A	N/A	N/A	N/A

4.7.3. Social factors

Having analysed crime rates, we can now move to consider some of the social factors that could influence them. These include income inequality, unemployment, young people leaving education and social values. It must be clear from the outset that this section of the paper does not intend to investigate the correlations between such factors and crime, nor to suggest any empirical evidence of their causal effects on crime. This would be a very complex endeavour that goes well beyond the scope of this study. Instead, we will provide a descriptive comparative analysis of the datasets from the countries examined in this paper concerning factors for which there are theoretical (hypothetical) reasons to believe might affect crime rates. The purpose is therefore not to test or demonstrate causation, but to provide cues for future research and policy interventions.

Income inequality. The OECD provides some helpful data on inequality in the countries examined in this study (OECD, 2022c). OECD defines household disposable income in a particular year. It consists of earnings, self-employment and capital income, and public cash transfers; income tax and social security contributions paid by households are deducted. The income of the household is attributed to each of its members, with an adjustment to reflect differences in needs for households of different sizes. In OECD datasets, income inequality among individuals is measured by various indicators and expressed by a coefficient (the Gini coefficient) ranging between 0 in the case of perfect equality and 1 in the case of perfect inequality.

OECD datasets from 2010 to 2020 are not always complete, as some data are missing for some states and some years. In particular, data for 2020 are still missing. The available data shows that the US had consistently high levels of inequality (around 0.39) for the longest period than any other country – from 2013 (when the earliest data for the US is available) to 2019 (Table 17). This figure was second only to Bulgaria, where inequality has been growing steadily from 2010 (0.33) to 2019 (0.4). The UK also had consistently high levels of inequality growing from 0.35 in 2010 to 0.37 in 2019. Lithuania also saw an increase in inequality from 2010 (0.32) to 2017 (0.38), but more recently rates have been decreasing (0.36 in 2019). Other countries with high inequality are Latvia (0.34 in 2020), Romania (0.34 in 2019), New Zealand (0.32 in 2019) and Spain (0.32 in 2019) – although in New Zealand and Spain, inequality has been decreasing in the last few years. Estonia reported a steep decrease in inequality (from 0.36 in 2013 to 0.31 in 2019). The country with the lowest level of inequality is Slovakia, where inequality has been decreasing from 0.27 in 2010 to 0.22 in 2019. Low levels of inequality are also reported in Slovenia (0.24–0.25 from 2010 to 2019), the Czech Republic (0.25–0.26), Iceland (0.25–026), Norway (0.25–0.27), Sweden (0.27–0.28), Austria (0.27–0.28) and Hungary (0.27–0.29).

Table 17: Income inequality 2010–2019

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Australia	N/A	N/A	0,33	N/A	0,34	N/A	0,33	N/A	0,33	N/A
Austria	0,28	0,28	0,28	0,28	0,27	0,28	0,28	0,28	0,28	0,27
Belgium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0,26	0,26
Bulgaria	0,33	0,34	0,36	0,35	0,37	0,38	0,40	0,40	0,41	0,40
Canada	0,32	0,31	0,32	0,32	0,31	0,32	0,31	0,31	0,30	0,30
Czech Republic	0,26	0,26	0,25	0,26	0,26	0,26	0,25	0,25	0,25	0,25
Denmark	N/A	0,25	0,25	0,25	0,26	0,26	0,26	0,26	0,26	N/A
Estonia	N/A	N/A	N/A	0,36	0,35	0,33	0,31	0,31	0,31	0,31
Finland	0,26	0,26	0,26	0,26	0,26	0,26	0,26	0,27	0,27	N/A
France	N/A	N/A	0,31	0,29	0,29	0,30	0,29	0,29	0,30	0,29
Germany	N/A	0,29	0,29	0,29	0,29	0,29	0,29	0,29	0,29	N/A
Greece	0,34	0,33	0,34	0,34	0,34	0,34	0,33	0,32	0,31	0,31
Hungary	0,27	0,27	0,28	0,29	0,28	0,28	0,28	0,29	0,28	0,29
Iceland	0,25	0,25	0,25	0,24	0,25	0,26	0,26	0,25	N/A	N/A
Ireland	0,30	0,31	0,31	0,31	0,30	0,30	0,31	0,30	0,29	N/A
Italy	0,33	0,33	0,33	0,33	0,33	0,33	0,33	0,33	0,33	N/A
Latvia	0,35	0,35	0,35	0,35	0,35	0,35	0,35	0,36	0,35	0,34
Lithuania	0,33	0,32	0,35	0,35	0,38	0,37	0,38	0,37	0,36	0,36
Luxembourg	N/A	N/A	N/A	N/A	N/A	0,31	0,31	0,33	0,32	0,31
Netherlands		0,29	0,29	0,29	0,31	0,31	0,29	0,30	0,30	0,30
New Zealand	0,34	0,33	0,34	0,34	0,34	0,33	0,33	0,34	0,33	0,33
Norway	0,25	0,25	0,25	0,25	0,26	0,27	0,26	0,26	0,26	0,26
Poland	0,30	0,30	0,30	0,30	0,30	0,29	0,29	0,28	0,28	N/A
Portugal	0,34	0,34	0,34	0,34	0,34	0,34	0,33	0,32	0,32	0,31
Romania	0,34	0,34	0,34	0,35	0,37	0,35	0,33	0,35	0,35	0,34
Slovakia	0,27	0,26	0,25	0,27	0,25	0,25	0,24	0,22	0,24	0,22
Slovenia	0,25	0,24	0,25	0,25	0,25	0,25	0,24	0,24	0,25	0,25
Spain	0,34	0,34	0,33	0,35	0,34	0,34	0,34	0,33	0,33	0,32
Sweden	N/A	N/A	N/A	0,27	0,27	0,28	0,28	0,28	0,28	0,28
Switzerland	0,30	0,29	0,29	0,30	0,30	0,30	0,30	0,30	0,31	0,32
United Kingdom	0,35	0,35	0,35	0,36	0,36	0,36	0,35	0,36	0,37	0,37
United States	N/A	N/A	N/A	0,40	0,39	0,39	0,39	0,39	0,39	0,40

Source: OECD 2022

Unemployment. The relationship between unemployment and crime has been intensively researched. According to one scholar, 'unemployment and crime go hand in hand' (Andersen, 2021). Employment increases the opportunity cost of crime by granting legitimate earnings, reducing the time available for criminal behaviour and may influence behaviour by increasing patience and risk aversion.
OECD also offers data on unemployment rates (OECD, 2022d). Unemployment rates are percentages of unemployed people compared to the whole labour force (total number of unemployed people plus those in employment). The unemployed are defined by OECD as people of working age who are without work, are available for work and have taken specific steps to find work. According to OECD data, unemployment rates have been declining – more or less significantly – in most countries examined by this study, although an increase has been reported almost everywhere (except for France and Italy) in 2020, during the coronavirus pandemic (Table 18).

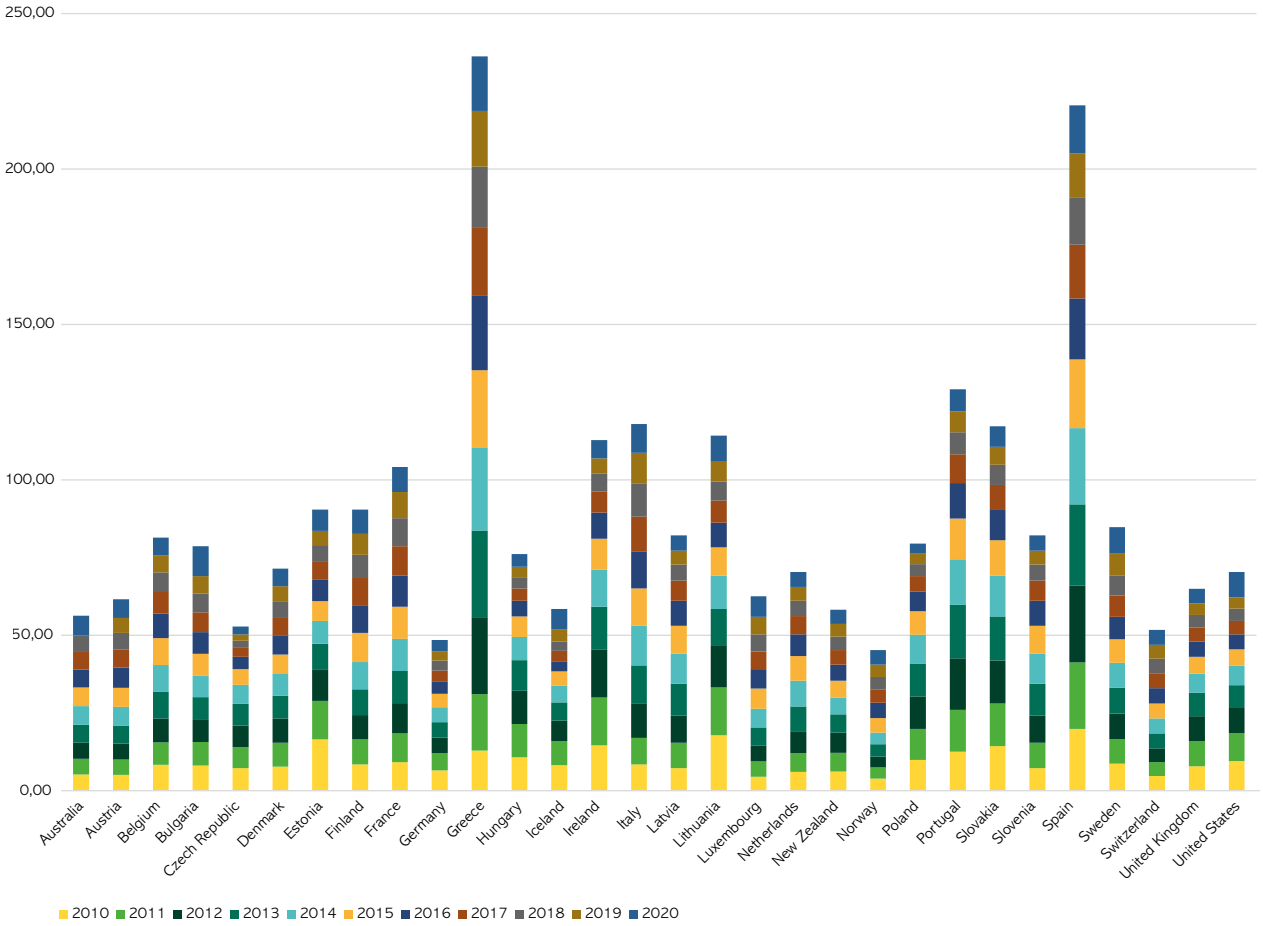
Table 18: Unemployment rates 2010–2020

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Australia	5,21	5,08	5,22	5,66	6,08	6,06	5,71	5,59	5,30		6,46
Austria	5,19	4,90	5,19	5,73	6,03	6,15	6,45	5,93	5,21	4,84	6,03
Belgium	8,38	7,22	7,63	8,55	8,66	8,65	7,94	7,18	6,03	5,44	5,76
Bulgaria	8,12	7,56	7,33	7,13	6,94	6,94	7,05	6,40	5,89	5,73	9,56
Canada	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Croatia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyprus	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Czech Republic	7,29	6,72	6,98	6,97	6,12	5,06	3,97	2,91	2,27	2,02	2,55
Denmark	7,75	7,76	7,78	7,38	6,93	6,27	5,98	5,82	5,15	5,03	5,63
Estonia	16,58	12,35	9,91	8,49	7,32	6,39	6,83	5,81	5,39	4,48	6,88
Finland	8,54	7,97	7,81	8,30	8,75	9,46	8,92	8,77	7,43	6,74	7,73
France	9,28	9,22	9,76	10,30	10,28	10,35	10,07	9,43	9,03	8,43	8,03
Germany	6,58	5,52	5,08	4,95	4,71	4,37	3,91	3,57	3,21	2,98	3,63
Greece	12,96	18,09	24,81	27,83	26,65	24,98	23,88	21,84	19,74	17,88	17,62
Hungary	10,80	10,67	10,68	9,85	7,50	6,63	4,98	4,05	3,59	3,30	4,13
Iceland	8,30	7,68	6,63	5,84	5,41	4,51	3,34	3,28	3,10	3,93	6,43
Ireland	14,58	15,41	15,48	13,78	11,88	9,93	8,41	6,73	5,78	4,98	5,85
Italy	8,54	8,51	10,88	12,37	12,83	12,00	11,75	11,26	10,60	9,93	9,30
Latvia	7,26	8,18	8,85	10,11	9,70	8,98	8,01	6,58	5,13	4,44	4,98
Lithuania	17,84	15,39	13,41	11,80	10,73	9,13	7,90	7,12	6,18	6,28	8,52
Luxembourg	4,58	4,83	5,07	5,88	6,05	6,46	6,33	5,62	5,50	5,59	6,69
Malta	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Netherlands	6,07	6,05	6,82	8,19	8,35	7,89	7,00	5,88	4,87	4,43	4,85
New Zealand	6,23	6,03	6,48	5,85	5,43	5,40	5,13	4,73	4,33	4,10	4,60
Norway	3,96	3,57	3,48	3,93	3,78	4,69	4,91	4,37	3,99	3,88	4,75
Poland	9,98	9,95	10,39	10,61	9,21	7,68	6,28	4,96	3,88	3,31	3,22
Portugal	12,58	13,52	16,58	17,18	14,65	13,03	11,47	9,23	7,17	6,68	7,12
Romania	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Slovakia	14,43	13,61	13,91	14,13	13,10	11,47	9,66	8,08	6,51	5,72	6,66
Slovenia	7,26	8,18	8,85	10,11	9,70	8,98	8,01	6,58	5,13	4,44	4,98
Spain	19,88	21,41	24,79	26,12	24,45	22,08	19,65	17,23	15,27	14,11	15,53
Sweden	8,78	7,95	8,15	8,21	8,10	7,59	7,15	6,86	6,52	6,98	8,54
Switzerland	4,80	4,40	4,48	4,75	4,83	4,80	4,92	4,80	4,71	4,39	4,82
United Kingdom	7,88	8,13	7,98	7,60	6,18	5,35	4,90	4,43	4,10	3,83	4,58
United States	9,62	8,95	8,07	7,38	6,17	5,29	4,87	4,35	3,90	3,67	8,09

Source: OECD 2022

The countries with the highest unemployment rates from 2010 to 2020 are Greece, Spain and Portugal, where unemployment rates reached their peak in 2013. In that year, 27.83% of the labour force was unemployed in Greece, 26.12% in Spain and 17.18 in Portugal. High unemployment rates were recorded in 2010 in Lithuania (15.39%), Estonia (16.58), Ireland (14.58) and Slovakia (14.53), but since then they have been decreasing considerably, falling below 11% (or less) in 2019. In 2020, the lowest levels of unemployment were recorded in the Czech Republic (2.55%), Poland (3.22), Germany (3.63), Hungary (4.13) and the UK (4.58) (Figure 38).

Figure 38: Unemployment rates 2010–2020 (stacked)



Source: OECD 2022

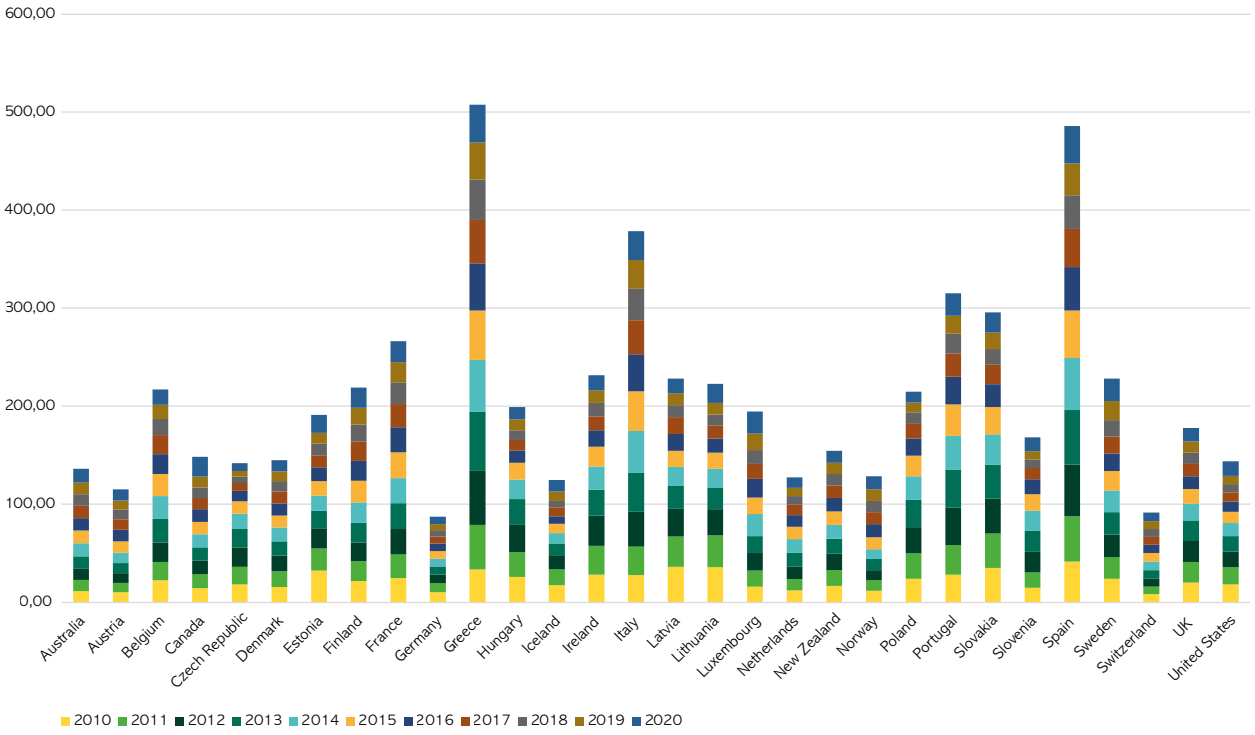
The OECD also records unemployment rates for the specific group of people aged 15 to 24 (those just entering the labour market following education), who are generally at high risk of offending. Unemployment rates for this group of people tend to reflect broadly the general unemployment rates, with Greece and Spain reporting the highest rates and the Czech Republic, Germany, Norway, Iceland and Switzerland reporting the lowest. A significant exception is Italy, which reported significantly high unemployment rates for people between 15 and 24, compared to the unemployment rates of the total labour force (Figures 37–38).

Table 19: Unemployment rates (age 15–24) 2010–2020

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Australia	11,54	11,36	11,71	12,21	13,31	13,10	12,63	12,58	11,77	11,73	14,26
Austria	10,12	9,53	9,98	10,31	10,93	11,27	11,95	10,47	10,05	9,10	11,69
Belgium	22,43	18,80	19,93	23,90	23,48	22,48	20,25	19,48	16,10	14,50	15,85
Bulgaria	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Canada	14,63	13,94	14,11	13,44	13,18	12,87	12,83	11,43	10,86	10,95	20,04
Croatia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyprus	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Czech Republic	18,33	18,03	19,50	18,92	15,84	12,59	10,54	7,90	6,73	5,62	7,93
Denmark	15,55	16,24	15,73	14,72	14,19	12,10	12,13	12,35	10,52	10,02	11,53
Estonia	32,46	22,32	20,88	17,95	15,33	14,66	14,09	12,28	11,85	11,23	18,28
Finland	21,88	20,06	19,27	20,19	20,38	22,12	20,43	19,84	16,97	17,27	20,83
France	24,71	24,17	25,81	26,43	25,67	26,08	25,94	23,50	21,98	20,73	21,43
Germany	10,40	9,09	8,58	8,36	8,26	7,73	7,52	7,22	6,63	6,15	7,52
Greece	33,65	45,28	55,91	59,37	53,06	50,28	48,22	44,48	41,18	37,64	38,38
Hungary	25,87	25,41	27,78	26,13	20,06	17,09	12,71	10,49	9,84	11,25	12,44
Iceland	17,67	15,73	14,73	11,53	10,91	9,76	7,29	9,18	6,80	9,49	11,88
Ireland	28,13	29,54	30,71	26,68	23,43	20,20	16,73	14,37	13,68	12,43	15,87
Italy	27,96	29,03	35,24	40,03	42,64	40,33	37,73	34,77	32,27	29,14	29,53
Latvia	36,06	30,98	28,50	23,08	19,60	16,28	17,26	16,98	12,23	12,48	14,77
Lithuania	35,83	32,56	26,72	21,88	19,33	16,31	14,49	13,26	11,21	11,86	19,53
Luxembourg	15,90	16,39	18,09	17,04	22,53	16,78	19,10	15,51	14,15	16,61	22,73
Malta	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Netherlands	12,33	11,36	12,86	14,16	13,71	12,57	12,09	10,36	8,87	8,48	10,56
New Zealand	16,60	16,16	16,91	15,28	14,05	13,86	13,43	12,94	11,77	11,28	12,38
Norway	11,71	10,66	10,55	11,44	9,95	12,23	13,07	12,53	11,38	11,69	13,23
Poland	23,95	26,05	26,81	27,60	24,07	20,95	17,81	14,91	11,81	9,88	10,93
Portugal	28,23	30,21	38,20	38,31	34,77	32,00	28,27	23,79	20,30	18,25	22,85
Romania	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Slovakia	35,23	35,05	35,27	34,93	30,98	27,68	23,43	19,95	15,75	17,04	20,34
Slovenia	14,78	15,90	20,73	21,70	20,58	16,60	15,38	11,33	8,85	8,18	14,43
Spain	41,51	46,22	52,88	55,46	53,21	48,34	44,46	38,66	34,38	32,56	38,30
Sweden	24,16	22,00	22,97	22,85	22,23	19,62	18,17	17,08	16,69	19,40	23,23
Switzerland	8,20	7,70	8,30	8,73	8,58	8,78	8,58	8,05	7,93	8,00	8,63
United Kingdom	20,03	21,33	21,38	20,85	17,08	14,85	13,25	12,30	11,55	11,43	13,73
United States	18,42	17,28	16,18	15,52	13,37	11,60	10,42	9,23	8,60	8,38	15,06

Source: OECD 2022

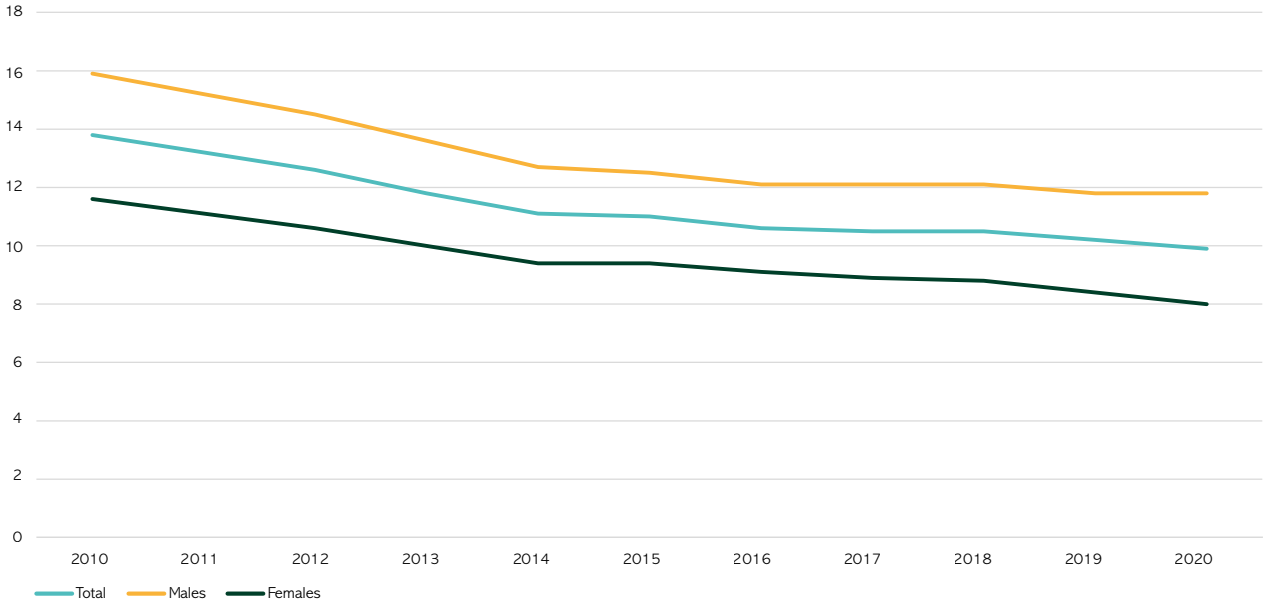
Figure 39: Unemployment rates (age 15–24) 2010–2020 (stacked)



Source: OECD 2022

Early leavers. Research suggests that education can have crime-reducing effect, especially by improving the chances of employment (Machin et al., 2011; Skrede Gleditsch et al., 2022). Leaving education early might therefore be correlated to increases in crime. According to Eurostat (2022e), in 2021 an average of 9.7% of young people aged 18–24 in the EU were early leavers – that is, individuals who completed at most a lower secondary education and were not in further education or training during the four weeks preceding the labour force survey (Figure 40).

Figure 40: Percentage of 18–24-year-old early leavers in the EU 2010–2020



Source: Eurostat 2022

However, there were differences between states, between women and men, and between young people living in areas with different degrees of urbanisation. The proportion of early leavers in 2021 ranged from 2.4% in Croatia to 15.3% in Romania. The highest shares were found in Romania (15.3%), followed by Spain and Italy with around 13%. The countries with the lowest proportion of early leavers were Croatia, Slovenia, Greece, Ireland and Switzerland, where the share was below 5%. According to Eurostat (2022e), the proportion of early leavers was 3.5 percentage points (pp) higher for young men (11.4%) than for young women (7.9%) in the EU in 2021. All EU Member States, except for Bulgaria and Romania, reported a higher proportion of early leavers for young men than for young women. Particularly large differences were recorded in Norway (6 pp), Spain (7 pp) and Iceland (10.7 pp).

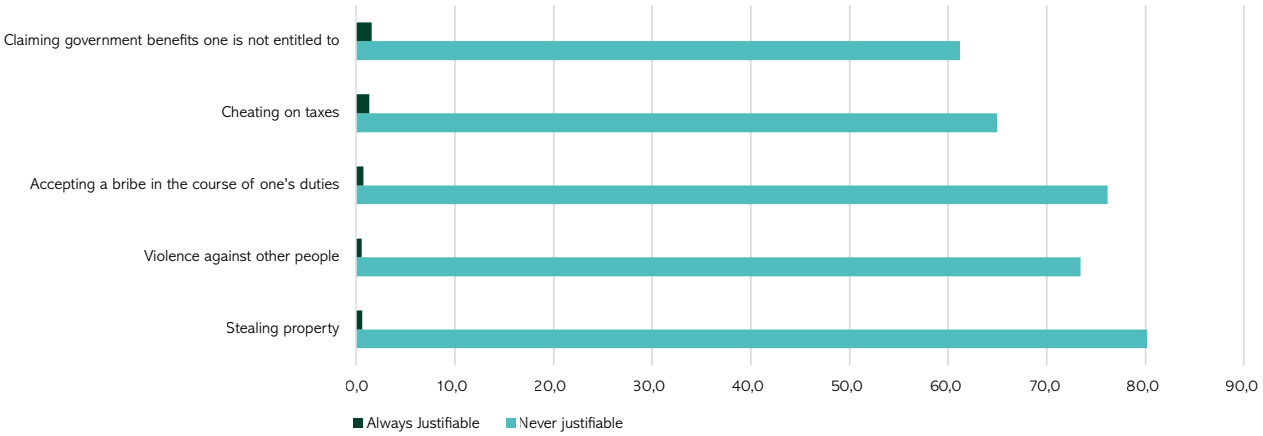
Social values. Social values can also affect criminal motivations. Two simple examples: ideology might fuel political violence or terrorism, while an excessive focus on financial success might drive economic crime. Two main international surveys seek to measure social values across different countries: the European Value Study (EVS) (europeanvaluesstudy.eu) (EVS, 2022) and the World Value Survey (WVS) (www.worldvaluessurvey.org) (Haerpfer et al., 2022). The last round of these surveys, covering the period from 2017 to 2021, has been conducted in a partnership between EVS and WVS teams and the joint data was published in November 2020 and updated in May 2022. The surveys include questions on the most varied social issues and values, such as religion, family, friends or politics. The joint results of the survey offer endless opportunities to study possible correlations between social values and crime. While we cannot address such correlations here, we can provide some insights on some data concerning the perceived justifiability of certain behaviours, which might help in understanding some social attitudes towards crime. The surveys include some questions asking respondents to rate the justifiability of illegal behaviours on a 10-point scale ranging from never justifiable (0) to always justifiable (10). Here, we will focus on the following behaviours which, although not necessarily overlapping, are related to some of the crimes we addressed above:

- stealing property (theft);
- violence against other people (homicide, serious assault, sexual violence);
- cheating on taxes (fraud);
- claiming government benefits one is not entitled to (fraud);
- accepting a bribe in the course of one's duties (corruption).

However interesting, this data suffers from some considerable limitations. First, the most recent data is not always complete for all countries, so a full comparison is not possible. Moreover, when analysing data concerning individual attitudes and perceptions about crime, there is always the risk of biases: some people, for instance, might be inclined to alter their genuine answer for fear of being judged.

In the last survey round, the crime that was perceived as the least justifiable across the countries for which data are available is stealing, which an average (mean) of 80.2% of respondents across different countries found never justifiable and only 0.6% found always justifiable. The second least justifiable behaviour is public bribery, which 76.2% of respondents found never justifiable and 0.6% always justifiable. Bribery is followed by violence against other persons, which 73.4% of respondents found never justifiable, and 0.7% found always justifiable. Respondents showed much higher levels of acceptance of fraudulent offences. An average of 65% of respondents found cheating on taxes never justifiable (and 1.3% found it always justifiable) and only 61.2% found benefit fraud (claiming government benefits to which one is not entitled) never justifiable (with 1.6% of respondents who found it always justifiable) (Figure 41).

Figure 41: Justifiability of illicit behaviours (average percentage of respondents)



Source: EVS/WVS 2022

However, these averages are not necessarily reliable as the countries for which data are available vary from crime to crime. For stealing and violence, data are available only from Australia, Canada, Cyprus, Germany, Greece, the Netherlands, New Zealand, Romania and the US, while for the other offences data are available for most countries covered by this study. The table below provides precise figures for each country. (Table 20).

Table 20: Justifiability of illicit behaviours by country (percentage of respondents)

Country	Violence against other people		Stealing property		Accepting a bribe in the course of one's duties		Cheating on taxes		Claiming benefits one is not entitled to	
	Never justifiable	Always justifiable	Never justifiable	Always justifiable	Never justifiable	Always justifiable	Never justifiable	Always justifiable	Never justifiable	Always justifiable
Australia	72,3	1,7	79,6	0,8	76,9	0,5	63,6	1,3	67,3	1,8
Austria	N/A	N/A	N/A	N/A	73,3	0,3	67,2	0,4	61,3	0,5
Bulgaria	N/A	N/A	N/A	N/A	90,2	0,2	79,6	1,3	77,7	1,5
Canada	54,4	0,7	61	0,7	60,2	0,8	51,7	1,5	59,2	1,2
Croatia	N/A	N/A	N/A	N/A	82,8	2,1	72,3	3,8	74	1,6
Cyprus	84,9	0,3	87,9	0,3	84,4	0	81,5	0,6	70,2	1,4
Czech Republic	N/A	N/A	N/A	N/A	61	1,3	61,1	1,7	57,4	1,6
Denmark	N/A	N/A	N/A	N/A	87,2	0,3	73,7	0,5	69,1	0,8
Estonia	N/A	N/A	N/A	N/A	82,1	0,5	63,9	1,2	64,8	1,8
Finland	N/A	N/A	N/A	N/A	87,2	0,1	64,1	0,9	52,1	1,1
France	N/A	N/A	N/A	N/A	72,2	1,3	62,1	1,5	31,4	3,4
Germany	85,2	0,5	90,1	0	82,2	0,3	75,7	0,7	74,7	0,8
Greece	89,9	0	93,4	0,3	82,4	0	71,4	0,4	71,9	0,2
Hungary	N/A	N/A	N/A	N/A	69,3	0,6	79,3	0,6	80,7	0,7
Iceland	N/A	N/A	N/A	N/A	89,5	0,1	65	0,6	71,5	0,8
Italy	N/A	N/A	N/A	N/A	81,1	0,3	63,4	1,4	65,8	1,2
Latvia	N/A	N/A	N/A	N/A	71,2	0,4	51,9	1,1	50,8	1,9
Lithuania	N/A	N/A	N/A	N/A	61,3	0,4	45,7	1,3	47,2	0,9
Netherlands	64,4	0,1	76,1	0,1	68,9	0,2	57,1	0,6	68,8	0,6
New Zealand	70,8	0,6	81,5	0,9	81,3	0,4	65,6	0,9	62,8	1,7
Norway	N/A	N/A	N/A	N/A	82	0,8	70,5	1	60,3	1,4
Poland	N/A	N/A	N/A	N/A	87,5	0,2	76,4	0,9	63,3	1,1
Portugal	N/A	N/A	N/A	N/A	77,8	0,2	60,5	0,8	60,5	1
Romania	82,6	0,2	82,5	1	80,1	0,8	64,9	5,2	66,8	3,2
Slovakia	N/A	N/A	N/A	N/A	42,3	2,3	42,5	1,5	28,5	3,5
Slovenia	N/A	N/A	N/A	N/A	83	0,3	68,5	1,1	54	0,9
Spain	N/A	N/A	N/A	N/A	61,1	5,5	52,9	3,8	37,4	6,3
Sweden	N/A	N/A	N/A	N/A	72,9	0,6	66,1	0,4	62,6	0,7
Switzerland	N/A	N/A	N/A	N/A	76,4	1,1	61,6	1,6	59,9	1,4
United Kingdom	N/A	N/A	N/A	N/A	82,4	0,4	70,9	1,2	73,6	1
United States	56,2	1	69,3	1,5	71,4	0,7	63,5	1,2	52,5	3

Source: EVS/WVS 2022

The country with the highest percentages of respondents who found various offences never justifiable is Bulgaria (an average of 82.5%, although data are not available for stealing and violence). The second is Greece (81.8%), followed by Germany (81.58%), Denmark (76.7%), Croatia (76.4%) and Hungary (76.4%). The countries displaying the lowest percentages of respondents who found the various offences never justifiable are Slovakia (37.8%), Spain (50.5%), Lithuania (51.4%), France (55.2%), Latvia (58%) and the Czech Republic (59.8%), although for none of these countries data are available for stealing and violence. Percentages are surprisingly low for Canada (57.3% on average), which did provide data on stealing and violence.

4.7.4. Effectiveness of law enforcement

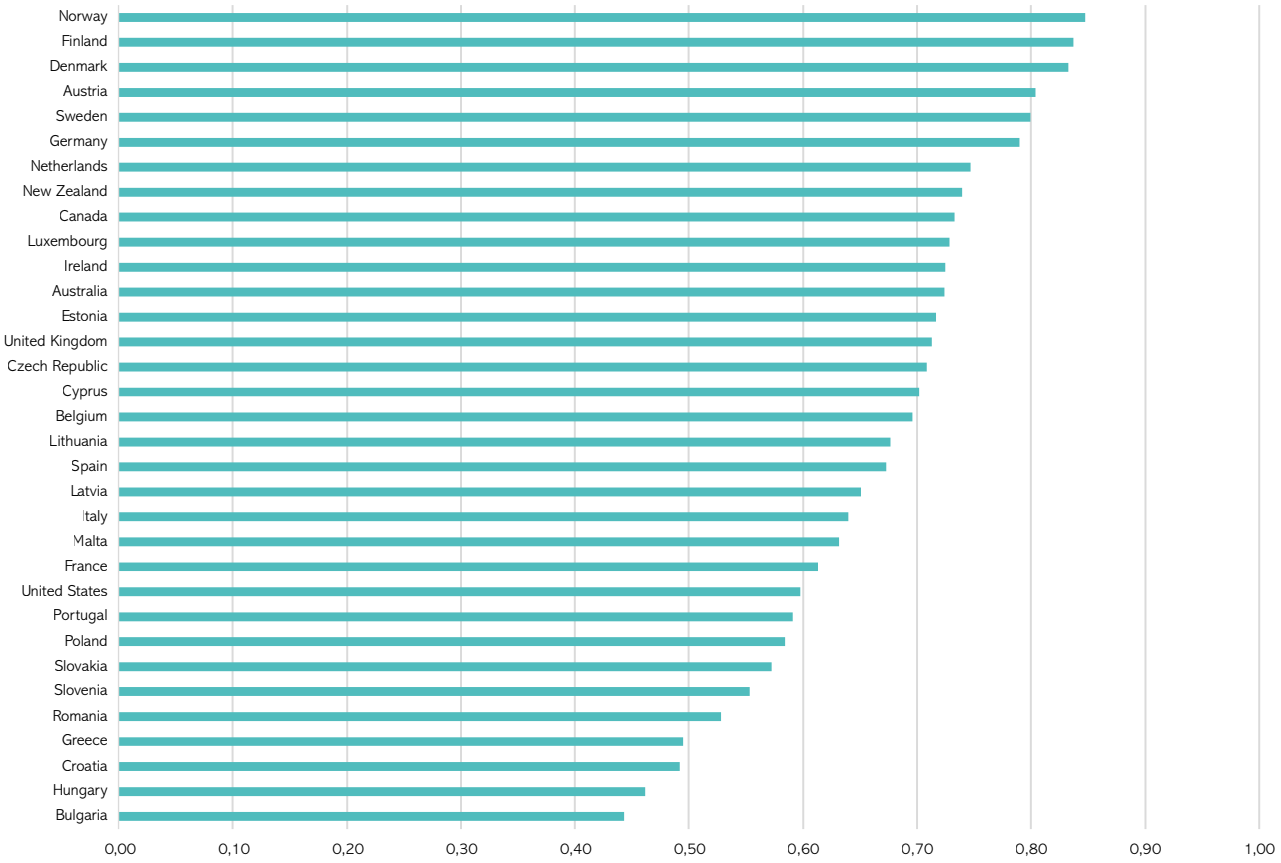
The effectiveness of law enforcement is a fundamental factor in crime control and social safety. Although such effectiveness is very difficult to measure and quantify, some interesting data about it come from the World Justice Project (WJP) Rule of Law Index (https://worldjusticeproject.org). The index seeks to represent the state of the rule of law in 139 countries and jurisdictions by providing scores and rankings based on various factors: constraints on government powers, absence of corruption, open government, fundamental rights, order and security, regulatory enforcement, civil justice and criminal justice. Some of these are evidently relevant to public safety.

The scores and rankings in the WJP Rule of Law Index are derived from more than 138 000 household surveys and 4200 legal practitioner and expert surveys worldwide. For each factor or indicator, each country is given a score from 0 to 1, whereby 0 is the lowest score (ineffective system or weak rule of law) and 1 is the top score (effective system or strong rule of law). Obviously, these surveys record perceptions, so they need to be interpreted with caution as perceptions might not necessarily correspond to reality and can be distorted in many ways. However, such perceptions can still give some useful indications of some possible issues and can help direct future research and policy efforts. These data can be integrated with data on the reliability of police services (World Bank, 2022) collected within the World Economic Forum Executive Opinion Survey (World Economic Forum, 2016), an extensive survey capturing the opinions of business leaders around the world on a broad range of topics surrounding the business environment and, more broadly, of the many drivers of economic development.

In this section we will examine how effective the criminal justice system and regulatory enforcement, and order and security are perceived in the countries considered by our study. In the following section we will consider fairness and compliance with fundamental rights and the rule of law by examining the other indicators, except that concerning civil justice which is beyond our focus.

Criminal justice. In 2021, the country that was rated first on the basis of the effectiveness of the criminal justice was Norway, followed by Finland, Denmark, Austria, Sweden, Germany, the Netherlands and New Zealand. The worst-scoring country was Bulgaria, followed by Hungary, Croatia, Greece, Romania, Slovenia and Slovakia. Economic powers such as the US, France and Italy did not score particularly well, placing themselves midway through the rankings (Figure 42).

Figure 42: Effectiveness of the criminal justice system 2021



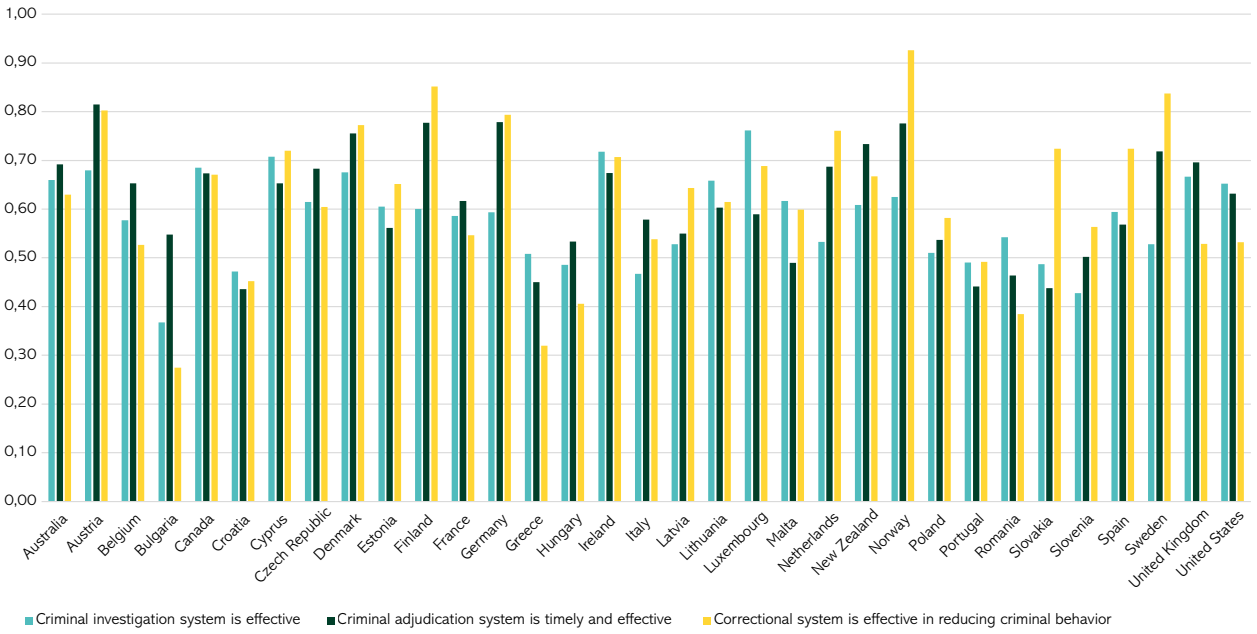
Source: WJP 2022

The scores for these rankings are based on the combination of seven different factors:

1) the criminal investigation system is effective;
2) the criminal adjudication system is timely and effective;
3) the correctional system is effective in reducing criminal behaviour;
4) the criminal system is impartial;
5) the criminal system is free of corruption;
6) the criminal system is free of improper government influence;
7) the due process of the law and rights of the accused are respected.

In 2021, Luxembourg had the highest score for the effectiveness of the investigation system, followed by Ireland, Cyprus, Canada, Austria, Denmark and the UK. Austria was rated first for the effectiveness of the adjudication system, followed by Germany, Finland, Norway, Denmark, New Zealand and Sweden. The highest score for the effectiveness of the correctional system was from Norway, followed by Finland, Austria, Germany, Denmark and the Netherlands (Figure 43).

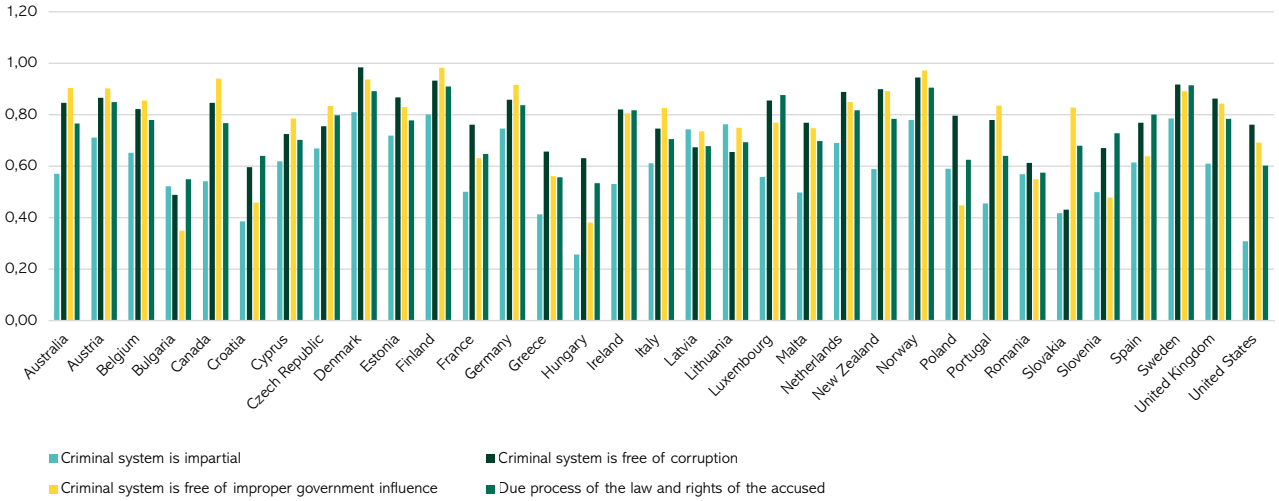
Figure 43: Effectiveness of investigation, adjudication and correctional systems 2021



Source: WJP 2022

Some of the systems that were considered the most effective, were also considered to be very fair and impartial. This is the case for instance of Denmark, Finland and Norway, whose systems were assessed to be impartial, free of corruption and undue government influence, and compliant with the due process and the rights of the accused. It is worth noting that these were also countries with the highest conviction rates, suggesting a combination of effectiveness and fairness. On the other hand, the US, which reported very high conviction rates, has been considered one of the countries with the least impartial criminal justice system – second only to Hungary – and scored very poorly, also with respect to compliance with the due process and the rights of the accused, following Hungary, Bulgaria, Greece and Romania (Figure 44).

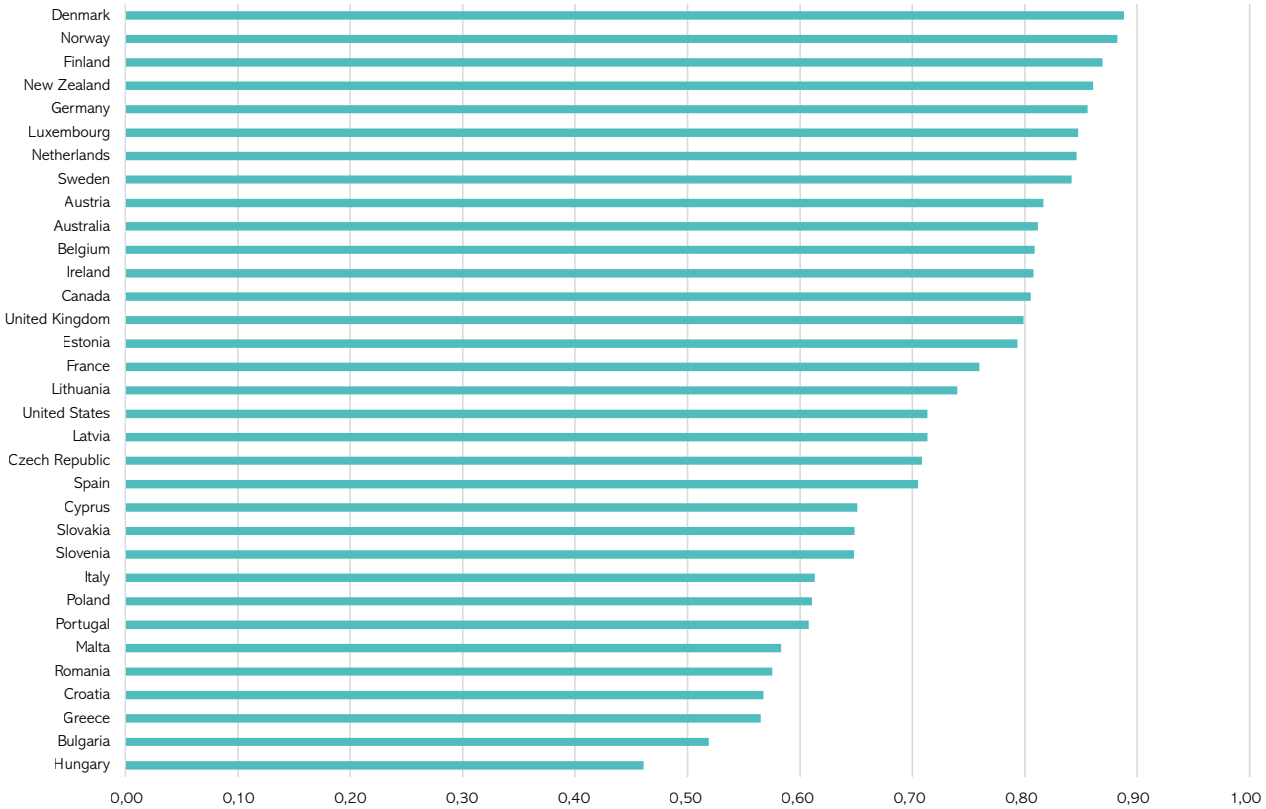
Figure 44: Impartiality, integrity and due process in the criminal justice system 2021



Source: WJP 2022

Regulatory enforcement. As we mentioned before, a large role in crime prevention is played by regulatory (legal or administrative) measures seeking to influence the behaviour of private actors, for instance by requiring them to implement crime control measures such as due diligence, corporate compliance, codes of conduct or risk management. The regulatory enforcement factor of the WJP Rule of Law Index measures precisely the extent to which regulations are fairly and effectively implemented and enforced. It does not assess which activities a government chooses to regulate, nor does it consider how much regulation of a particular activity is appropriate. The highest-ranking countries for general effectiveness of regulatory enforcement are Denmark, Norway, Finland, New Zealand, Germany, Luxembourg, the Netherlands, Sweden, Austria and Australia. The lowest-scoring countries are Hungary, Bulgaria, Greece, Croatia, Romania, Malta, Portugal, Poland and Italy (Figure 45).

Figure 45: Effectiveness of regulatory enforcement 2021

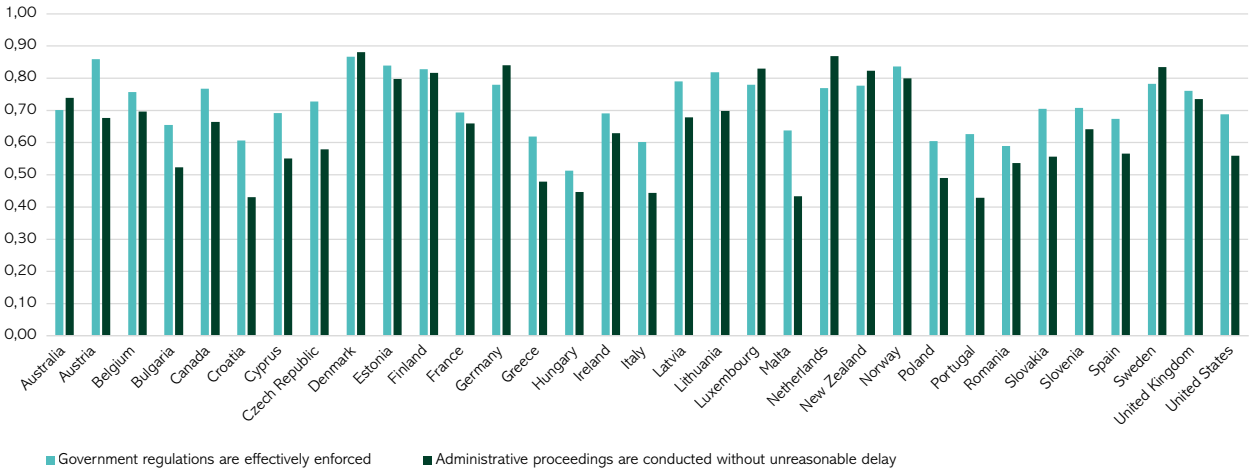


Source: WJP 2022

These overall scores are based on five indicators. The first four are relevant to this analysis: 1) government regulations are effectively enforced; 2) government regulations are applied and enforced without improper influence; 3) administrative proceedings are conducted without unreasonable delay; 4) due process is respected in administrative proceedings. (The last one on government expropriation is irrelevant here).

As for effective and timely enforcement (indicators 1 and 3), Denmark was the highest-scoring country, followed by Estonia, Norway and Finland, which also achieved high scores on both counts. Austria had high scores for effectiveness, but not so much for timeliness, while Sweden, Luxembourg, Germany, New Zealand and the Netherlands saw higher scores for timeliness than they achieved for effectiveness (Figure 46). Interestingly, the vast majority of states scored more highly in effectiveness than timeliness.

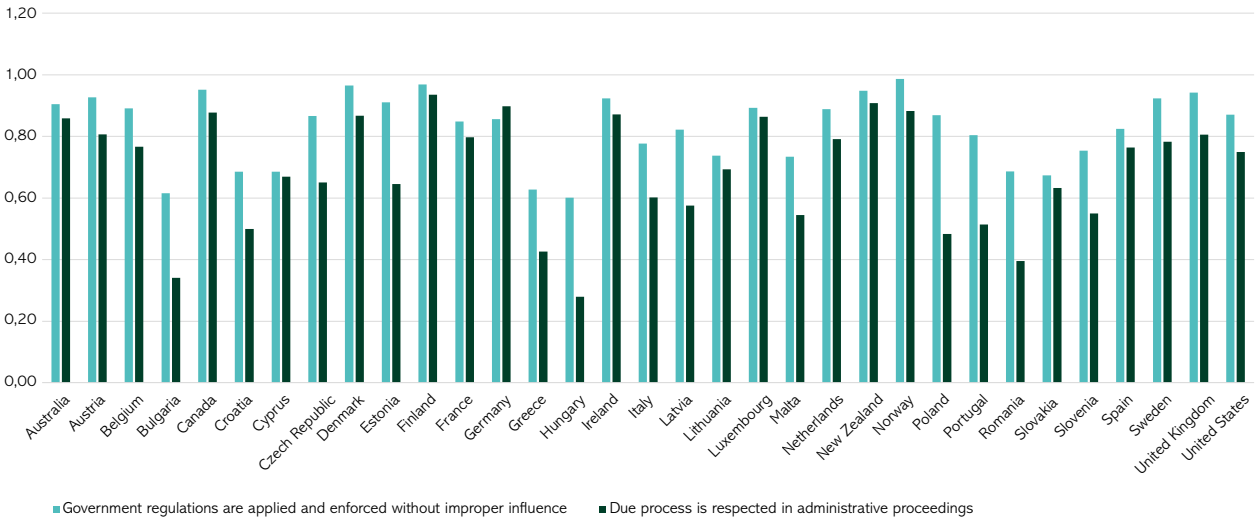
Figure 46: Enforcement of government regulations and timeliness of administrative proceedings



Source: WJP 2022

As for the absence of undue influences (indicators 2 and 4), the highest-scoring countries were once again Norway, Finland and Denmark, followed by Canada, New Zealand, the UK, Austria and Sweden. Ireland, New Zealand and Germany were the highest-scoring countries for respect of the due process and individual rights, followed by Norway, Canada, Ireland and Denmark (Figure 47). Interestingly, several countries had higher scores for the absence of undue influence than they achieved for respect of the due process.

Figure 47: Integrity and due process in administrative proceedings 2021

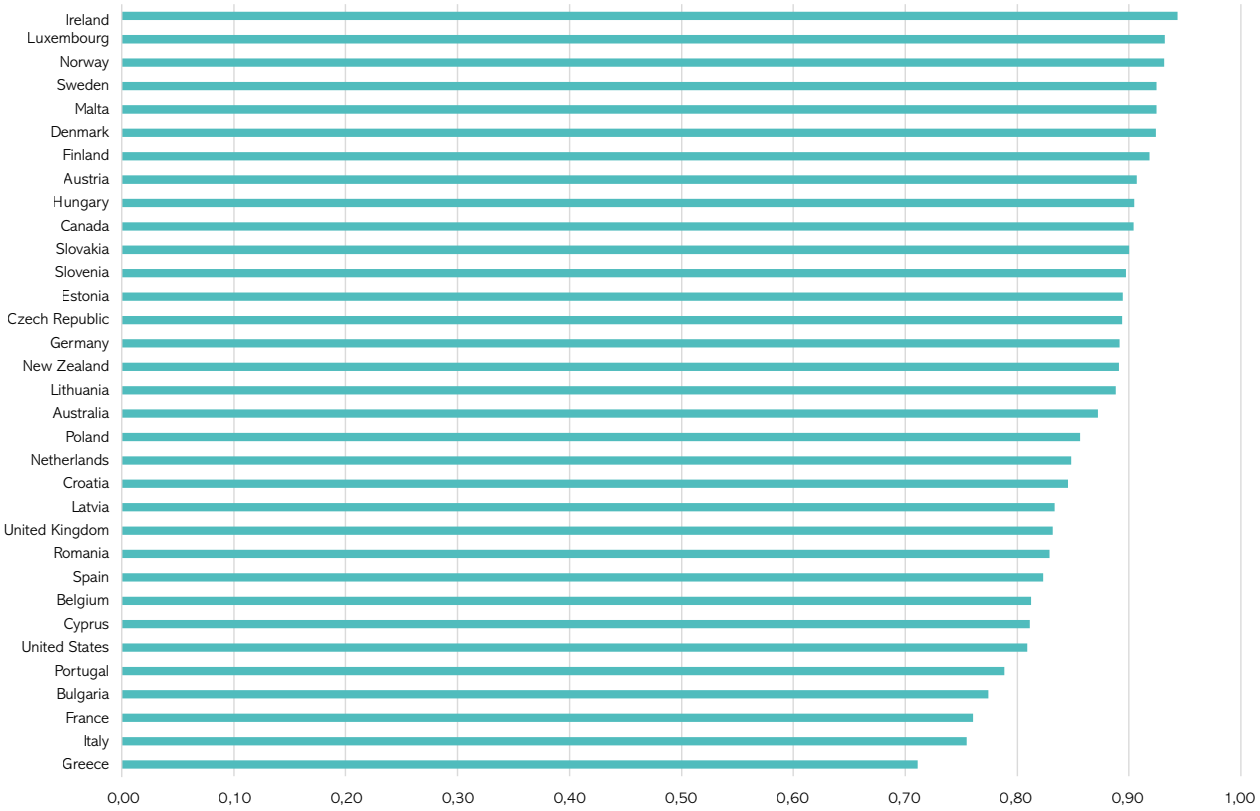


Source: WJP 2022

Order and security. The WJP Rule of Law Index also directly measures order and security – that is, how well a society ensures the security of persons and property. Security is defined here not just as national security, but as one of the defining aspects of any rule of law society, a fundamental function of the state and a precondition for the realisation of the rights and freedoms that the rule of law seeks to advance. This seems to be close, if not overlapping with the definition of social safety that we use throughout this study.

The highest general scores in order and security were recorded in Ireland, Luxembourg, Norway, Sweden, Malta, Denmark and Finland. The lowest scores were recorded in Greece, Italy, France, Bulgaria, Portugal and the US (Figure 48).

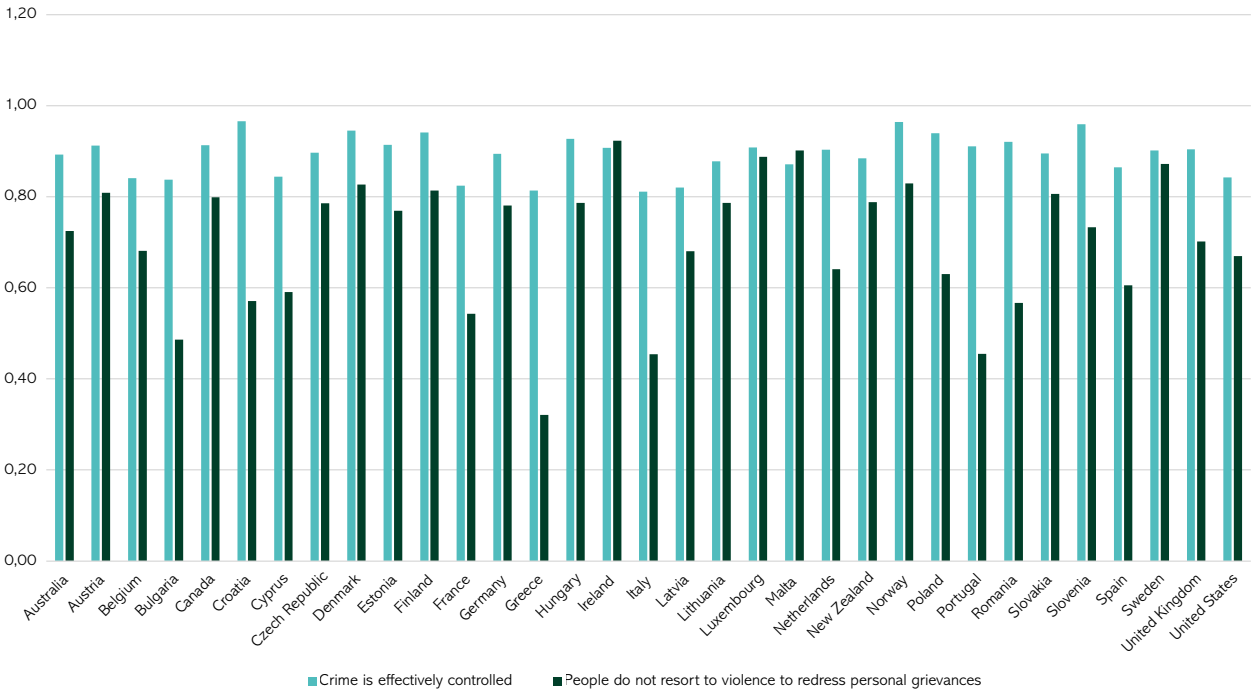
Figure 48: Order and security 2021



Source: WJP 2022

The general rankings for order and security are based on three indicators: 1) crime is effectively controlled; 2) civil conflict is effectively limited; 3) people do not resort to violence to redress personal grievances. Most states had the same highest score for the second indicator, which measures whether people are effectively protected from armed conflict and terrorism. The only exceptions are the US, France and Belgium, which shared the same score, and the UK which occupies the lowest rank for this particular indicator. More significant variations were recorded with respect to indicators 1 and 3. Interestingly, Croatia came first in the rankings of effective crime control, followed by Norway, Slovenia, Denmark, Poland, Hungary and Romania. It is evident that, apart from the presence of Norway and Denmark, such rankings do not match the rankings concerning the criminal justice system, suggesting that although such a system is a major factor in order and security, other factors might affect people's perception of order and security. It is also interesting to observe that some of the highest-scoring countries for this indicator – Croatia, Poland, Hungary and Romania – are among the lowest-ranking for respect of due process and individual rights. The list of the worst-scoring countries is also interesting. Italy is at the bottom, followed by Greece, Latvia, France, Bulgaria, Belgium, and the US (Figure 49).

Figure 49: Crime control and violence 2021



Source: WJP 2022

As far as the last indicator is concerned (people do not resort to violence to redress personal grievances), the best-scoring country is Ireland, followed by Malta, Luxembourg, Sweden, Norway, Denmark, Finland and Austria. The lowest-scoring country is Greece, followed by Italy, Portugal, Bulgaria, France, Romania and Croatia. Interestingly, Greece, Portugal, Romania and Croatia have recorded rather low rates of serious assault in the last few years. The reasons for this discrepancy might vary. For instance, the violence used to redress personal grievances rarely amounts to serious assault, or personal violence is under-reported or under-recorded in these countries, or the perceptions of the respondents do not match actual crime rates or are affected by social or cultural factors.

Reliability of police services. Finland has ranked first for police reliability in the World Economic Forum's Executive Opinion Survey every year from 2010 to 2018 (data on this indicator from 2018 onwards are not available yet) (World Bank, 2022; World Economic Forum, 2016). In 2018, Switzerland came second, followed by Norway, New Zealand, Iceland, Canada, Spain and Australia. Of these, Spain considerably improved its position (from 25th of all the countries surveyed in 2010 to 12th in 2018). Although a few positions below, the UK also improved in these years (from 31st to 19th). On the other hand, Denmark's ranking worsened in time (from 3rd and 7th between 2011 and 2013, to 27th in 2018), falling behind the US (22nd in 2018). The lowest rank is occupied by Slovakia, followed by Bulgaria, Poland, Latvia, Romania, Greece, Italy and Hungary (Table 21).

Table 21: Reliability of police services 2010–2018

Country	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
Australia	19	17	12	16	14	14	11	14
Austria	23	19	17	20	18	18	17	18
Belgium	28	28	24	27	23	23	26	31
Bulgaria	111	106	111	113	112	111	105	105
Canada	7	6	8	14	11	11	10	10
Croatia	58	49	51	53	55	53	49	58
Cyprus	40	34	36	44	44	43	64	55
Czech Republic	86	96	92	90	75	74	62	52
Denmark	10	3	7	11	15	15	24	27
Estonia	33	31	31	32	32	32	20	20
Finland	1	1	1	1	1	1	1	1
France	27	33	33	34	30	30	29	29
Germany	12	21	20	17	19	19	39	38
Greece	92	81	84	77	58	57	54	68
Hungary	67	67	70	72	66	65	70	64
Iceland	3	7	9	9	10	10	8	7
Ireland	17	14	15	8	12	12	19	25
Italy	44	38	38	38	42	42	72	65
Latvia	75	72	65	62	46	45	81	79
Lithuania	76	73	66	70	60	59	55	53
Luxembourg	16	22	21	15	9	9	13	15
Malta	35	37	42	33	33	33	46	51
Netherlands	15	13	6	10	16	16	14	17
New Zealand	13	11	4	2	2	2	2	6
Norway	8	16	18	13	13	13	5	4
Poland	60	63	67	74	76	75	84	89
Portugal	37	40	34	35	29	29	31	28
Romania	72	90	110	107	65	64	80	69
Slovakia	89	85	86	108	106	105	101	106
Slovenia	48	61	50	40	40	40	36	41
Spain	25	24	16	18	20	20	16	12
Sweden	14	4	13	19	24	24	30	39
Switzerland	6	5	2	6	5	5	3	2
United Kingdom	31	27	23	26	26	25	21	19
United States	26	30	30	24	22	22	23	22

Source: World Bank/World Economic Forum 2022

4.7.5. Quality of government and the rule of law

Quality of government and the rule of law are also difficult to measure. Some international indexes seek to do so by assigning scores to different countries based on a variety of indicators. The European Quality of Government Index (EQI) developed by the Quality of Government Institute (QoGI) is the result of novel survey data regional (e.g. sub-national) level governance within the EU. The data were first gathered and published in 2010 and then repeated in 2013, 2017 and 2021. The index is based on a large citizen survey questioning respondents about perceptions and experiences with public sector corruption, and the extent to which they believe various public sector services are impartially allocated and of good quality. It aims to provide researchers and policymakers a tool to better understand how governance varies within countries and now, over time. The Index attributes each country a score (the EQI Index score) based on several indicators concerning quality of government and corruption levels. The exact methodology and indicators are different for different years. Here, we will cover the 2017 round (Charron et al., 2019) for which data appear to be more complete at the time of writing. The World Bank's Worldwide Governance Indicators (WGI) project (Kaufmann & Kraay, 2022) reports indicators for over 200 countries over the period 1996–2021 for various dimensions of governance, including government effectiveness, control of corruption, political stability and the absence of violence/terrorism, and the rule of law. The indicators combine the views of many enterprise, citizen and expert survey respondents gathered through various data sources produced by several survey institutes, think tanks, non-governmental organisations, international organisations and private sector firms (http://info.worldbank.org/governance/wgi/). As far as the rule of law is concerned, we have already introduced the WJP, which ranks countries on the basis of various factors considered relevant to the rule of law.

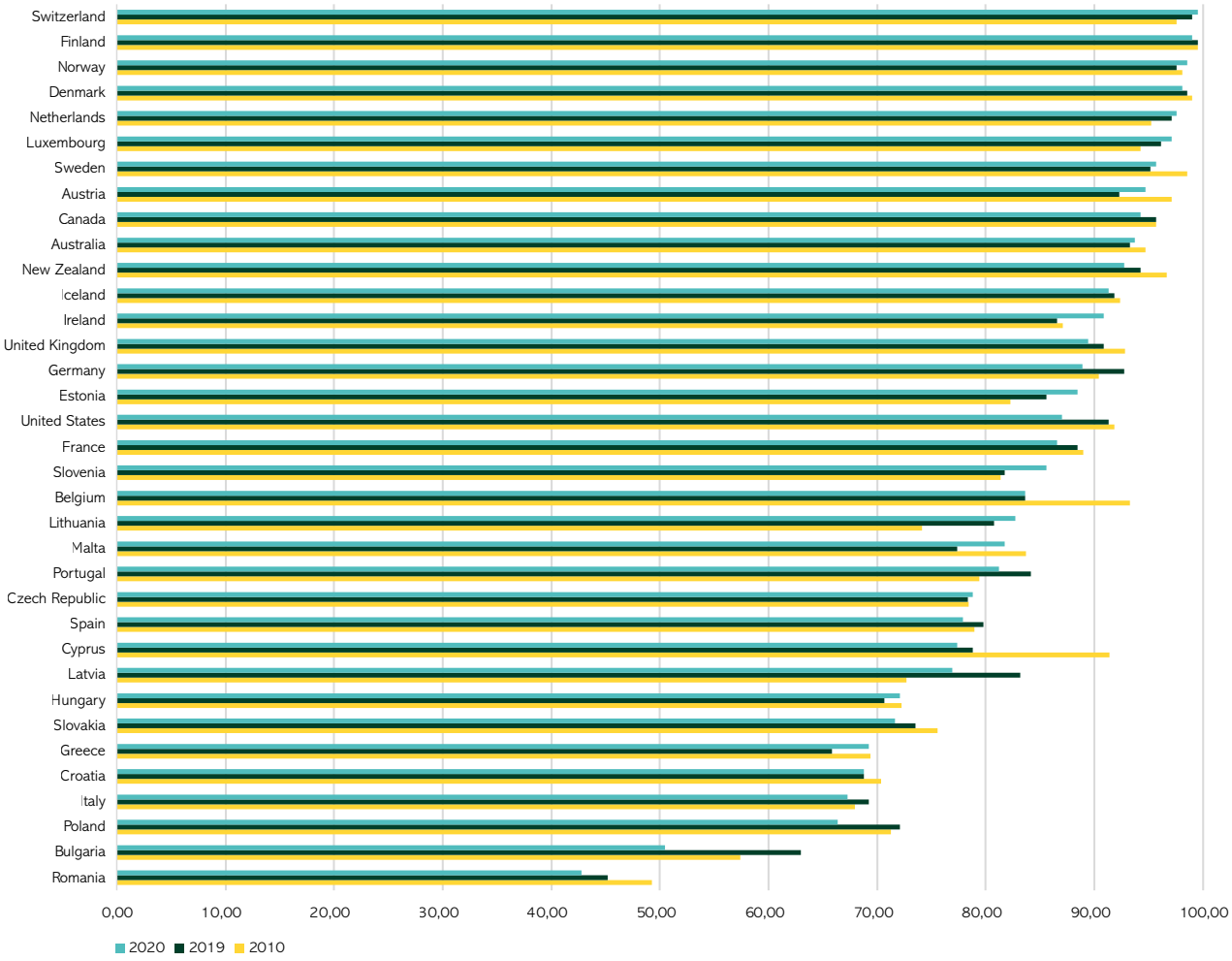
Quality of government. In 2017, Finland achieved the highest EQI score, followed by Sweden, Denmark, the Netherlands, Luxembourg, Germany and the UK. Data for Iceland and Norway are unavailable. The lowest score was Bulgaria's, followed by Greece, Croatia, Hungary, Italy and Slovakia (Table 22).

Table 22: European Quality of Government Index 2017

Country	2017
Iceland	NA
Norway	NA
Finland	1,43
Sweden	1,40
Denmark	1,40
Netherlands	1,21
Luxembourg	1,20
Germany	1,01
United Kingdom	0,99
Ireland	0,84
Austria	0,80
Belgium	0,62
France	0,41
Estonia	0,23
Portugal	0,03
Malta	-0,08
Cyprus	-0,11
Lithuania	-0,26
Slovenia	-0,29
Czech Republic	-0,30
Spain	-0,33
Poland	-0,46
Latvia	-0,51
Slovakia	-0,81
Italy	-1,13
Hungary	-1,15
Croatia	-1,21
Greece	-1,39
Bulgaria	-1,73

The WGI offers a measure of government effectiveness, intended as the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. In 2019, Finland ranked first in government effectiveness, followed by Switzerland, Denmark, Norway, the Netherlands, Luxembourg, Canada, Sweden, New Zealand and Australia. The same countries also occupied the top rankings in 2020 with some variations, including Switzerland taking the first rank and Austria climbing to the eighth spot, before Canada, Australia and New Zealand. At the bottom of the rankings for both years, with some variations, were Romania, Bulgaria, Poland, Italy, Croatia, Greece, Slovakia and Hungary (Figure 50).

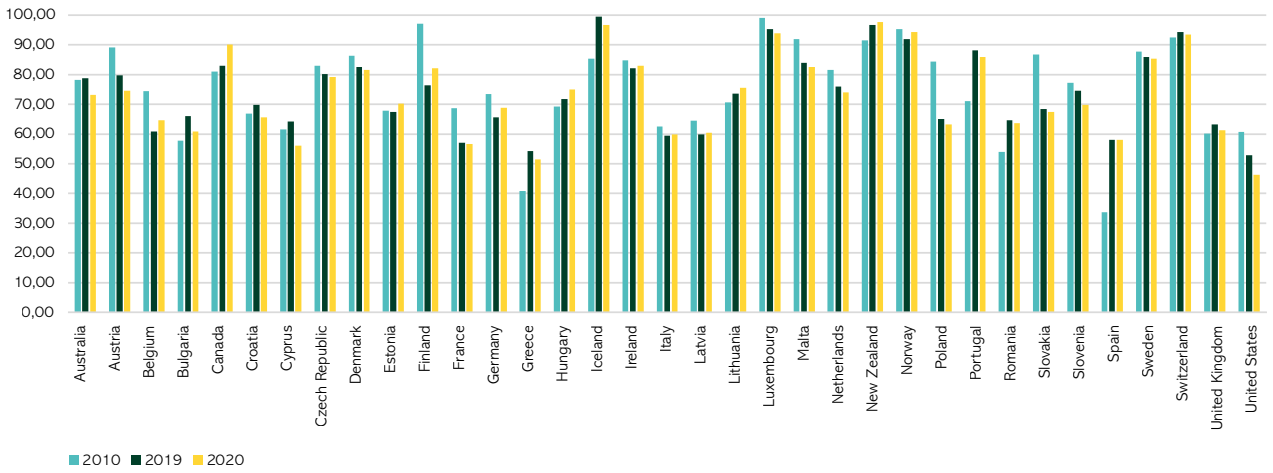
Figure 50: Government effectiveness 2010, 2019 and 2020



Source: WGI 2022

Another indicator considered by WGI is political stability and the absence of politically motivated violence, including terrorism. This is a rather specific indicator as it concerns special forms of crime and illegality, but an important one as it can critically affect social safety and the perceptions of it. In 2019, Iceland reported the highest score for political stability, followed by New Zealand, Luxembourg, Switzerland, Norway, Portugal, Sweden, Malta, Canada and Denmark. The same countries were at the top of the ranking the following year, with some variations, including New Zealand replacing Iceland in first place and Ireland climbing to the ninth spot before Malta, Finland and Denmark. In both years, the US scored the bottom rank. Greece, Spain, France, Italy, Belgium and the UK also had very low scores for both years (Figure 51).

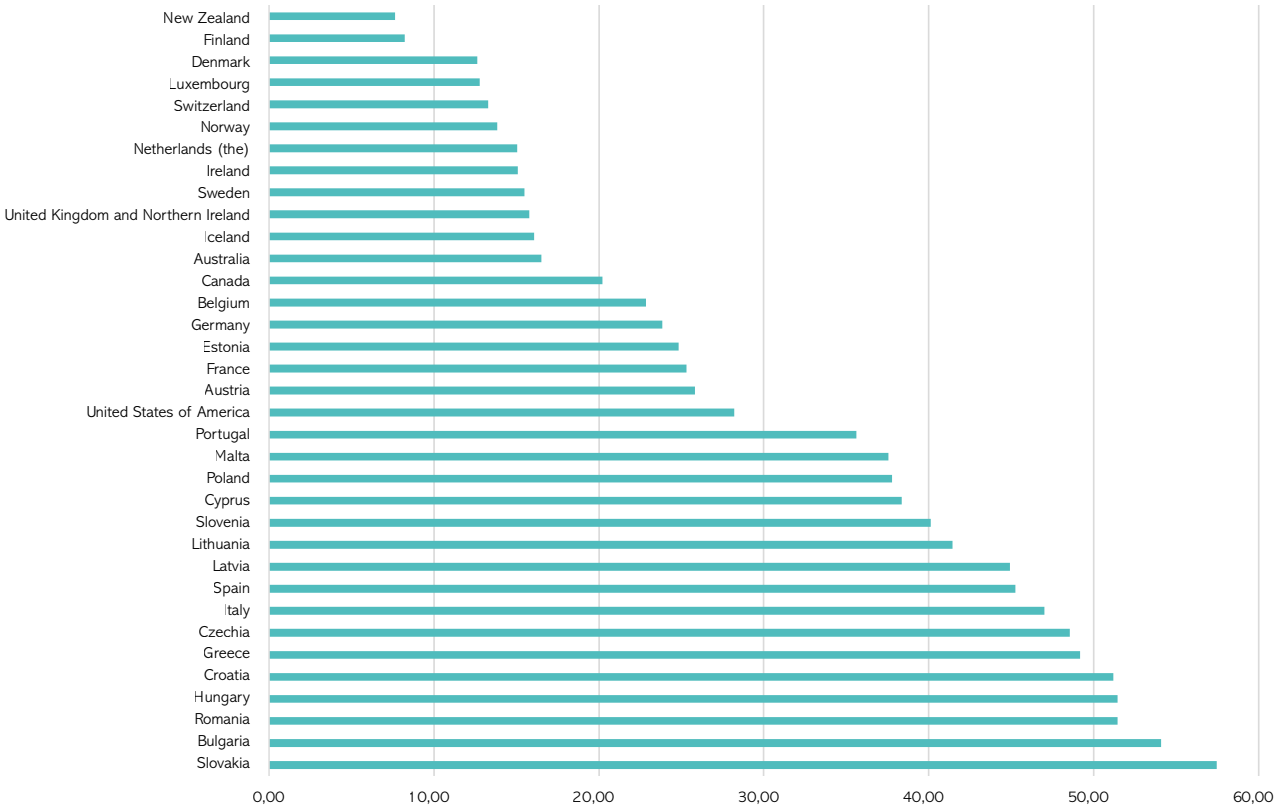
Figure 51: Political stability and absence of violence/terrorism in 2010, 2019 and 2020



Source: WGI 2022

Quality of government also depends on the absence of corruption. QoGI uses a complex index – the Baynesian Corruption Index (BCI) – to measure corruption on a scale between 0 and 100, whereby the higher the value, the higher the level of corruption (Standaert 2015; Dahlberg et al. 2022). In 2017, New Zealand secured the best score (7.63), followed by Finland (8.22), Denmark (12.61), Luxembourg (12.79), Switzerland (13.30), Norway (13.84), the Netherlands (15.03), Ireland (15.10), Sweden (15.50) and the UK (15.58). Slovakia had the worst score at 57.44, followed by Bulgaria (54.08), Romania (51.44), Hungary (51.43), Croatia (51.20), Greece (49.19), the Czech Republic (48.53), Italy (47.01) and Spain 2017 (45.26) (Figure 52).

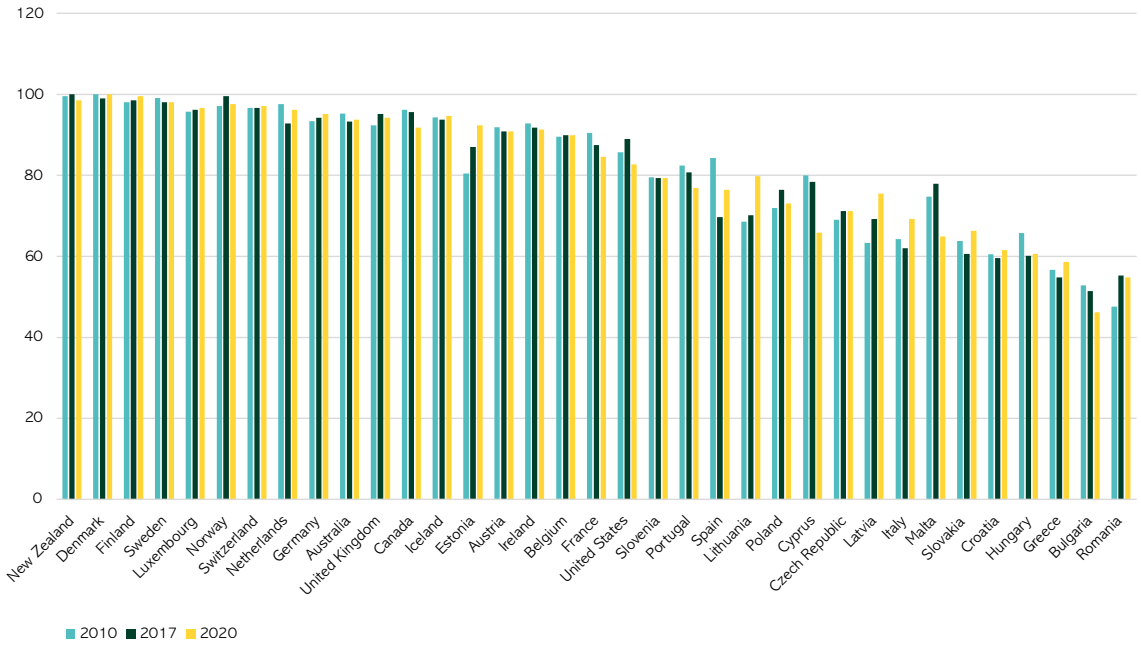
Figure 52: Baynesian Corruption Index 2017



Source: QoGI 2022

WGI also measures 'control of corruption', intended as the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests. Similarly, the WJP considers the absence of corruption as one of the factors of the rule of law, focused on whether officials in any branch of government (legislative, executive, judicial, military branch) use public office for private gain. Although WGI and WJP rankings do not match country by country those of BCI, the countries that figure at the top and the bottom of WGI and WJP rankings from 2017 to 2020 are largely the same. The figure below gives a visual indication of the WGI rankings for the years 2010, 2017 and 2020 (Figure 53).

Figure 53: Control of corruption in 2010, 2017 and 2020



Source: WGI 2022

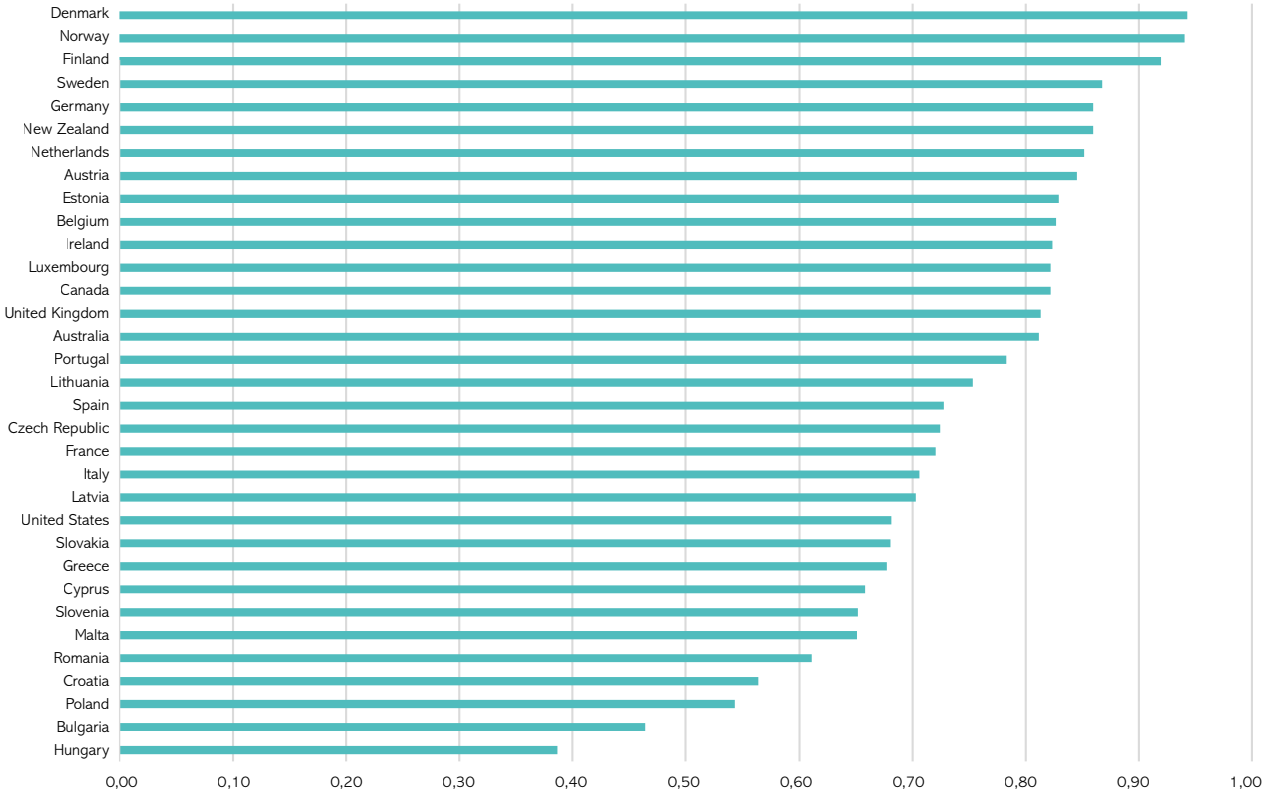
The rule of law. The rule of law is a complex notion which can be difficult to define. Scholars debate between two distinct conceptions: a formal or 'thin' notion, which does not address the content of the law but its mode of generation and application (Raz, 1979 and 2019), and substantive or 'thick' one, which requires the law to embody particular values of justice, morality or human rights (Dworkin, 1985; Bingham, 2010). Both definitions share a common nucleus of principles seeking to ensure the stability and predictability of the law, limit government discretion and offer independent and fair judicial remedies for the violation of such principles. As such, the rule of law plays a crucial role in social safety, as it guides the behaviour of individuals by making legal rules predictable and protects their rights against state abuses. The extent of such protection varies according to the different notion – thin or thick – of the rule of law. A thick version requires the law to include safeguards to protect individual rights and liberties against abusive exercises of state powers, such as unlawful arrests or imprisonment.

As we saw, the WJP aims specifically at assessing the rule of law around the world. The rule of law is also one of the WGI indicators of the quality of government. We have already examined some groups of the indicators upon which the WJP relies – those concerning criminal justice, regulatory enforcement, order and security, and absence of corruption. Other relevant groups include constraints on government powers and fundamental rights. The first category – constraints on government powers – comprises the following indicators:

1) government powers are effectively limited by the legislature;
2) government powers are effectively limited by the judiciary;
3) government powers are effectively limited by independent auditing and review;
4) government officials are sanctioned for misconduct;
5) government powers are subject to non-governmental checks;
6) transition of power is subject to the law.

Without going into the details of each indicator, we can observe that in 2021 the top-ranking country in this general category was Denmark, followed by Norway, Finland, Sweden, Germany, New Zealand, the Netherlands, Austria, Estonia and Belgium. At the bottom of the ranks we find Hungary, Bulgaria, Poland, Croatia, Romania, Malta, Slovenia, Cyprus, Greece, Slovakia and the US (Figure 54).

Figure 54: Constrains on government powers 2021



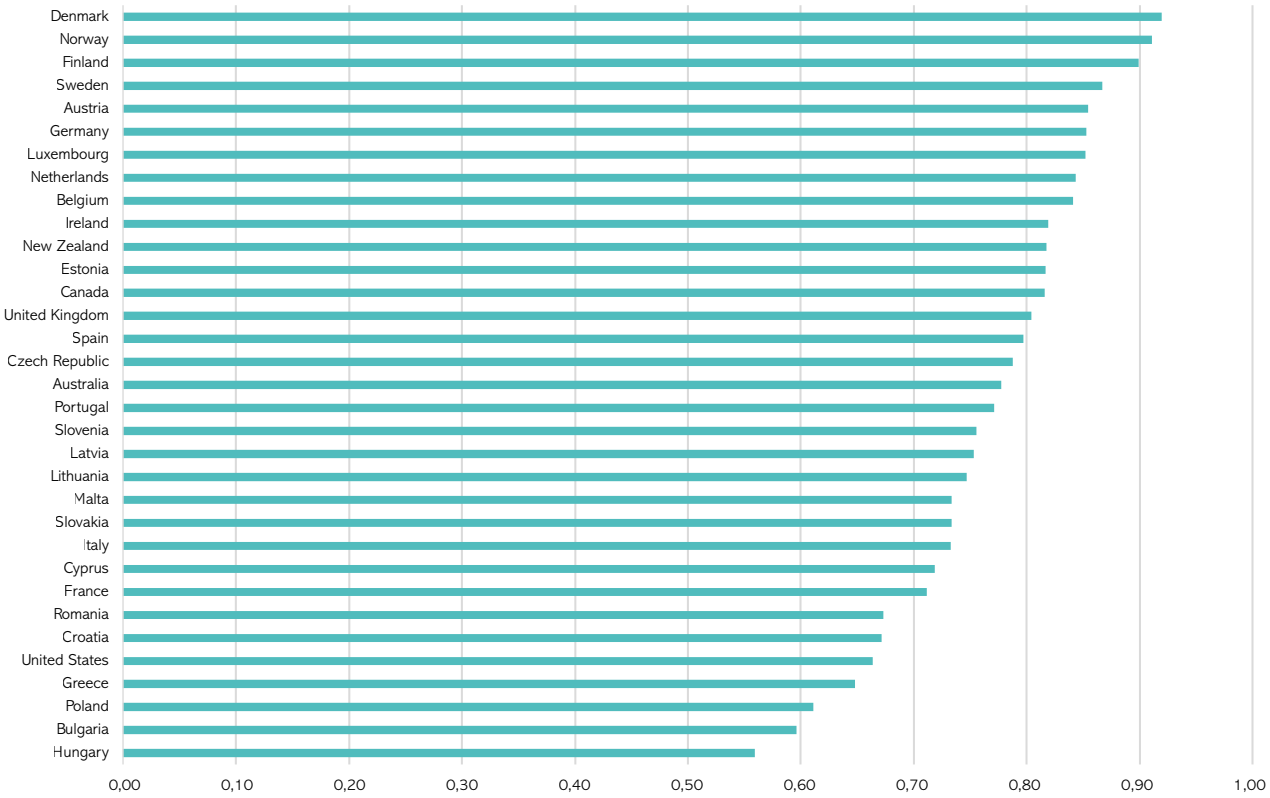
Source: WJP 2022

The category of fundamental human rights includes the following indicators:

1) equal treatment and absence of discrimination;
2) the right to life and security of the person is effectively guaranteed;
3) due process of the law and rights of the accused (which we already examined before);
4) freedom of opinion and expression is effectively guaranteed;
5) freedom of belief and religion is effectively guaranteed;
6) freedom from arbitrary interference with privacy is effectively guaranteed;
7) freedom of assembly and association is effectively guaranteed;
8) fundamental labour rights are effectively guaranteed.

We will focus here only on the main scores for the general category without assessing individual factors, which go beyond the scope of this study. In 2021, the highest-scoring country in this category was Denmark, followed by Norway, Finland, Sweden, Austria, Germany, Luxembourg, the Netherlands, Belgium and Ireland. The lowest-scoring countries were Hungary, Bulgaria, Poland, Greece, United States, Croatia, Romania, France, Cyprus, Italy and Slovakia (Figure 55).

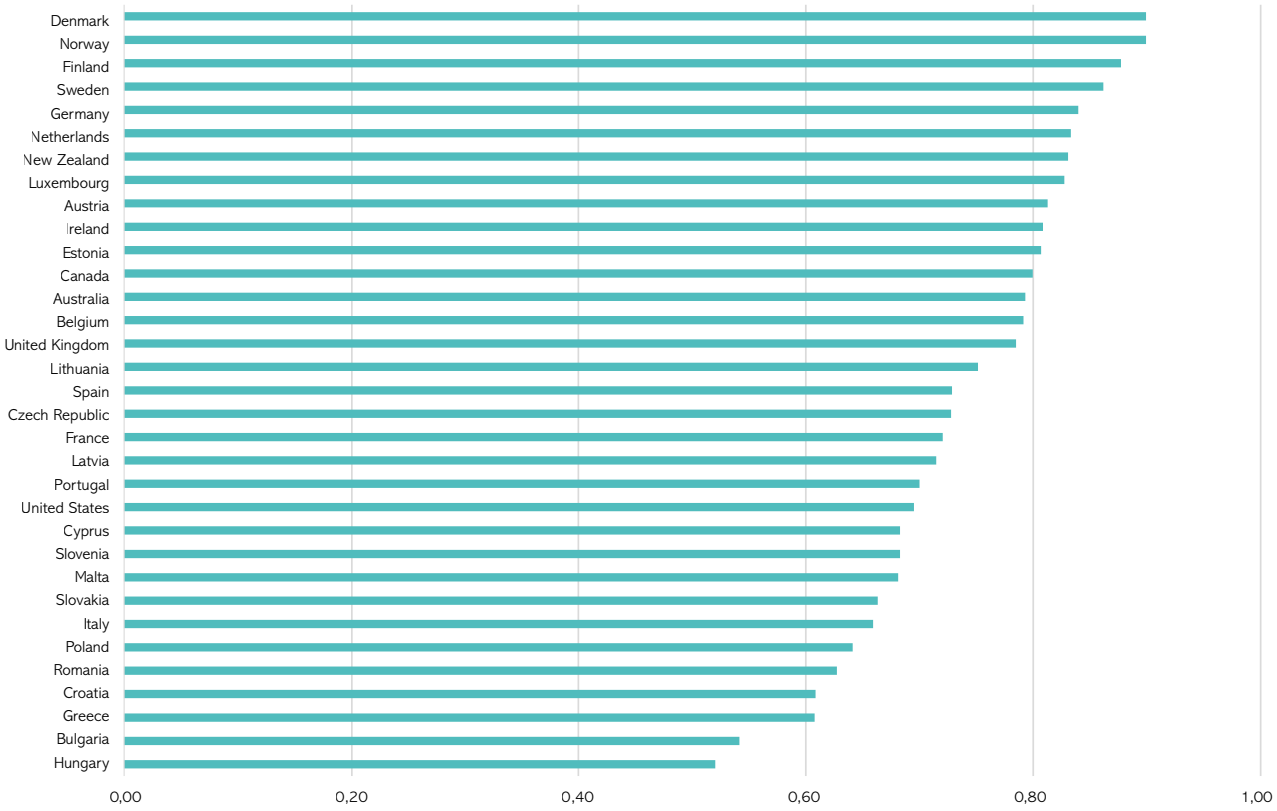
Figure 55: Fundamental human rights 2021



Source: WJP 2022

As a result of an integrated assessment of all the scores for the relevant factors, the WJP produces an overall Rule of Law Index. The highest-scoring countries from 2019 to 2021 have constantly been – in this order – Denmark, Norway, Finland, Sweden, Germany, the Netherlands, New Zealand, Luxembourg (no data for 2019 and 2020), Austria, Ireland (no data for 2019 and 2020), Estonia and Canada. The bottom ranks have been constantly occupied by Hungary, Bulgaria, Greece, Croatia, Romania, Poland, Italy, Slovakia, Malta, Slovenia, Cyprus and the US (Figure 56).

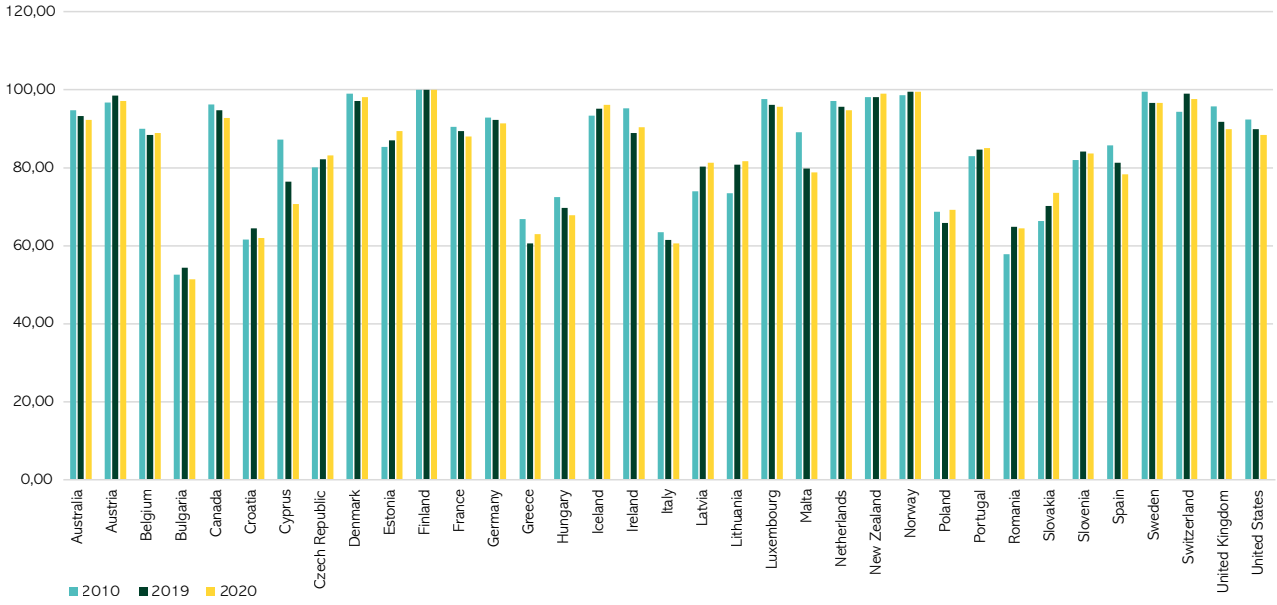
Figure 56: WJP Rule of Law Index 2019–2021



Source: WJP 2022

These results are largely similar to those produced by WGI. Although the specific ranking of each state might slightly vary, the top and bottom positions tend to be occupied by the same countries in both datasets. There are, however, some notable differences. In particular, the WGI dataset, the US is ranked more highly (92 out of 100, with 100 being the best ranking) (Figure 57). Moreover, some data for some countries and some years are missing in the WJP rankings.

Figure 57: Rule of law (WGI) 2010, 2019 and 2020



Source: WGI 2022

4.7.6. Perceptions of safety, trust and confidence in law enforcement

Do people feel safe? Do they trust and have confidence in law enforcement? Some helpful data to answer these questions can be found in the Eurostat and Eurobarometer datasets. Eurostat's perception surveys on the quality of life in European cities (Eurostat, 2022f) include specific questions on perceptions of safety. The data are collected at city level, so it does not allow for a comprehensive understanding of the situation at a national level. Nevertheless, it provides some interesting information on people's perception in some major cities. The EU's Eurobarometer datasets (EU, 2022) include data on Europeans' attitudes towards security – intended to include social safety as we defined it in this paper, as it also covers police and law enforcement measures other than national and international security challenges faced by EU countries – and cyber-security. The Eurobarometer is the EU's polling instrument to regularly monitor the public opinion in Europe on issues related to the EU as well as attitudes on subjects of a political or social nature. The European Social Survey (ESS) – an academically-driven multi-country survey to monitor and interpret changing public attitudes and values within Europe – includes some interesting datasets on trust in the police and legal system (ESS ERIC, 2021). OECD's Government at a Glance (GaaG) datasets (OECD, 2022a) also include data on citizens' confidence with the police and the judiciary. Data from these datasets are not always consistent across different years and countries. We will seek to rely on the most recent and complete data, which sometimes date back to a few years ago.

Perceptions of safety. According to the Eurobarometer's data from the 2017 survey on Europeans' attitudes towards security, 68% of the Europeans interviewed agreed that the EU is a secure place to live. The country with most positive answers was the Netherlands, where 87% of the respondents agreed with this statement. High percentages of positive answers were also found in Luxembourg (82%), Denmark (81%), Austria (81%), Germany (80%), Sweden (80%), Belgium (79%) and Finland (78%). The lowest percentages were found in Bulgaria (47%), the Czech Republic (49%), Cyprus (51%), Italy (52%), Greece (53%), Latvia (56%) and Poland (59%) (Figure 58).

Figure 58: Perceptions of safety (EU, country, city, and neighbourhood) 2017

Source: Eurobarometer 2022

Some 82% of the interviewed Europeans feel their own country is a secure place to live. Half of the countries (14 in total) recorded more than 90% of answers agreeing with this statement. Five countries recorded 88% or 89% positive answers. The highest percentages were recorded for Finland (97%), Portugal (97%), Malta (97%), the Netherlands (96%), Luxembourg (96%), Slovenia (95%), Denmark (93%) and Estonia (93%). The lowest percentages were recorded in the UK (70%), Italy (71%), France (71%), Bulgaria (72%), Romania (80%), Cyprus (81%) and Belgium (81%).

Around 90% of interviewed Europeans feel their own city is a secure place to live. Most of the countries recorded 90% positive answers or more. Malta recorded the highest percentage (99%), followed by Finland (98%), Portugal (98%), the Netherlands (97%), Slovenia (97%), Luxembourg (96%) and Denmark (96%). Only a few countries fell below 90%: Cyprus (89%), the UK (89%), France (88%), Hungary (87%), Greece (87%), Romania (87%), Italy (83%) and Bulgaria (82%).

Around 91% of interviewed Europeans feel their neighbourhood is a secure place to live. Once again, more than 90% of the respondents agreed with this statement in most countries. The highest number of positive answers were recorded in Finland (99%), Portugal (98%), the Netherlands (98%), Malta (97%), Slovenia (97%), Luxembourg (97%), Denmark (97%) and Ireland (97%). Only a few countries fell below 90%: Bulgaria (81%), Italy (84%), Romania (87%), Greece (89%) and France (89%).

It is interesting to observe that the place the respondents found the EU the least secure place to live, compared to their country, city and neighbourhoods and they felt slightly safer in their cities and neighbourhoods than in their countries. The countries with the highest percentages of positive responses across all questions were Finland, Malta and Portugal (97% each), followed by Luxembourg and the Netherlands (96% each). The countries with the lowest percentages of such answers were the UK (70%), Italy (71%), France (71%) and Bulgaria (72%). The comparative table below shows the figures for each country and each environment (EU, country, city or neighbourhood) (Table 23).

Table 23: Perceptions of safety (EU, country, city and neighbourhood) 2017

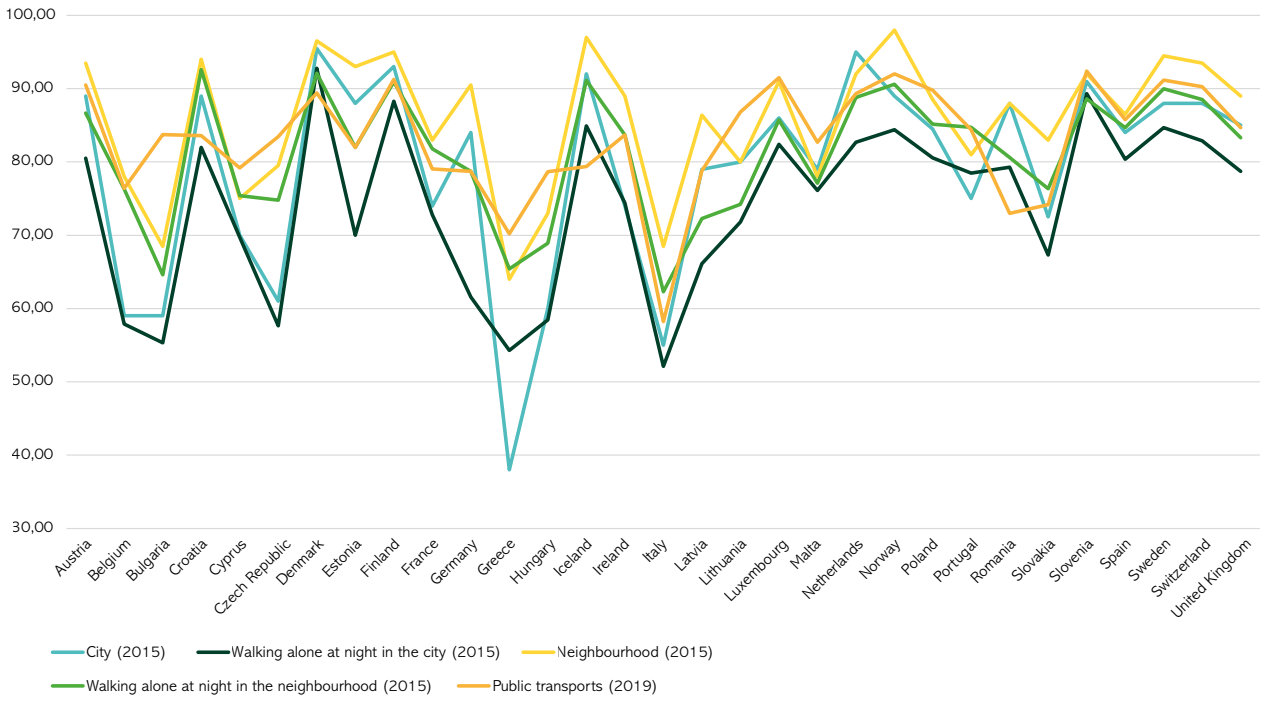
Country	EU	Country	City	Neighbourhood
Austria	81%	93%	95%	96%
Belgium	79%	81%	90%	92%
Bulgaria	47%	72%	82%	81%
Croatia	63%	89%	95%	96%
Cyprus	51%	81%	89%	91%
Czech Republic	49%	91%	92%	93%
Denmark	81%	94%	96%	97%
Estonia	61%	94%	95%	94%
Finland	78%	97%	98%	99%
France	67%	71%	88%	89%
Germany	80%	89%	93%	94%
Greece	53%	84%	87%	89%
Hungary	60%	85%	87%	90%
Ireland	69%	92%	94%	97%
Italy	52%	71%	83%	84%
Latvia	56%	86%	91%	90%
Lithuania	68%	88%	95%	94%
Luxembourg	82%	96%	96%	97%
Malta	62%	97%	99%	97%
Netherlands	87%	96%	97%	98%
Poland	59%	91%	93%	91%
Portugal	73%	97%	98%	98%
Romania	68%	80%	87%	87%
Slovakia	60%	89%	92%	93%
Slovenia	73%	95%	97%	97%
Spain	74%	91%	95%	95%
Sweden	80%	88%	92%	96%
United Kingdom	64%	70%	89%	93%

Source: Eurobarometer 2022

These data can be integrated with data from Eurostat's survey on safety in various cities from EU Member States. Some of the available data are from 2015, some others are from 2019. The relevant data we will consider here concerns responses to survey questions on general perceptions of safety in the city and in the neighbourhood, perceptions of safety when walking alone at night in the city or the neighbourhood, and perceptions of safety on public transport. Eurostat's data are not comparable with data from the Eurobarometer for several reasons. First, the datasets available concern different years. Second, Eurostat's survey focuses on cities, not on countries. For some countries, responses were collected only in one city (usually the capital) or a few cities – this is the case, for instance, of Ireland (Dublin), Cyprus (Lefkosia) and Malta (Valletta). For other countries, respondents came from many cities – for instance, for Germany, responses were collected from 35 cities; for the UK, from 8 cities; for Italy, from 7 cities. Moreover, responses to certain questions came from different urban areas for the same city than in other years – for instance, Dublin (county) or Dublin (city). The selection of city or cities for each country inevitably affects responses as some cities might be more dangerous than others. These caveats are important for the analysis that follows. Because of the nature of this study, we cannot go into the detail of the responses provided by each city, but we will have to limit ourselves to consider the averages (median) of the answers provided by different cities in a particular country. But it must be clear that, because of the very specific selection of cities in this survey, these averages cannot be representative of the situation in a country as a whole. These issues might also explain some notable differences between the results of the Eurostat survey and the Eurobarometer survey. Notably, Malta, which reported very strong perceptions of city and neighbourhood safety in the Eurobarometer, scored rather poorly in the Eurostat survey. This might depend on specific circumstances of Valletta, the only Maltese city from which responses were collected for the latter survey. However, Eurostat's data can to an extent complement the Eurobarometer's figures with data from countries that are not covered by the Eurobarometer (such as Iceland, Norway and Switzerland) and on more specific issues (such as safety when walking at night or on public transport). Moreover, some similarities between the Eurobarometer and Eurostat datasets seem to confirm findings from other datasets examined previously, such as those on the effectiveness of law enforcement or the quality of government. These similarities largely concern the countries that recorded highest and lowest perceptions of safety, which are often also at the top or bottom of the rankings respectively, concerning effectiveness of law enforcement and quality of government.

The core countries with the highest or lowest percentages of positive answers to the question about feeling safe in one's own city, tend to be the same in both the Eurostat and the Eurobarometer surveys. In the 2015 Eurostat survey, more than 90% of respondents from cities in Denmark (95.5%), the Netherlands (95%), Finland (93%), Iceland (92%) and Slovenia (91%) felt safe in their city. High percentages are also recorded in Croatia, Austria, Norway (89% each) and Estonia, Romania, Sweden and Switzerland (88% each). These largely correspond to the countries with the highest percentages of positive answers in the Eurobarometer survey, except Iceland – for which data were not available in that survey – and Malta, which recorded much fewer positive responses in the Eurostat survey. Similarly, the countries with the lowest percentages of positive responses in the Eurostat survey are Greece (38%), Italy (55%), Bulgaria, (59%), Belgium (50%), Hungary (60%), the Czech Republic (61%) and Cyprus (70%) – the same as the Eurobarometer survey. Similar results concern the 2019 question on feeling safe when walking alone at night in the city, with the same group of countries offering the highest percentage of positive responses (Denmark 92.8%, Slovenia 89.3%, Finland 88.3%, Iceland 84.9%, Sweden 84.7%, Norway 84.4%, Switzerland 82.9% and the Netherlands 82.7%) and the same group of countries with the lowest percentages (Italy 52.1%, Greece 54.3%, Bulgaria 55.35%, the Czech Republic 57.65%, Belgium 57.9% and Hungary 58.45%) (Figure 59).

Figure 59: Perceptions of safety in European cities (median across different cities per country) 2015–2019



Source: Eurostat 2022

Some differences between 2015 the Eurostat and the Eurobarometer results are observable with respect to neighbourhood safety. In 2015, the highest percentage of positive responses came from Norway (98%) and Iceland (97%), which were not included in the Eurobarometer dataset. Some other countries that reported high percentages of positive responses are also the same as in the Eurobarometer – Denmark (96.5%), Finland (95%), Sweden (94.5%), Croatia (94%), Austria (93.5%), Estonia (93%), the Netherlands (92%), Slovenia (92%) and Luxembourg (91%). Switzerland, which was not included in the Eurobarometer survey, also reported a high percentage of positive responses (93.5%). Portugal, on the other hand, scored much more poorly compared to the Eurobarometer (81% versus 98%), and Malta did even worse (78% against 97%), but again this might depend on the specific selection of cities for the Eurostat survey. Some countries with the lowest percentages of positive responses are largely the same as in the Eurobarometer: Greece (64%), Italy (68.5%), Bulgaria (68.5%), Hungary (73%) and Cyprus (75%). Other countries performed comparatively better, but again the results of the two surveys are not exactly comparable. Responses to the question about feeling safe when walking alone at night in the neighbourhood provided similar results at the top and bottom ends of the percentage scale. However, interestingly some countries with high percentages of positive responses on neighbourhood safety, such as Germany (90.50%) or Latvia (86.4%) reported lower percentages with respect to the question on walking alone at night in the same neighbourhood (Germany: 78.7%; Latvia: 72.3%) (Figure 59).

The 2019 Eurostat survey also includes a question on perceptions of safety on public transport. The countries that recorded the highest percentages of positive responses are Slovenia (92.4%), Norway (92%), Luxemburg (91.5%), Finland (91.25%) and Sweden (91.15%). The countries that reported the lowest percentages are Italy (58.2%), Greece (70.2%), Romania (73%), Slovakia (74.15%), Belgium (76.4%) and Hungary (78.65%). Some countries with usually stronger perceptions of city and neighbourhood safety reported rather poor scores for this question. Only 78.7% of respondents from cities in Germany and only 79.4% from cities in Iceland, for instance, feel that public transport is safe (Figure 59). The comparative table offers a complete view of the average (median) percentage of positive responses from cities across all countries (Table 24).

Table 24: Perceptions of safety in European cities (percentage of positive responses; median across different cities per country) 2015–2019

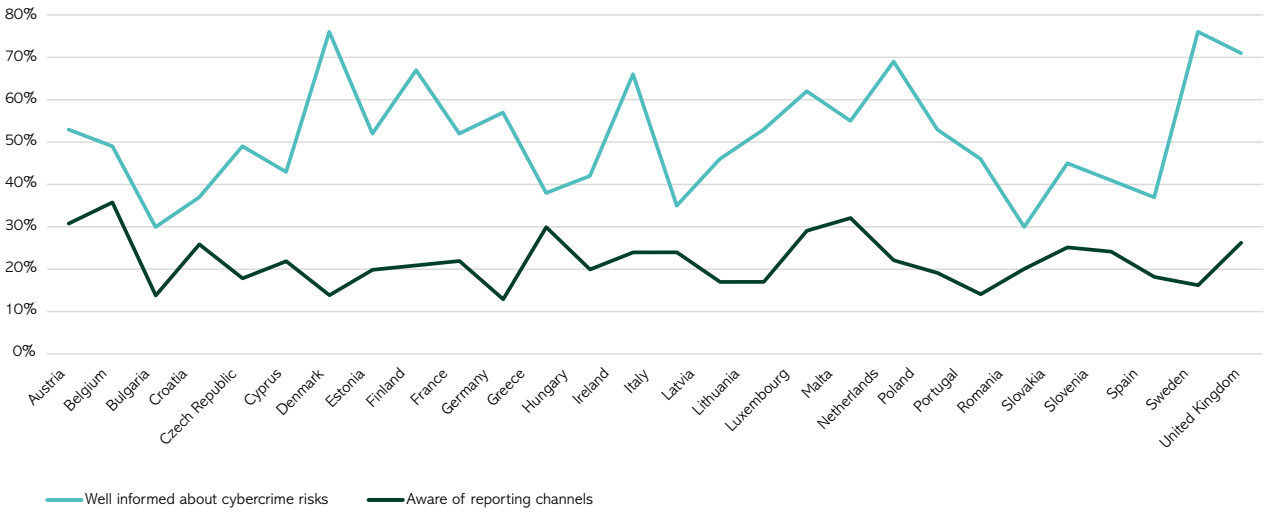
Country	City (2015)	Walking alone at night in the city (2015)	Neighbourhood (2015)	Walking alone at night in the neighbourhood (2015)	Public transports (2019)
Austria	89,00	80,50	93,50	86,65	90,50
Belgium	59,00	57,90	78,00	76,30	76,40
Bulgaria	59,00	55,35	68,50	64,60	83,75
Croatia	89,00	82,00	94,00	92,60	83,60
Cyprus	70,00	69,70	75,00	75,40	79,20
Czech Republic	61,00	57,65	79,50	74,80	83,45
Denmark	95,50	92,80	96,50	92,10	89,40
Estonia	88,00	70,00	93,00	82,00	82,00
Finland	93,00	88,30	95,00	90,95	91,25
France	74,00	72,80	83,00	81,80	79,05
Germany	84,00	61,60	90,50	78,70	78,70
Greece	38,00	54,30	64,00	65,40	70,20
Hungary	60,00	58,45	73,00	68,90	78,65
Iceland	92,00	84,90	97,00	91,10	79,40
Ireland	74,00	74,40	89,00	83,70	83,70
Italy	55,00	52,10	68,50	62,30	58,20
Latvia	79,00	66,10	86,40	72,30	78,80
Lithuania	80,00	71,80	80,00	74,20	86,80
Luxembourg	86,00	82,40	91,00	85,70	91,50
Malta	79,00	76,10	78,00	77,10	82,70
Netherlands	95,00	82,70	92,00	88,80	89,30
Norway	89,00	84,40	98,00	90,60	92,00
Poland	84,50	80,55	88,50	85,15	89,80
Portugal	75,00	78,50	81,00	84,75	84,40
Romania	88,00	79,30	88,00	80,60	73,00
Slovakia	72,50	67,30	83,00	76,35	74,15
Slovenia	91,00	89,30	92,00	88,60	92,40
Spain	84,00	80,35	86,50	84,70	85,75
Sweden	88,00	84,70	94,50	90,00	91,15
Switzerland	88,00	82,90	93,50	88,50	90,25
United Kingdom	85,00	78,70	89,00	83,30	84,70

Source: Eurostat 2022

The 2019 Eurobarometer includes a comprehensive survey on Internet security. While this is not the place to examine the datasets in detail, it is worth considering the attitudes of Europeans towards cyber risk and the reporting of cyber threats. Only 51% of the interviewed Europeans felt 'very well' or 'well informed' about the risks of cybercrime. Denmark and Sweden had the highest percentage of positive answers (76% each), followed by the UK (71%), the Netherlands (69%), Finland (67%), Ireland (66%) and Luxembourg (62%). The lowest percentages were recorded in Romania (30%), Bulgaria (30%), Italy (35%), Croatia (37%), Spain (37%) and Greece (38%). Positive responses in all the other countries ranged from 41% to 57%.

Only 21% of the respondents across all countries were aware of the existence of an official website or e-mail address in their country where they can report a cybercrime or any other illegal online behaviour (e.g. cyberattack, online harassment or bullying). The largest proportion of respondents aware of reporting mechanisms was recorded in Belgium (36%), followed by Malta (32%), Austria (31%), Greece (30%), Luxembourg (29%), the UK (26%) and Croatia (26%). In nine countries, less than 20% of the responses were positive. The lowest percentages of positive answers were recorded in Germany (13%), Bulgaria (14%), Portugal (14%), Denmark (14%) and Sweden (16%) (Figure 60).

Figure 60: Perceptions of Internet security (percentage of positive answers) 2019

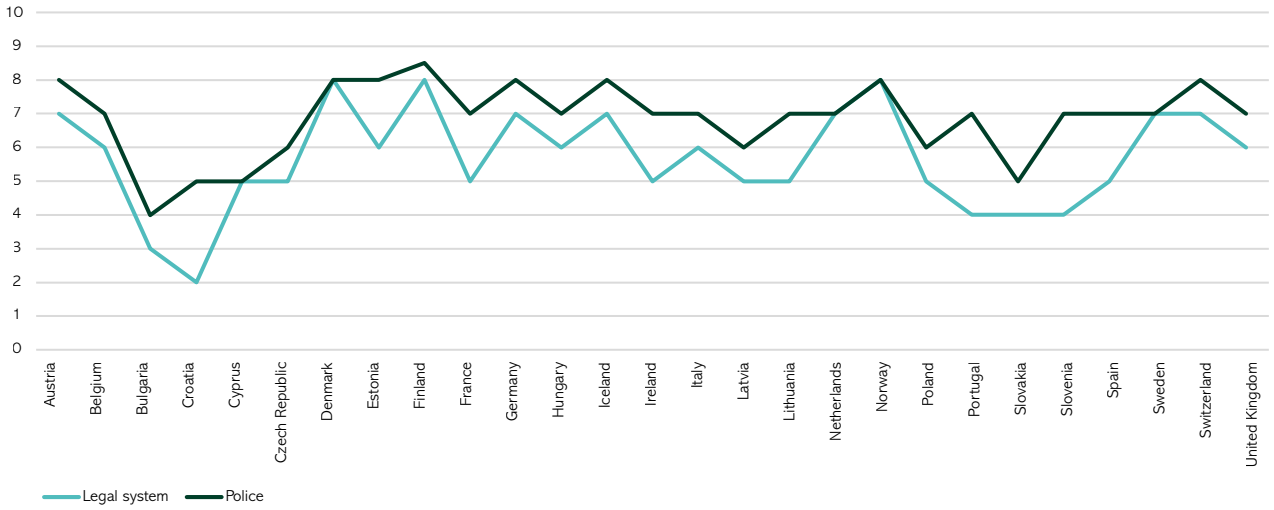


Source: Eurobarometer 2022

Trust and confidence in law enforcement. The ESS survey measures European citizens' trust in the legal system and in the police in a scale from 0 (no trust) to 10 (complete trust) (ESS, 2021). The responses to the survey were collected between 2018 and 2020 (ESS, 2022). The GaaG datasets (OECD, 2022a), on the other hand, measure the proportion of citizens that have confidence in the local police and in the judicial system, and include additional countries such as Australia, Canada, New Zealand and the US – although some others, such as Bulgaria and Croatia, are not covered.

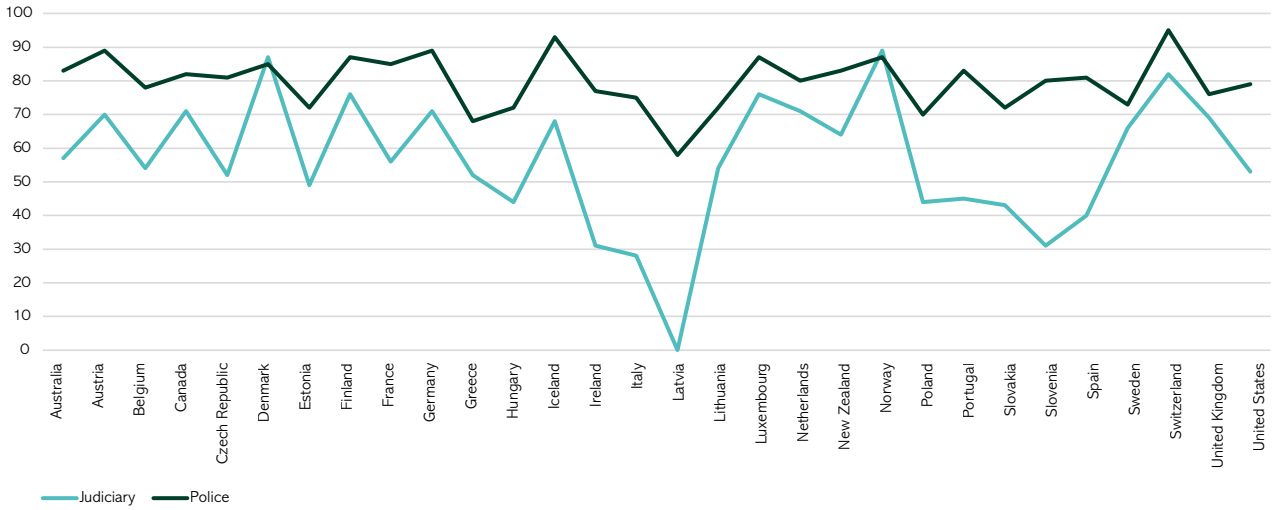
The most evident finding from a comparative analysis of both datasets is that citizens appear to have more trust and confidence in the police rather than the legal and judicial systems, as scores related to the police are comparatively higher than those for legal and judicial systems in both surveys. Moreover, in some countries where trust or confidence in the police are quite high, trust or confidence in the legal or judicial systems can be quite low (Figures 61 and 62).

Figure 61: Trust in the legal system and the police (median of all responses by country) 2018–2020



Source: ESS 2022

Figure 62: Percentage of citizens who have confidence in the judicial system and the local police, 2019

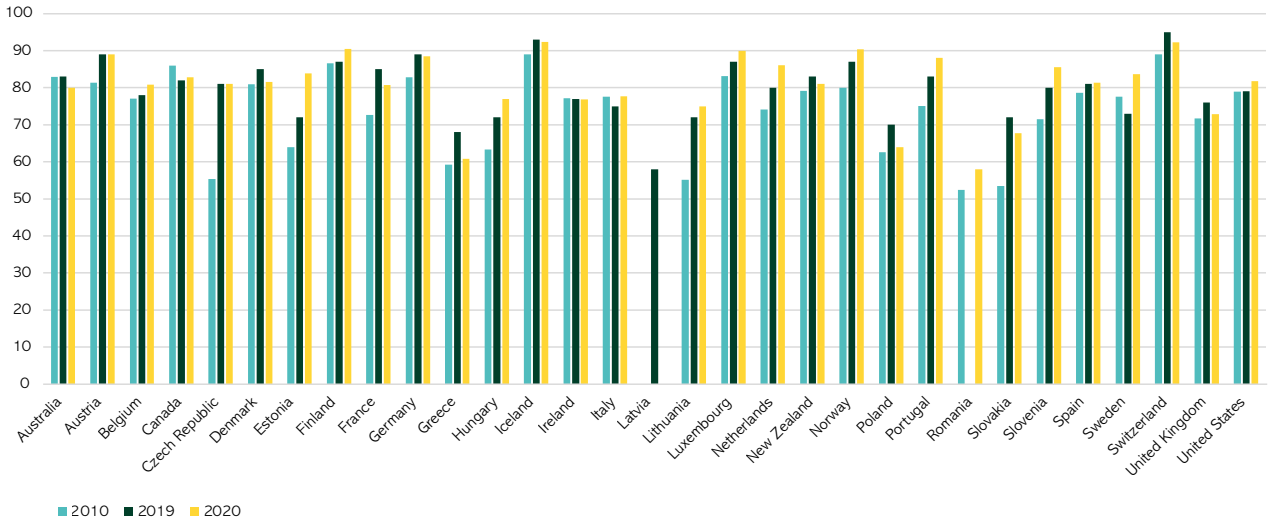


* Data on confidence in the judiciary is not available for Latvia

Source: OECD GaaG 2022

How many citizens have confidence in the local police? According to the GaaG the highest percentage of citizens who have confidence in the local police in 2019 were found in Switzerland (95%), Iceland (93%), Austria (89%), Germany (89%), Finland (87%), Luxembourg (87%) and Norway. The lowest percentages were recorded in Latvia (58%), Greece (68%), Poland (70%), Slovakia (72%), Lithuania (72%), Hungary (72%), Estonia (72%) and Sweden (73%). Despite some variations, data for 2020, during the global pandemic, does not reveal major changes. Most notably, Sweden reported a considerable increase in confidence (from 73% in 2019 to 83.89%) in 2020. Overall, scores have improved for most countries since 2010 (Figure 63).

Figure 63: Percentage of citizens who have confidence in the local police 2010, 2019 and 2020



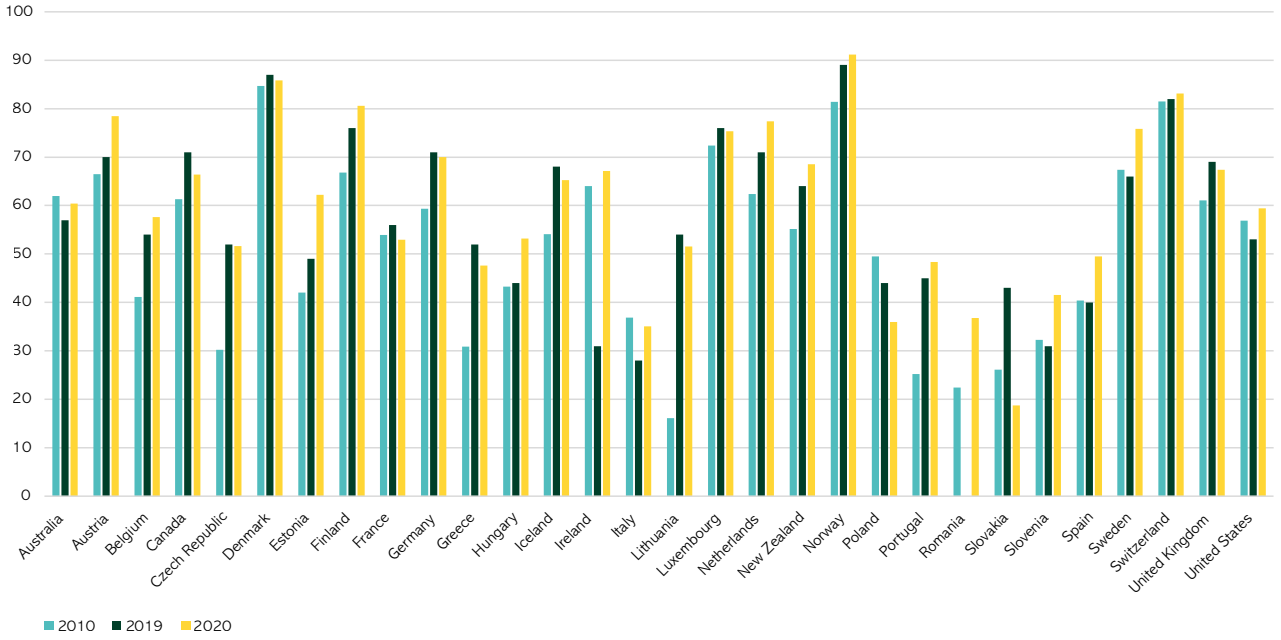
Source: OECD GaaG 2022

How much trust do citizens have in the police? According to ESS data, the highest average (median) levels of trust in the police were recorded in Finland (8.5 out of 10), Denmark, Norway, Austria, Germany, Iceland, Switzerland and Estonia (all 8 out of 10). A large number of countries – including France, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden and the UK – scored 7 points. A few countries scored lower, including Bulgaria (4), Croatia (5), Slovakia (5), Cyprus (5), Poland (6), Latvia (6) and the Czech Republic (6) (Figure 61).

How much do citizens trust the legal system? According to the ESS, the countries with the higher average (median) levels of trust in the police also tend to have high levels of trust in the legal system. These include Finland, Denmark, Norway (8 out of 10), and Austria, Germany, Iceland, Switzerland and the Netherlands (7 out of 10). The lowest levels are found in Croatia (2 out of 10), Bulgaria (3 out of 10) and Portugal, Slovakia and Slovenia (4 out of 10) (Figure 61).

How many citizens have confidence in the judicial system? The GaaG dataset shows that in 2019, the highest proportion was found in Norway (89%), followed by Denmark (87%), Switzerland (82%), Finland (76%), Luxembourg (76%), Canada, Germany and the Netherlands (all 71%). The country with the lowest record of citizens' confidence in the judiciary was Italy (28%), followed by Slovenia (31%), Ireland (31%), Slovakia (43%), and Poland and Hungary (44%). In 2020, the proportions slightly changed for some countries – some for the better (notably, Norway moved from 89% to 91.14%, Finland from 76% to 80.6%, Austria from 70% to 78.47%, Ireland from 31% to 67.12%, Italy from 28% to 35.07%). Some changed for the worse (for instance, the UK fell from 69% to 67.36%, Canada from 71% to 66.42%, France from 56% to 52.95%, Poland from 44% to 35.95%, Slovakia from 43% to 18%) (Figure 64).

Figure 64: Percentage of citizens who have confidence in the judicial system 2010, 2019 and 2020



Source: OECD GaaG 2022

4.8. ASSESSING THE PERFORMANCE: HOW WELL ARE STATES DOING?

As we explained in the methodology sections, any attempt to compare different countries based on the analysis of data from multiple sources and concerning different times and indicators need to be conducted with extreme caution, as the data are very diverse and complex, and the risk of misinterpretation is very high. On some occasions, no comparison is possible. One major limitation we have already addressed is the lack of sufficient data from many countries on some of the most challenging contemporary forms of crime, such as economic crime and cybercrime. We also encountered incomplete data for some countries concerning important issues such as death and suicides in prison, or the female population.

In this section, we will outline and explore in a more explicit and structured way some issues emerging from the preceding data analysis, and we will formulate questions and hypotheses to point the direction for further research or policy interventions. We will also provide some further guidance on how to avoid misinterpreting the data already exposed. This section is organised into three main sections: 1) efficiency – the relationship between inputs and outputs; 2) effectiveness – the relationship between outputs and outcomes; and 3) cost-effectiveness – the relationship between inputs and outcomes. The last part will also include considerations of satisfaction and trust, for which we have considered outcomes for the purpose of our study.

To facilitate the reading of the following passages – which are rich in names of states and figures – we have included some colour-coded tables. The purpose of these tables is purely to help the visualisation of the data and support the reading of the discussion. The tables and the colour-coding should not be interpreted as a suggestion of any conclusive or comparative evidence of the states' performances beyond what explicitly stated in the text. Also, some of these tables include figures from different datasets and different years. Therefore, any comparison requires particular care.

4.8.1. Efficiency (input–outputs)

Assessing efficiency entails comparing the resources invested in social safety (inputs) with the outputs of such investment. As we said, the countries that spent more in social safety on average (mean) from 2010 to 2020 are Bulgaria (2.52% of the GDP), Slovakia (2.35%), Croatia (2.24%), Poland (2.22%), Romania (2.18%), the US (2.06%), Hungary (2.04%), Latvia (2.3%), Greece (2.3%) and the UK (1.99%). The countries that spent less in the same period are Denmark (0.99%), Luxembourg (1.05%), Norway (1.06%), Malta (1.22%), Finland (1.26%), Ireland (1.26%), Sweden (1.31%), Austria (1.34%), Iceland (1.43) and Germany (1.56%). The other countries sit in-between these two extremes. It will be difficult to fully interpret data related to the US, for which any comparison is difficult due to the federal system and the way data were submitted, and the UK, for which some data for some years or some UK countries (England and Wales, Northern Ireland, and Scotland) is missing.

From prosecution to conviction. Denmark, Norway and Finland are among the countries that spent less on average in public order and safety between 2010 and 2020, and yet they have the highest average (mean) conviction–prosecution ratios per 100 000 inhabitants than any other country – each well above 90% (Table 26). Denmark and Finland have reported very high prosecution and conviction rates per 100 000 inhabitants in that period, while figures were lower in Norway. From 2010 to 2020 Norway reported low numbers of judges (15.4 per 100 000 inhabitants) and police (162.3 per 100 000 inhabitants) among all countries. Denmark reported fewer judges than Norway and Finland (an average of 13.4 per 100 000 inhabitants between 2010 and 2020) and but more police than Norway (190.7 per 100 000 inhabitants on average). Finland, on the other hand, has slightly more judges than both countries (18.8 per 100 000 inhabitants), but the lowest number of police than any other country (139.3 per 100 000 inhabitants). Of these countries, in 2020 Norway reported a very good combination of disposition time (76 days on average) and a clearance rate of 102.7%. Disposition times and clearance rates are lower for Denmark (133 days and 98.7%) and Finland (164.3 days and 95.3%).

Table 25: Inputs and outputs (arrests, prosecutions and convictions)

Country	Inputs			Outputs			
	Average (mean) annual public expenditure in public order and safety 2010-2020 (percentage of GDP) (OECD/ Eurostat)	Average (mean) number of professional judges per 100,000 inhabitants every year 2011-2020 (Eurostat)	Average (mean) number of police officers per 100,000 inhabitants every year 2011-2020 (Eurostat)	Average (mean) number of persons suspected, arrested, or cautioned per 100,000 inhabitants 2011-2020 (UN CTS)	Average (mean) number of persons prosecuted per 100,000 inhabitants 2010-2020 (UN CTS)	Average (mean) number of persons convicted per 100,000 inhabitants 2010-2020 (UN CTS)	Average (mean) annual conviction-prosecution ratio 2010-2020 (UN CTS)
Australia	1,88	N/A	N/A	1.672	N/A	1.274	N/A
Austria	1,34	11,6	336,2	3.060	3.385	374	11,0%
Belgium	1,77	18,4	341,3	2.120	5.215	1.377	26,4%
Bulgaria	2,52	31,1	391,3	664	583	422	72,4%
Canada	N/A	N/A	N/A	2.501	1.028	665	64,7%
Croatia	2,24	43,7	493,1	522	1.389	385	27,7%
Cyprus	1,81	12,9	581,0	510	8.673	5.098	58,8%
Czech Republic	1,79	11,6	374,4	942	850	604	71,0%
Denmark	0,99	13,4	190,7	608	3.209	2.955	92,1%
Estonia	1,92	17,4	309,7	1.379	635	562	88,6%
Finland	1,26	18,8	139,3	6.801	2.772	2.706	97,6%
France	1,64	9,9	317,4	1.776	1.045	886	84,8%
Germany	1,56	25,6	300,7	2.612	1.169	913	78,1%
Greece	2,03	37,6	494,9	N/A	N/A	N/A	N/A
Hungary	2,04	29,0	382,3	1.274	835	736	88,2%
Iceland	1,43	15,1	191,0	1.499	746	N/A	N/A
Ireland	1,26	3,3	290,0	N/A	1.645	N/A	N/A
Italy	1,86	11,0	444,7	1.497	2.646	385	14,5%
Latvia	2,03	21,5	429,4	951	533	441	82,7%
Lithuania	1,61	26,3	302,6	869	694	588	84,7%
Luxembourg	1,05	34,5	322,1	4.703	2.043	1.371	67,1%
Malta	1,22	9,5	473,7	1.224	520	N/A	N/A
Netherlands	1,89	14,3	299,3	1.524	1.166	516	44,2%
New Zealand	N/A	N/A	N/A	3.098	1.801	1.525	84,7%
Norway	1,06	15,4	162,3	1.251	979	915	93,5%
Poland	2,22	25,5	258,8	1.016	1.042	906	86,9%
Portugal	1,85	17,0	446,6	1.743	872	571	65,4%
Romania	2,18	22,256	254,713	1.040	469	198	42,3%
Slovakia	2,35	25,4	403,9	861	816	556	68,2%
Slovenia	1,69	44,9	354,3	830	563	379	67,3%
Spain	1,98	9,2	370,6	800	N/A	564	N/A
Sweden	1,31	9,2	204,2	1.681	1.029	841	81,7%
Switzerland	1,59	15,5	219,1	1.472	N/A	1.261	
United Kingdom	1,99	N/A	N/A	N/A	N/A	N/A	N/A
United States	2,06	N/A	N/A	3.422	27	25	N/A

Sources: Eurostat, OECD, UN CTS 2022

Among the countries that spent less in public order and safety between 2010 and 2020, Sweden and Germany also have good conviction–prosecution ratios (respectively 87.1% and 78.1%) and some low numbers of judges and police compared to other countries (9.2 judges and 204.2 police per 100 000 inhabitants in Sweden; 25.6 judges and 300.7 police in Germany). Iceland and Ireland have some of the lowest rates of judges and police staff per 100 000 inhabitants, but their performance is more difficult to assess as data on conviction rates could not be found in the UN-CTS database. However, in 2020, they both reported fast disposition times (73 days on average in Iceland, 118 days in Ireland), although clearance rates are rather low in both states (86.3 days in Iceland, 91.3 days in Ireland). In fact, Iceland's clearance rates are the lowest among all the countries that provided useful data. Malta's situation is also difficult to assess due to the lack of data on conviction rates. However, in 2020 the country reported very slow disposition times (668.5 days on average) but the highest clearance rates than any other country (122%), with a very small average number of judges (9.5 per 100 000 inhabitants from 2010 to 2020). Austria's situation is also unusual, as the average conviction–prosecution rate between 2010 and 2020 is very low (11%), despite reporting satisfactory disposition times (112.6 days) and clearance rates (100.3%) in 2020.

Among the countries that are situated in the middle of the rankings for expenditure in public order and safety, those with higher average conviction–prosecution ratios between 2010 and 2020 are Estonia (88.6%), France (84.8%) and Lithuania (84.7%). Moreover, in 2020 all these three countries reported clearance rates close to 100%. All these countries have reported relatively small average rates of judges and police per 100 000 inhabitants. Both Lithuania and Estonia also reported very fast average disposition times (86 and 50.6 days, respectively). Average disposition times were much slower in France: 272.5 days. Some problematic countries are also in this group of countries. Italy, for instance, reported disproportionately high prosecution rates per population (2646 per 100 000 inhabitants on average) compared to conviction rates (384.9) and a very low average conviction–prosecution ratio (14.5%) between 2010 and 2020. In 2020, it also reported some of the slowest disposition times.

Of the countries that spent more in public order and social safety between 2010 and 2020, Hungary has the highest average conviction–prosecution ratio (88.2%), and a record disposition time of 56 days and a clearing rate of 101% in 2020. However, prosecution and conviction rates per 100 000 inhabitants were lower than most of the countries that spent less on public order and safety, except for Malta and Iceland. Hungary had an average of 29 judges and 382.3 police per 100 000 inhabitants between 2010 and 2020. Poland and Latvia also have respectable conviction–prosecution ratios between 2010 and 2020, and good disposition times and clearance rates, although prosecution and conviction rates in Latvia were half those in Poland. Apart from these three countries, the situation of other countries that spent large amounts of money on public order and safety seems more problematic. Croatia has a very low average conviction–prosecution ratio (27.7%) and rather limited PSAC and conviction rates between 2010 and 2020, despite having a very high average number of judges (43.7) and police (493.1) per 100 000 inhabitants. Bulgaria, the country that invested the most in public order and safety, has very low numbers of prosecutions and convictions, and low conviction–prosecution ratios in the same period, although in 2010 disposition times and clearing rates were satisfactory. Romania also has one of the lowest average conviction–prosecution ratios (42.3%) and very small prosecution and conviction numbers (an average of 468.5 and 198.2 per 100 000 inhabitants respectively).

Prisons and punishment. Interestingly, most of the ten countries that spent less on public order and safety are also among the countries with the lowest average (mean) rates of prison population per 100 000 inhabitants from 2010 to 2020 – ranging from an average of 43.6 inmates per 100 000 inhabitants in Iceland to 79.8 in Germany. The exceptions are Austria (101.6), Luxembourg (117.3) and Malta (145.8). Most of these countries also did not report prison overcrowding, apart from Finland and Austria each with an average (mean) of more than 2% inmates exceeding the maximum capacity of its prison facilities between 2010 and 2020. Some of these countries recorded high average (mean) rates of suicides between 2010 and 2020 – Denmark (0.12% of the prison population), Norway (0.11%) and Germany (0.11%). Suicide rates were lower in the other countries – from no suicides recorded in Luxembourg and Iceland, to 0.8% in Finland (Table 26).

On the other hand, all the countries that spent more in social safety except Croatia are among the countries with the higher average (mean) prison population rates, usually higher than 100 inmates per 100 000 inhabitants, with peaks of 669.7 inmates in the US, 233.6 in Latvia and 201.8 in Poland. Only few of these countries – Greece, Hungary and Romania – reported prison overcrowding between 2010 and 2020, while some others such as Bulgaria, Latvia and the US have rather low average (mean) inmates-capacity rates (all below 90%). Average suicide rates were fairly low in all these countries, from a minimum of 0.01% in Croatia to a maximum of 0.06% in Slovakia, with the exception of Latvia (0.10%).

Table 26: Inputs and outputs (prisons)

Country	Inputs			Outputs			
	Average (mean) public expenditure in public order and safety between 2010 and 2020 (percentage of GDP) (OECD/ Eurostat)	Average (mean) number of personnel in adult prisons per 100,000 inhabitants 2011-2020 (Eurostat)	Prison facilities 2019 (or latest year available)* (UN CTS)	Average (mean) persons held in prison per 100,000 inhabitants every eyar 2010-2020 (UN CTS)	Ratio official prison capacity-prison population 2019 (or latest year available)* (UN CTS)	Average (mean) annual percentage of suicides per total prison population 2010-2020 (UN CTS)	Probationers per 100 inmates 2021 (SPACE II)
Australia*	1,88	N/A	114	152,7	N/A	0,04%	N/A
Austria	1,34	47,2	28	101,6	102,1%	0,11%	168,3
Belgium	1,77	76,6	N/A	96,8	N/A	0,14%	555,8
Bulgaria	2,52	37,2	70	109,1	79,6%	0,05%	56,4
Canada*	N/A	N/A	243	111,1	106,2%	0,04%	N/A
Croatia	2,24	61,8	24	92,3	90,2%	0,01%	100,5
Cyprus	1,81	48,7	1	52,9	134,1%	N/A	N/A
Czech Republic	1,79	103,5	35	197,3	104,7%	0,06%	120,9
Denmark	0,99	107,3	58	65,9	99,3%	0,12%	199,9
Estonia	1,92	105,8	3	220,5	N/A	0,09%	166,8
Finland	1,26	41,7	26	57,2	102,3%	0,08%	131,1
France	1,64	42,4	266	103,6	115,8%	0,17%	279,7
Germany	1,56	44,5	180	79,8	89,5%	0,11%	N/A
Greece	2,03	41,1	N/A	105,6	109,6%	0,04%	123,5
Hungary	2,04	78,3	30	176,1	112,1%	0,04%	219,1
Iceland	1,43	33,4	5	43,6	N/A	0,00%	176
Ireland	1,26	73,4	N/A	84,4	85,6%	0,03%	162,8
Italy	1,86	70,4	230	101,1	121,4%	0,08%	175,2
Latvia	2,03	121,4	9	233,6	70,8%	0,10%	184,1
Lithuania	1,61	98,0	10	263,6	84,8%	0,11%	286,1
Luxembourg	1,05	77,8	2	117,3	75,4%	0,00%	168
Malta	1,22	56,2	1	145,8	85,9%	0,08%	N/A
Netherlands*	1,89	63,3	48	71,4	90,9%	0,11%	389,1
New Zealand	N/A	N/A	N/A	197,3	91,9%	0,07%	N/A
Norway	1,06	84,5	37	75,2	97,7%	0,11%	88,6
Poland	2,22	54,4	151	201,8	87,0%	0,03%	359,2
Portugal	1,85	50,2	49	128,5	100,1%	0,11%	268,5
Romania	2,18	55,9	45	135,4	105,4%	0,05%	309,8
Slovakia	2,35	91,1	18	188,2	90,8%	0,06%	122,4
Slovenia	1,69	37,8	14	66,4	104,3%	0,09%	181,7
Spain	1,98	55,7	84	135,4	91,1%	0,05%	130,2
Sweden	1,31	62,4	76	63,9	97,4%	0,06%	153,6
Switzerland	1,59	51,0	100	76,5	88,9%	0,10%	59,6
United Kingdom	1,99	N/A	N/A	N/A	N/A	N/A	N/A
United States	2,06	N/A	N/A	669,7	87,4%	0,03%	N/A

* Prison facilities and ratio official prison capacity-prison population for these countries is based on data from the following years: Australia 2017; Canada 2015; Germany 2017; the Netherlands 2018.

Sources: Eurostat, OECD, UN CTS, SPACE II 2022

4.8.2. Effectiveness (output–outcomes)

One of the main outcomes of social safety policies and systems – especially crime prevention and criminal justice – is the reduction of crime. It might therefore be tempting to assess the effectiveness of such systems on the basis of crime rates. However, things are not so simple. As we said, crime rates can be affected by a lot of factors and high crime rates are not necessarily an indication of institutional ineffectiveness. On the contrary, high crime rates might signal the ability of law enforcement to detect and record crimes or of citizens to report them effectively. It is important therefore to read crime rates in context. To do so, in this section we will first introduce broader outcomes of the social safety system, including citizens' perceptions of institutional effectiveness and safety, as well as their trust and confidence in the institutions, and compare them with some of the outputs we examined before concerning the criminal justice and prison system. Then we will use these findings to read crime rates. Finally, we will address some social factors.

Perceptions about effectiveness and quality of law enforcement and government, and the rule of law.
The countries that consistently reported the highest scores in effectiveness of law enforcement, quality of government and the rule of law are Norway, Denmark, Finland and Sweden. These countries are at the top of the 2021 World Justice Project (WJP) rankings for effectiveness and fairness of criminal justice, regulation, and order and security (Table 27). They consistently occupied top positions in the Quality of Government Institute (QoGI) European Quality of Government Index (EQI), in the World Governance Indicators (WGI) rankings for effectiveness of government and the rule of law from 2010 to 2020, as well as in the WJP rule of law rankings. They are also among the least corrupt countries according to both the Transparency International CPI (2021) and the Quality of Government Institute (QoGI) Baynesian Corruption Index. Other countries performing consistency well in these indexes are Austria, Sweden, Germany, the Netherlands, New Zealand, Canada, Luxembourg and Ireland.

Table 27: Citizens' perceptions on criminal justice, regulation, order and security, human rights and the rule of law 2021 (WJP)

Country	Effectiveness of the criminal justice system	Effectiveness of regulatory enforcement	Order and security	Fundamental human rights	Rule of law
Australia	0,72	0,81	0,87	0,78	0,79
Austria	0,80	0,82	0,91	0,85	0,81
Belgium	0,70	0,81	0,81	0,84	0,79
Bulgaria	0,44	0,52	0,77	0,60	0,54
Canada	0,73	0,80	0,90	0,82	0,80
Croatia	0,49	0,57	0,85	0,67	0,61
Cyprus	0,70	0,65	0,81	0,72	0,68
Czech Republic	0,71	0,71	0,89	0,79	0,73
Denmark	0,83	0,89	0,92	0,92	0,90
Estonia	0,72	0,79	0,89	0,82	0,81
Finland	0,84	0,87	0,92	0,90	0,88
France	0,61	0,76	0,76	0,71	0,72
Germany	0,79	0,86	0,89	0,85	0,84
Greece	0,50	0,57	0,71	0,65	0,61
Hungary	0,46	0,46	0,90	0,56	0,52
Iceland	N/A	N/A	N/A	N/A	N/A
Ireland	0,72	0,81	0,94	0,82	0,81
Italy	0,64	0,61	0,75	0,73	0,66
Latvia	0,65	0,71	0,83	0,75	0,71
Lithuania	0,68	0,74	0,89	0,75	0,75
Luxembourg	0,73	0,85	0,93	0,85	0,83
Malta	0,63	0,58	0,92	0,73	0,68
Netherlands	0,75	0,85	0,85	0,84	0,83
New Zealand	0,74	0,86	0,89	0,82	0,83
Norway	0,85	0,88	0,93	0,91	0,90
Poland	0,58	0,61	0,86	0,61	0,64
Portugal	0,59	0,61	0,79	0,77	0,70
Romania	0,53	0,58	0,83	0,67	0,63
Slovakia	0,57	0,65	0,90	0,73	0,66
Slovenia	0,55	0,65	0,90	0,76	0,68
Spain	0,67	0,71	0,82	0,80	0,73
Sweden	0,80	0,84	0,92	0,87	0,86
Switzerland	N/A	N/A	N/A	N/A	N/A
United Kingdom	0,71	0,80	0,83	0,80	0,79
United States	0,60	**0,71**	0,81	0,66	0,69

Sources: WJP 2022

These countries also recorded high levels of citizens' perceptions of safety. Finland, Denmark, Norway and Sweden, together with the Netherlands, Luxembourg and Austria also reported consistently high levels of citizens' perceptions of safety at country, city and neighbourhood levels in both the Eurobarometer and Eurostat surveys – although with some variations between the two surveys. Interestingly, Slovenia and Croatia, who reported some of the lowest scores in perceptions of effectiveness of the criminal justice system, recorded high levels of perceptions of safety, suggesting that such perceptions might not always related to citizens' perceptions of the criminal justice systems but might be influenced by other factors.

It is not surprising that the same countries also reported high levels of citizens' trust and confidence in the legal institutions. Denmark, Finland and Norway reported some of the highest levels of citizens' trust in the legal system in the European Social Survey (ESS) and confidence with the judiciary in the GaaG survey, together with Austria, Germany, Luxembourg and the Netherlands. Some of these countries – Finland, Austria, Germany, Norway and Denmark – also reported some of the highest levels of citizens' trust and confidence in the police in both surveys, together with Iceland

and Switzerland. Despite scoring high in the WJP rankings for criminal justice effectiveness, Sweden reported relatively lower levels of trust and confidence in the judiciary and the police.

So, what are these countries doing right? Answering this question can be important for other countries to conduct some comparative research on these jurisdictions to identify policies and practices that can inspire similar solutions or possible reforms in their own systems. The WJP datasets are particularly helpful to orient researchers and policymakers in the comparative search for best practices in the best-scoring countries.

Luxembourg, Austria, Canada and Denmark, together with Cyprus, the UK and Australia, are considered the countries with the most effective investigation systems. Finland, Norway, Denmark and Germany occupy very high rankings for both effectiveness and timeliness of the adjudication system, and the impartiality of the criminal justice system. Among these, Germany and Norway also reported a very good combination of disposition times and clearance rates in the 2020 CEPEJ survey. The criminal justice systems of these countries also are considered some of the most free from corruption and undue government influences, together with New Zealand, Canada and Australia. It is also important to note that Sweden, Finland, Norway and Denmark are considered to have the highest degrees of compliance with the due process and the rights of the accused, together with Luxembourg, Austria, Germany and the Netherlands. This – together with strong perceptions of impartiality and absence of corruption and undue influences – suggests that effectiveness of the criminal justice system in these countries is not achieved at the detriment of fairness and integrity, and that the judiciary and law enforcement are not abusing their powers. This is further confirmed by the high ranks occupied by these countries in rule of law indexes.

According to the WJP data, the most effective correctional systems are considered to be those in Norway, Finland, Sweden, Austria, Germany, Denmark and the Netherlands. Interestingly, Finland, Sweden, Denmark and Norway have some of the lowest prison populations across 2010 and 2020 – although not the highest rates of probationers in 2021. In 2019, Denmark, Norway and Sweden had almost filled the capacity of their prison facilities, with a number of inmates close to 100% of their capacity, while Finland reported some overcrowding (102.33%). However, while Sweden and Finland have reported relatively low suicide rates (although not the lowest), such rates are higher (in fact, among the highest) in Denmark, Norway, Germany, the Netherlands and Austria.

As far as the police are concerned, results are slightly different. According to the World Economic Forum Executive Opinion Survey (EOS), in 2017–18, Finland, Switzerland and New Zealand have been considered the countries with the most reliable police services and have maintained consistently high scores on this since 2010. On the other hand, Denmark's and Sweden's rankings in this respect have been deteriorating in the last few years and this is also reflected in lower scores concerning people's trust and confidence in the police in Sweden, in both the ESS and GaaG surveys. Once again, the fact that these countries also occupy top position in rule of law rankings suggest that the police are not abusing their powers and are acting in respect of individual rights.

As we said, social safety is not just achieved through policing and law enforcement but also through broader crime prevention measures. Sweden, Norway, Denmark and Finland are among the highest-scoring countries in WJP's rankings concerning order and security, although the three top positions are occupied by Ireland, Malta and Luxembourg. Of these countries, Norway, Slovenia, Denmark and Finland are among those with the highest scores for crime control (which, in the WJP's survey measures both crime rates and people's perceptions of safety). In these countries, as well as in Ireland, Malta, Luxembourg, Sweden, Austria and Slovakia, there is a strong perception that people do not resort to violence to redress personal grievances. Croatia recorded the highest score for crime control, and this is in line with strong citizens' perceptions of safety reported in the Eurobarometer and Eurostat surveys. However, Croatia also reported very low trust and confidence in the legal system and the police, low levels of compliance with the rule of law and strong perceptions that citizens do resort to violence to redress personal grievances. This suggest that the perception that crime is effectively controlled might not necessarily depend on the quality of law enforcement or other institutional measures.

We already mentioned that an increasing role in crime prevention is played by regulation. Once again, according to the WJP data, Denmark, Norway and Finland are at the top of the rankings for regulatory enforcement, followed by New Zealand, Germany, Luxembourg, the Netherlands, Sweden and Austria. Denmark, Austria, Estonia and Finland are perceived as the countries in which government regulations are enforced more effectively. Norway, Finland and Denmark, together with Canada, New Zealand and the UK, recorded the highest score for the absence of any improper influence on the application and enforcement of regulations. Denmark is once again at the top of the rankings concerning the absence of unreasonable delays in administrative proceedings, followed by the Netherlands, Germany, Sweden,

Luxembourg, New Zealand, Finland and Norway. Finland, New Zealand, Germany, Norway, Canada, Ireland and Denmark occupy the first positions as regards compliance with the due process in administrative proceedings.

With the benefit of these insights, we can now go turn to crime rates.

Crime rates. A first noticeable finding emerging from crime rates is that some of the countries that reported strong citizens' perceptions of institutional effectiveness, trust and safety have also recorded very high crime rates from 2010 to 2020. In that period Denmark, Sweden and Norway for instance, have reported some of the highest rates of property crimes such as burglary, theft and fraud. Sweden has also consistently reported some of the highest rates of sexual violence, money laundering and corruption. Finland has consistently reported relatively high rates of homicide, sexual violence, theft, fraud and corruption. Other countries that scored well in indicators of effectiveness, trust and safety and yet reported high or increasing rates for various crimes considered in this study include New Zealand, Switzerland, Austria and the Netherlands. How can these countries do so well in social safety if they have such high crime rates? As we said earlier, high crime rates might actually depend on effective social safety systems and increased reporting, other than on different national methodologies to collect data. This can be demonstrated by looking at prosecution and convictions rates and ratios. Significantly, some of the countries with high crime rates and strong perceptions of effectiveness, trust and safety, also report high numbers of prosecutions and convictions and high percentages of convictions per prosecutions, suggesting that law enforcement agencies are effectively detecting and recording crime, and prosecuting and convicting offenders. From 2010 to 2020, Denmark, Finland, New Zealand and Switzerland reported high prosecution and conviction rates and some of the highest conviction–prosecution ratios. Norway also reported an excellent conviction–prosecution ratio but lower prosecution and conviction rates.

However, high prosecution and conviction rates and ratios do not always demonstrate effectiveness or efficiency and like any other indicator, such as crime rates, they need to be read in context. For instance, Cyprus has reported the highest prosecution and conviction rates from 2010 to 2020, while also reporting the lowest rates for most of the offences considered here and low rates of persons arrested, suspected or cautioned. Moreover, Cyprus reported low citizens' perceptions of safety in the Eurostat and Eurobarometer data and low levels of citizens' trust in the legal system, the judiciary and the police in the ESS and EOS surveys. Other peculiarities can be observed in Austria or the Netherlands. Despite having relatively high prosecution rates, both countries reported comparatively low conviction rates, which led to some of the lowest conviction–prosecution ratios (44.2% in the Netherlands, 11% in Austria). These figures are at odds with the high perceptions of effectiveness of the criminal justice system in these countries and with the good levels of trust and confidence in the police and the judiciary. This discrepancy might depend on several factors, such as different methods in collecting data, the availability of mechanisms to agree a settlement with the prosecution and avoid conviction, or different legal definitions of prosecution or conviction.

High crime rates can also depend on broader legislative definitions of certain offences, different ways to record criminal cases and higher reporting of crime. All this is well exemplified by the Swedish Government's explanation of the increase in sexual violence rates in Sweden. The government notes that such increase can partly be explained by changes in legislation, as the definition of rape in Swedish law has recently broadened to include acts are not considered rape in many other countries. As a result, it is difficult to compare the levels of reported crime over time or against the situation in other countries. Furthermore, the government observes that in some countries, if several offences are committed on the same occasion only the most serious of these will be recorded. In Sweden, in principle every offence committed on a single occasion is recorded. The government also explains that the increase of sexual violence rates also depends on an increasing the number of rape offences reported to the Police Authority. This is the result of conscious government efforts to encourage women to talk openly about these issues and report any offence. As a result of these factors, while Sweden, according to Eurostat statistics, has long had the highest number of reported rapes ***per capita***, a study by the Swedish National Council for Crime Prevention shows that if the legal conditions and statistical methods had been the same as in Germany, Sweden would rank somewhere in the middle of the statistics from Eurostat (Government Offices of Sweden, 2022).

In short, somewhat counterintuitively, some countries might have high crime rates precisely ***because*** they are doing well against crime. Conversely, low crime rates might actually indicate difficulties in the detection, recording or reporting of crime. Romania and Bulgaria, for instance, from 2010 to 2020 consistently reported low rates for most of the crimes considered here, which is at odds with the low perceptions of safety by citizens recorded in these countries. The combination of low prosecution and conviction rates with the low perceptions of effectiveness and trust in the police and the criminal justice system in these countries suggests that there might be difficulties in the detection, recording and prosecution of criminal offences.

Social factors. A proper investigation of the correlations between social factors such as inequality, unemployment, education and social values is way beyond the scope and nature of this study and requires a more complex and interdisciplinary analysis of the available data. Here, we can only highlight some suggestions for future research based on preliminary findings emerging from our analysis. First, some of the countries that reported solid perceptions of institutional effectiveness, trust and safety, such as Norway, Germany, Switzerland, Iceland and Denmark, also reported a good combination of low inequality rates and low unemployment, suggesting a strong social system, while some of the countries that recorded low citizen perceptions of effectiveness, trust and safety such as Greece, Italy or Portugal also reported high inequality and unemployment. However, there are also cases of countries that are perceived as effective and safe that reported high inequality or unemployment. This is the case, for instance, of Finland and Ireland. Second, the countries with the highest homicide rates (between 3 and 6 per 100 000 inhabitants) from 2010 to 2020 – Lithuania, the US, Romania and Estonia – are also countries that reported high levels of income inequality in that period. However, the homicide-inequality correlation becomes less clear for countries with lower homicide rates (between 1 and 2 per 100 000 inhabitants). Similarly, correlations between unemployment or early leaver rates are more difficult to identify and establish on the basis of our analysis, as the datasets examined do not show any clearly identifiable pattern and this might depend on different national abilities and methodologies to record crime data. Comparing social values and crime rates (on the basis of the selection of data for this study) also produces some contradictory results. For instance, some of the countries that recorded low social acceptance of benefit fraud or tax cheating in the EVS and WVS between 2017 and 2020, reported low fraud rates in the same period (e.g. Bulgaria, Cyprus, Croatia and Greece), while some other countries that also recorded such low acceptance have reported high fraud rates (e.g. Germany or Denmark). The reasons for these apparent contradictions cannot be fully investigated here, but a possible explanation could be differences in the identification of relevant offences and in the collection and recording of the relative data.

4.8.3. Cost-effectiveness (input–outcomes)

A comparison between data on government expenditure on public order and safety, and data on the effectiveness of the criminal justice system, crime control and regulation as well as on citizens' perceptions of safety and trust in the institutions, shows clearly that the countries that reported the highest scores in the latter datasets are also those that spent less on public order and safety. Among these, Denmark has the lowest expenditure rates, very low numbers of judges and police, while maintaining excellent conviction–prosecution ratios, good disposition times and clearing rates, and high levels of citizens' perceptions of effectiveness, safety and trust. Finland has the lowest numbers of police officers of any other country. With slightly higher expenditure rates and slightly more judges, Norway has a better conviction–prosecution ratio than Denmark, and some of the fastest disposition times and higher clearance rates. Finland has more judges than Denmark and higher expenditure rates, but also has better conviction–prosecution ratios. Ireland has also low expenditure rates and the lowest number of judges, but more police officers and lower clearance rates than Denmark or Finland. Sweden also has low expenditure rates and relatively few judges or police officers, and similar disposition times and clearance rate as Ireland, but a lower conviction–prosecution ratio than Denmark and Finland.

Few other countries strike a similar balance between input, outcomes and outputs. Some countries have reported low expenditure rates but also low perceptions of effectiveness, safety and trust, suggesting that perhaps a better investment in social safety or a better use of the resources available is advisable. This is the case, for instance, for Malta or Lithuania. Other countries among those that spent less on public order and safety reported strong citizen perceptions of effectiveness, safety and trust, but their outputs are not always as satisfactory. Luxembourg, for instance, despite employing more police officers and judges than Denmark, Norway or Finland, has much lower conviction–prosecution ratios. Finally, most of the countries that spent more on public order and safety – such as Bulgaria, Hungary, Croatia, Greece, Romania and Slovakia – have reported low levels of perceived effectiveness, safety or trust, which might indicate poor management and employment of the resources invested.

CONCLUSION

Social safety is the existence of the necessary societal conditions for citizens to live their lives and enjoy their rights free from any harm caused or threatened by other individuals or groups. The purpose of this chapter was to evaluate the performance of public services in the area of social safety in 35 countries: the 27 EU Member States plus the United Kingdom (UK), Norway, Iceland, Switzerland, Australia, New Zealand, Canada and the United States of America (US).

After a comprehensive overview of the most current developments and challenges in crime and the main strategies in crime prevention and criminal justice, we have analysed numerous sets of secondary quantitative data from multiple sources and concerning various indicators related to social safety. These include public expenditure and staffing in public order and safety, arrest, prosecution and conviction rates, prison population, crime rates, effectiveness of law enforcement, quality of government and the rule of law, perceptions of safety and trust in law enforcement and legal institutions. Any assessment and comparison between different countries based on such datasets must be conducted with extreme caution. However, the data analysis suggests some interesting general findings which, if further tested and explored by future research, could lead to more detailed analyses and policy recommendations.

A selected number of countries reported consistently high scores across various surveys concerning perceptions of effectiveness of government, legal institutions, and regulation and law enforcement, as well as perceptions of safety at national, city and neighbourhood levels, and trust and confidence in law enforcement and legal institutions. These countries include Norway, Denmark, Finland and Sweden. The perceptions recorded in these surveys are confirmed by the high prosecution and conviction rates and ratios reported by the same countries (despite inevitable local variations and differences). Some of these countries also have some very high crime rates. However, the high prosecution and conviction rates combined with citizens' trust and perceptions of effectiveness suggest that high crime rates in these countries might depend on the effectiveness of law enforcement agencies in detecting, recording and prosecuting crime. Such rates might also depend on different legal definitions of the relevant offences as well as on a higher willingness of citizens to report such offences, which in turn might depend on different cultural sensibilities and on the effectiveness of reporting systems. The same countries are also among those that reported the lowest expenditure in public order and safety, and relatively low numbers of judges and police personnel. Compared with the outcomes we have just mentioned, this finding suggests high cost-effectiveness.

A final finding cuts across all the states examined here and concerns the incompleteness of data, which emerged on several occasions throughout the paper. Missing data for certain countries and certain years for indicators and different methods of collections are, to an extent, expected – although states should keep working on increasingly effective and standardised systems of collection. What is increasingly less justifiable is the lack of data on some of the most challenging and harmful contemporary developments in crime – including cybercrime, such as online child pornography or e-fraud, and economic crime. The literature examined in the first part of this chapter and the available data suggest that these crimes are increasing, posing a major threat to social safety. Moreover, research suggests that they will keep growing and evolving in the future. It is therefore urgent that states start focusing on such forms of crime first and foremost by collecting sufficient data and secondly, by conducting rigorous research on them with a view to adopting effective policy and regulatory interventions to prevent and respond to them.

REFERENCES

Aas, K. F. (2013). ***Globalisation & crime*** (2nd ed.). Sage.

Aebi, M. F., Caneppele, S., Harrendorf, S., Hashimoto, Y. Z., Jehle, J-M., Khan, T. S., Kühn, O., Lewis, C., Molnar, L., Smit, P., & Þórisdóttiret, R. (2021). ***European sourcebook of crime and criminal justice statistics 2021*** (6th ed.). Université de Lausanne.

Aebi, M. F., Cocco, E., & Hashimoto, Y.Z. (2022). ***Probation and prisons in Europe, 2021: Key findings of the SPACE reports***. Strasbourg: Council of Europe. https://wp.unil.ch/space/space-ii/annual-reports/

Aebi, M. F., & Hashimoto, Y. Z. (2022). SPACE II – 2021 – ***Council of Europe annual penal statistics: Persons under the supervision of probation agencies***. Council of Europe. https://wp.unil.ch/space/space-ii/annual-reports/

Agnew, R. (2006). ***Pressured into crime: An overview of general strain theory***. Oxford University Press.

Agnew, R. (2010). A general strain theory of terrorism. ***Theoretical Criminology, 14***(2), 131-153.

Akers, R. L. (2009). ***Social learning and social structure: A general theory of crime and deviance***. Routledge.

Albrecht, H-J., & Kilchling, M. (2002). Crime risk assessment, legislation, and the prevention of serious crime: Comparative perspectives. ***European Journal of Crime Criminal Law & Criminal Justice, 10***(1), 23-38.

Andersen, S. H. (2021). Unemployment and crime: Experimental evidence of the causal effects of intensified ALMPs on crime rates among unemployed individuals. ***The British Journal of Criminology, 61***(5), 1316-1333.

Andresen, M. A. (2014). ***Environmental criminology: Evolution, theory, and practice***. Routledge.

Antonopoulos, G. A. (ed.). (2015). Special issue: Sports, corruption and organized crime. ***Trends in Organized Crime, 18***(3), 169-288.

Ashforth, B. E., & Anand, V. (2003). The normalization of corruption in organizations. ***Research in Organizational Behavior, 25***(1), 1-52.

Ayres, I., & Braithwaite, J. (1992). ***Responsive regulation: Transcending the deregulation debate***. Oxford University Press.

Bauman, Z. (1998). Globalization. The human consequences. Columbia University Press.

Bauman, Z. (2006). ***Liquid fear***. Polity.

Bauman, Z. (2007). ***Liquid times: Living in an age of uncertainty***. Polity.

Bauman, Z. (2012). ***Liquid modernity (Rev. ed.)***. Polity.

Benson M. L. (1985). Denying the guilty mind: Accounting for involvement in a white-collar crime. ***Criminology, 23***(4), 583-607.

Bingham, T. (2010). ***The rule of law***. Allen Lane.

Blythe, J. M., & Johnson, S. D. (2021). A systematic review of crime facilitated by consumer Internet of Things. ***Security Journal, 34***(5), 97-125.

Bowers, K. J., & Johnson, S. D (2004). The burglary as clue to the future. The beginnings of prospective hot-spotting. ***European Journal of Criminology, 1***(2), 237-255.

Bowers, K. J. & Johnson, S. (2016). Situational crime prevention. In: D. P. Farrington & D. Weisburd (Eds.), ***What works in crime prevention and rehabilitation: Lessons from systematic reviews (pp.)***. Springer.

Bowers, K. J., Johnson, S. D., & Pease, K. (2004). Predictive hot-spotting. The future of crime mapping? ***British Journal of Criminology, 44***(5), 641-658.

Braithwaite, J. (2002). ***Restorative justice and responsive regulation***. Oxford. University Press.

Brantingham, P. J., & Brantingham, P. L. (1981). ***Environmental criminology***. Sage.

Brants, C., & Ringnalda, A. (2011). ***Issues of convergence: Inquisitorial prosecution in England and Wales?*** Wolf Legal Publishers.

Burgess, R. L., & Akers, R. L. (1966). A differential association-reinforcement theory of criminal behavior. ***Social Problems, 14***(2), 128-147.

Caldwell, M., Andrews, J. T. A., Tanay, T., & Griffin, L. D. (2020). AI-enabled future crime. ***Crime Science, 9***(1), 1-13.

Chakraborti, N., & Garland, J. (2012). Reconceptualizing hate crime victimization through the lens of vulnerability and "difference". ***Theoretical Criminology, 16***(4), 499-514.

Charron, N., Lapuente, V., & Annoni, P. (2019). Measuring quality of government in EU regions across space and time. ***Papers in Regional Science, 98***(5), 1925-1953.

Chicago Police Department (2022). ***What is CAPS?*** https://home.chicagopolice.org/community-policing-group/how-caps-works/what-is-caps/

Chiu, C., Gries, P., Torelli, C.J., & Cheng, S. Y. Y. (2011). Toward a social psychology of globalization. ***Journal of Social Issues, 67***(4), 663-676.

Clarke, R.V. (2017). Situational crime prevention. In: R. Wortley & M. Townsley (Eds.), ***Environmental criminology and crime analysis*** (2nd ed.) (pp. 361-368). Routledge.

Clarke, R. V., & Bowers, K. (2017). Seven misconceptions of situational crime prevention. In: N. Tilley & A. Sidebottom (Eds.), ***Handbook of crime prevention and community safety*** (2nd ed.) (pp. 109-142). Routledge.

Cohen, L. E., & Felson, F. (1979). Social change and crime rate trends: A routine activity approach. ***American Sociological Review, 44***, 588-608.

Coleman, J. W. (1987). Toward an integrated theory of white-collar crime. ***American Journal of Sociology, 93***(2), 406-439.

Coleman, J. W. (1992). Crime and money motivation and opportunity in a monetarized economy. ***The American Behavioral Scientist, 35***(6), 827-836.

Cornish, D., & Clarke, R. V. (eds.). (1986). ***The reasoning criminal***. Springer-Verlag.

Council of Europe (2010). ***Recommendation CM/Rec (2010)1 of the Committee of Ministers to Member States on the Council of Europe Probation Rules***. https://search.coe.int/cm/Pages/result_details.aspx?ObjectID=09000016805cfbc7

Council of Europe (2017). ***Recommendation of the Committee of Ministers to Member States on the European Rules on community sanctions and measures***. https://search.coe.int/cm/Pages/result_details.aspx?ObjectID=0900001680700a5a

Cressey, D. R. (1953). ***Other people's money***. Wadsworth.

Cullen, F. (1994). Social support as an organizing concept for criminology: Presidential address to the Academy of Criminal Justice Sciences. ***Justice Quarterly, 11*** (4), 527-559.

Dahlberg, S., Sundström, A., Holmberg, S., Rothstein, B., Alvarado Pachon, N., & Dalli, M. C. (2022). ***The quality of government basic dataset, version January 22***. University of Gothenburg: The Quality of Government Institute. https://www.gu.se/en/quality-government doi:10.18157/qogbasjan22

Davies, T., & Johnson, S. D. (2015). Examining the relationship between road structure and burglary risk via quantitative network analysis. ***Journal of Quantitative Criminology, 31*** (3), 481-507.

Dawes Centre for Future Crime. (2021). ***Reducing the unanticipated crime harms of Covid-19 policies***. https://www.ucl.ac.uk/future-crime/publications/2021/may/reducing-unanticipated-crime-harms-covid-19-policies

Dawes Centre for Future Crime. (2022). ***Scoping study of the future crime challenges of the metaverse***. https://www.ucl.ac.uk/future-crime/publications/2022/aug/scoping-study-future-crime-challenges-metaverse

Durkheim, É. (1897). Suicide. ***A study in sociology***. 2002 reprint. (J. A. Spaulding & G. A. Simpson, Trans.) Routledge.

Dworkin, R. (1985). ***A matter of principle***. Oxford University Press.

European Commission for the Efficiency of Justice (CEPEJ) (2022). ***CEPEJ indicators on efficiency***. https://public.tableau.com/app/profile/cepej/viz/EfficiencyEN/Efficiency

European Social Survey (ESS). (2021). ***ESS Codebook, ESS9-2018***. Ed. 3.1. Appendix A7. https://www.europeansocialsurvey.org/docs/round9/survey/ESS9_appendix_a7_e03_1.pdf

European Social Survey (ESS). (2022). ***Data Portal. ESS9-2018***. https://ess-search.nsd.no/en/study/bdc7c350-1029-4cb3-9d5e-53f668b8fa74

European Social Survey European Research Infrastructure (ESS ERIC). (2021). ESS9 - integrated file, edition 3.1 [Data set). Sikt - Norwegian Agency for Shared Services in Education and Research. https://doi.org/10.21338/ESS9E03_1

European Values Study (EVS). (2022). ***European Values Study 2017: Integrated Dataset (EVS2017)***. Cologne: GESIS Data Archive. ZA7500 Data file Version 5.0.0, doi:10.4232/1.13897

European Union (EU). (2022). ***Eurobarometer. Public Opinion in the European Union***. https://europa.eu/eurobarometer/screen/home

Eurostat. (2022a). ***General government expenditure by function (COFOG)***. https://ec.europa.eu/eurostat/databrowser/view/gov_10a_exp/default/table?lang=en

Eurostat. (2022b). ***Government expenditure on public order and safety***. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Government_expenditure_on_public_order_and_safety#Expenditure_on_.27public_order_and_safety.27

Eurostat. (2022c). ***Glossary: Classification of the functions of government (COFOG)***. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Classification_of_the_functions_of_government_(COFOG)

Eurostat. (2022d). ***Prison statistics***. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Prison_statistics

Eurostat. (2022e) ***Early leavers from education and training***. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Early_leavers_from_education_and_training

Eurostat. (2022f). ***Survey on quality of life in cities***. https://ec.europa.eu/eurostat/web/cities/perception-surveys

Farrington, D. (1996). The explanation and prevention of youthful offending. In: J. D. Hawkins (Ed.), ***Delinquency and crime: Current theories*** (pp. 68-148). Cambridge University Press.

Farrington, D. (2007). Childhood risk factors and risk-focused prevention. In: M. Maguire, R. Morgan & R. Reiner, R. (Eds.), ***The Oxford handbook of criminology*** (4th ed.) (pp. 602-640). Oxford University Press.

Federal Trade Commission (FTC). (2022). ***New data shows FTC received 2.8 million fraud reports from consumers in 2021***. https://www.ftc.gov/news-events/news/press-releases/2022/02/new-data-shows-ftc-received-28-million-fraud-reports-consumers-2021-0

Forrest, S., Myhill, A., & Tilley, N. (2005) Practical lessons for involving the community in crime and disorder problem-solving. ***Home Office Development and Practice Report 43***. UK Home Office.

Fouladvand, S. (2019). Corruption and human trafficking: A holistic approach. In: L. Pasculli & N. Ryder (Eds.). ***Corruption in the global era: Causes, sources and forms of manifestation*** (pp. 289-305). Routledge.

Fowles, J. (Ed.). (1978). ***The handbook of futures research***. Greenwood Press.

Garland, D. (1996). The limits of the sovereign state: Strategies of crime control in contemporary society. ***The British Journal of Criminology***, 36(4), 445-471.

Garland, D. (1997). "Governmentality" and the problem of crime: Foucault, criminology, sociology. ***Theoretical Criminology, 1***(2), 173-214.

Garland, D. (2001). ***The culture of control: Crime and social order in contemporary society***. University of Chicago Press.

Giddens, A. (1990). ***The consequences of modernity***. Polity Press.

Giavazzi, F. & Barbieri, G. (2014). ***Corruzione a Norma di Legge. La Lobby delle Grandi Opere che Affonda l'Italia***. Milano: Rizzoli.

Gill, P. (2002). Policing and regulation: What is the difference? ***Social & Legal Studies, 11***(4), 523-546.

Global Witness. (2017). ***Under-mined. How corruption, mismanagement and political influence is undermining investment in Uganda's mining sector and threatening people and environment.*** https://www.globalwitness.org/en/campaigns/oil-gas-and-mining/uganda-undermined/

Goldstraw-White, J. (2012). ***White collar crime accounts of offending***. Palgrave Macmillan.

Gordon, T. J. (1992). The methods of futures research. ***The Annals of the American Academy of Political and Social Science, 552***(1), 25-25.

Government Office for Science. (2017). ***The futures toolkit. Tools for futures thinking and foresight across UK Government***. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/674209/futures-toolkit-edition-1.pdf

Government Offices of Sweden. (2022). ***Facts about migration, integration and crime in Sweden***. https://www.government.se/articles/2017/02/facts-about-migration-and-crime-in-sweden/

Green, D. P., Strolovitch, D. Z., & Wong, J. (1998). Defended neighborhoods, integration, and racially motivated crime. ***American Journal of Sociology, 104***(2), 372-403.

Guerette, R. T. (2009). The pull, push and expansion of situational crime prevention evaluation: An appraisal of thirty-seven years of research. ***Crime Prevention Studies, 24***, 29-58.

Haerpfer, C., Inglehart, R., Moreno, A., Welzel, C., Kizilova, K., Diez-Medrano J., Lagos, M., Norris, P., Ponarin, E., & Puranen, B. (Eds.). (2022). ***World values survey: Round seven - country-pooled datafile version 4.0***. JD Systems Institute & WVSA Secretariat. doi:10.14281/18241.18

Hinduja, S. (2008). Deindividuation and Internet software piracy. ***CyberPsychology & Behaviour, 11***(4), 391-398.

Holt, T. J. (2010). Examining the role of technology in the formation of deviant subcultures. ***Social Science Computer Review, 28***(4), 466-481.

Holt, T. J., & Kilger, M. (2012). Examining willingness to attack critical infrastructure online and offline. ***Crime & Delinquency, 58***(5), 798-822.

Homel, R. & Thomsen, L. (2017). Developmental crime prevention. In: N. Tilley & A. Sidebottom (Eds.), ***Handbook of crime prevention and community safety*** (2nd ed.), (pp. 57-86). Routledge.

Jewkes, Y. & Sharp, K. (2003). Crime, deviance and the disembodied self: Transcending the dangers of corporeality. In: Y. Jewkes (Ed.), ***Dot.Cons: Crime, deviance and identity on the internet*** (pp. 1-14). Willan.

Johnson, S. D. & Bowers, K. J. (2010). Permeability and burglary risk: Are cul-de-sacs safer? ***Journal of Quantitative Criminology, 26***(1), 89-111.

Johnson S. D., Bowers K. J., & Guerette, R. (2012). Crime displacement and diffusion of benefits: A review of situational crime prevention measures. In: B. C. Welsh & D. P. Farrington (Eds.), ***The Oxford handbook of crime prevention*** (pp. 337-353). Oxford University Press.

Johnson S. D., Ekblom, P., Laycock, G., Frith, M. J., Sombatruang, N., & Rosas Valdez, E. (2018). Future crime. In: S. Wortley, A. Sidebottom, N. Tilley & G. Laycock (Eds.), ***The Routledge handbook of crime science*** (pp. 428-446). Routledge.

Karppi, T. (2018). "The computer said so": On the ethics, effectiveness, and cultural techniques of predictive policing. ***Social media + society, 4***(2). doi:10.1177/2056305118768296

Kaufmann, D. & Kraay, A. (2022). ***World governance indicators***. https://info.worldbank.org/governance/wgi/

King, C., & Lord, N. (2018). ***Negotiated justice and corporate crime. The legitimacy of civil recovery orders and deferred prosecution agreements***. Springer.

Kirmayer, L.J., Raikhel, E., & Rahimi, S. (2013). Cultures of the Internet: Identity, community and mental health. ***Transcultural Psychiatry, 50***(2), 165-191.

Kotchegura, A. (2018). Preventing corruption risk in legislation: Evidence from Russia, Moldova, and Kazakhstan. ***International Journal of Public Administration, 41***(5-6), 377-387.

Larsson, S., Svensson, M., & de Kaminski, M. (2012). Online piracy, anonymity and social change: Innovation through deviance. ***Convergence: The International Journal of Research into New Media Technologies, 19***(1), 95-114.

Laycock, G. & Tilley, N. (1995). Policing and Neighbourhood Watch. ***Crime Prevention and Detection Series Paper 60***. UK Home Office.

Levi, M. (2008). Policing fraud and organised crime. In: T. Newburn (Ed.), ***Handbook of Policing*** (2nd ed.). Willan.

Levi, M. (2010). Policing financial crimes. In: H. N. Pontell & G. L. Geis (Eds.), ***International handbook of white-collar and corporate crime*** (pp. 588-606). Springer.

Lord, N., & Levi, M. (2015). Determining the adequate enforcement of white-collar and corporate crimes in Europe. In: J. van Erp, W. Huisman, G. Vande Walle, & J. Beckers, J. (Eds.), ***The Routledge handbook of white-collar and corporate crime in Europe*** (pp. 39-56). Routledge.

Lyons, C. J. (2007). Community (dis)organization and racially motivated crime. ***American Journal of Sociology, 113***(3), 815-863.

Machin, S., Marie, O., & Vujić, S. (2011). The crime reducing effect of education. ***Economic Journal, 121***(552), 463-484.

Matza, D. (1964). ***Delinquency and drift.*** John Wiley.

Mazar, N., Amir, O., & Ariely, D. (2008). The dishonesty of honest people: A theory of self-concept maintenance. ***Journal of Marketing Research, 45***(6), 633-644.

McBarnet, D. (1991). Whiter than white collar crime: Tax, fraud insurance and the management of stigma. ***The British Journal of Sociology, 42***(3), 323-344.

Merton, R. K. (1938). Social structure and anomie. ***American Sociological Review, 3***(5), 672-682.

Merton, R. K. (1968). ***Social theory and social structure***. The Free Press.

Messner, S. F. & Rosenfeld, R. (1997). Markets, morality, and an institutional-anomie theory of crime. In: N. Passas & R. Agnew (Eds.), ***The future of anomie theory*** (pp.). Northeastern University Press.

Messner, S. F. & Rosenfeld, R. (2013). ***Crime and the American Dream*** (5th ed.). Wadsworth.

Mills, C.E., Freilich, J.D., & Chermak, S. M. (2017). Extreme hatred: Revisiting the hate crime and terrorism relationship to determine whether they are "close cousins" or "distant relatives". ***Crime & Delinquency, 63***(10), 1191-1223.

Mistry, D. (2006). ***A process evaluation of a pilot community engagement project***. Unpublished report to the UK Home Office.

Mistry, D. (2007). Community engagement: Practical lessons from a pilot project. ***Development and Practice Report 48***. UK Home Office.

Morgan, R., & Clarke, R. V. (2006). Legislation and unintended consequences for crime. ***European Journal on Criminal Policy and Research, 12***(3-4), 189-211.

Nelken, D. (2010). ***Comparative criminal justice: Making sense of difference***. Sage.

Nelken, D., & Hamilton, C. (2022). ***Research handbook of comparative criminal justice***. Edward Elgar.

Neufeld, D. J. (2010). Understanding cybercrime. In: R. H. Sprague Jnr, (Ed.), ***Proceedings of the 43rd Hawaii International Conference on System Sciences***, 2010, January 5-8, Hawaii. Washington: IEEE.

Olaniyan, K. (2014). ***Corruption and human rights law in Africa***. Hart.

Osborne, D., & Gaebler, T. (1993). ***Reinventing government***. Penguin.

OECD. (2022a). OECD.Stat. ***Government at a glance***. https://stats.oecd.org/Index.aspx?DataSetCode=GOV

OECD. (2022b). ***Government expenditure by function (COFOG)***. https://stats.oecd.org/Index.aspx?DataSetCode=SNA_TABLE11

OECD. (2022b). ***Income inequality.*** https://data.oecd.org/inequality/income-inequality.htm

OECD. (2022c). ***Unemployment rate***. https://data.oecd.org/unemp/unemployment-rate.htm

Pasculli, L. (2012). ***Le misure di prevenzione del terrorismo e dei traffici criminosi internazionali***. Padova University Press.

Pasculli, L. (2016). Harm, offence and offesa in the English and the Italian criminal law. For a constitutionalisation of a unitary principle of harm in the English legal system, also as criterion of judicial interpretation. ***Diritto Penale XXI Secolo, 2***, 302-349.

Pasculli, L. (2017). Corruptio legis: Law as a cause of systemic corruption: Comparative perspectives and remedies also for the post-Brexit commonwealth. In: ***Proceedings of the 6th Annual International Conference on Law, Regulations and Public Policy (LRPP 2017), 5-6 June 2017***, Singapore. GSTF.

Pasculli, L. (2020a). Coronavirus and fraud in the UK: From the responsibilisation of the civil society to the deresponsibilisation of the state. ***Coventry Law Journal, 25***(2): 3-23.

Pasculli, L. (2020b). The global causes of cybercrime and state responsibilities: Towards an integrated interdisciplinary theory. ***Journal of Ethics and Legal Technologies, 2***(1), 48-74.

Pasculli, L. (2021). The responsibilization paradox: The legal route from deresponsibilization to systemic corruption in the Australian financial sector. ***Policing, 15***(4), 2114-2132.

Pasculli, L., & Ryder, N. (2019). Corruption and globalisation: Towards an interdisciplinary scientific understanding of corruption as a global crime. In: L. Pasculli & N. Ryder (Eds.), ***Corruption in the global era: Causes, sources and forms of manifestation*** (pp. 3-23). Routledge.

Passas, N. (1990). Anomie and corporate deviance. ***Contemporary Crises, 14***(2): 157-178.

Passas, N. (2000). Global nomie, dysnomie, and economic crime: Hidden consequences of neoliberalism and globalization in Russia and around the world. ***Social Justice, 27***(2), 16-44.

Passas, N. (2005). Lawful but awful: "Legal corporate crimes". ***The Journal of Socio-Economics, 34***(6), 771-786.

Perry B. (2001). ***In the name of hate: Understanding hate crimes***. Routledge.

Perry, W. L., McInnis, B., Price, C.C., Smith, S.C., & Hollywood, J. S. (2013). ***Predictive policing. The role of crime forecasting in law enforcement operations***. Rand.

Pistor, K. (2019). ***The code of capital: How the law creates wealth and inequality***. Princeton University Press.

Prabowo, H. Y., Sriyana J., & Syamsudin, M. (2018). Forgetting corruption: Unlearning the knowledge of corruption in the Indonesian public sector. ***Journal of Financial Crime, 25***(1), 28-56.

Raz, J. (1979). The rule of law and its virtue. In: J. Raz (Ed.). ***The authority of law: Essays on law and morality*** (pp. 220-229). Oxford University Press.

Raz, J. (2019). The law's own virtue. ***Oxford Journal of Legal Studies, 39***(1), 1-15.

Rodriguez, M. (1993). ***Together we can***. Chicago Police Department.

Rosser, G., Davies, T., Bowers, K.J., Johnson, S.D., Cheng, T. (2016). Predictive crime mapping: Arbitrary grids or street networks? ***Journal of Quantitative Criminology, 33***(3), 569-594.

Ryder, N. (2014). ***The financial crisis and white collar crime: The perfect storm?*** Edward Elgar.

Ryder, N. (2018). "Too scared to prosecute and too scared to jail?" A critical and comparative analysis of enforcement of financial crime legislation against corporations in the US and the UK. ***The Journal of Criminal Law, 82***(3), 245-263.

Ryder, N. (2019). ***Terrorism financing and the fraud dossier***. Paper presented at the 8th Annual Wales Fraud Forum Conference, Cardiff, Wales, UK.

Savona, E. U. (Ed.). (2006). Double thematic issue 'Proofing EU Legislation against Crime.' ***European Journal on Criminal Policy and Research, 12***(3–4), 177-397.

Simmler, M., Plassard, I., Schär, N., & Schuster, M. (2017). Understanding pathways to crime: Can anomie theory explain higher crime rates among refugees? Current findings from a Swiss survey. ***European Journal on Criminal Policy and Research, 23***(4), 539-558.

Skogan, W. (2004). ***Community policing: Can it work?*** Thomson Wadsworth.

Skogan, W. (2006). ***Policing and community in Chicago***. Oxford University Press.

Skogan, W., & Hartnett, S. (1997). ***Community oolicing: Chicago style.*** Oxford University Press.

Skrede Gleditsch, K., Rivera, M., & Zárate-Tenorio, B. (2022). Can education reduce violent crime? Evidence from Mexico before and after the drug war onset. ***The Journal of Development Studies, 58***(2), 292-309.

Standaert, S. (2015). Divining the level of corruption: A Bayesian state-space approach. ***Journal of Comparative Economics, 43***(3), 782-803.

Steinmetz, K. F. (2015). Craft(y)ness. An ethnographic study of hacking. ***British Journal of Criminology, 55***(1), 125-145.

Steinmetz, K. F. (2016). ***Hacked: A radical approach to hacker culture and crime***. New York University Press.

Stiglitz, J. (2002). ***Globalization and its discontents***. Norton.

Stiglitz, J. (2012). ***The price of inequality***. Norton.

Sutherland, E. H., Cressey, D.R., & Luckenbill, D. F. (1992). ***Principles of criminology*** (11th ed.). General Hall.

Sykes, G. K., & Matza, D. (1957). Techniques of neutralization: A theory of delinquency. ***American Sociological Review, 22***(6), 664-670.

Tilley, N. (2012) ***Crime prevention***. Routledge.

Tillman, R. (2009). Making the rules and breaking the rules: The political origins of corporate corruption in the New Economy. ***Crime, Law and Social Change, 51***(1), 73-86.

Tillman, R., & Indergaard, M. (2005). Pump and dump: ***The rancid rules of the new economy***. Rutgers University Press.

Tillman, R., & Indergaard, M. (2007). Corporate corruption in the new economy. In: H. N. Pontell & G. L. Geis, (Eds.), ***International handbook of white-collar and corporate crime*** (pp. 474-489). Springer.

Townsend, M. (2016, March 31). From Brighton to the battlefield: How four young Britons were drawn to Jihad. ***The Guardian***. https://www.theguardian.com/uk-news/2016/mar/31/brighton-to-battlefield-how-four-young-britons-drawn-to-jihad-syria

Transparency International. (2021). ***Corruption perceptions index***. https://www.transparency.org/en/cpi/2021

Trozze, A., Kamps, J., Akartuna, E .A., Hetzel, F. J., Kleinberg, B., Davies, T. & Johnson, S. D. (2022). Cryptocurrencies and future financial crime. ***Crime Science, 11***(1), 1-35.

United Nations (UN). (2000). ***United Nations convention against transnational organized crime and the protocols thereto***. https://www.unodc.org/unodc/en/organized-crime/intro.html

United Nations (UN). (2003). ***United Nations convention against corruption***. https://www.unodc.org/unodc/en/corruption/uncac.html

UNODC. (2015). ***International classification of crime for statistical purposes***. https://www.unodc.org/documents/data-and-analysis/statistics/crime/ICCS/ICCS_English_2016_web.pdf

UNODC. (2022a). ***Data UNODC***. https://dataunodc.un.org/

UNODC. (2022b). ***Data UNODC – Metadata information: Prisons and prisoners.*** https://dataunodc.un.org/sites/dataunodc.un.org/files/metadata_prisons_and_prisoners.pdf

UNODC. (2022c). ***Data UNODC – Metadata information: Violent and sexual crime.*** https://dataunodc.un.org/sites/dataunodc.un.org/files/metadata_violent_and_sexual_crime.pdf

UNODC. (2022d). ***Data UNODC – Metadata information: Economic crime.*** https://dataunodc.un.org/sites/dataunodc.un.org/files/metadata_corruption_and_economic_crime.pdf

Vepřek, L. H., Sibert, L., Sehn, L., Köpp, L., & Friedrich, D. (2020). Beyond effectiveness: Legitimising predictive policing in Germany. ***Kriminologie – Das Online-Journal, 2***(3). https://doi.org/10.18716/ojs/krimoj/2020.3.3

Weaver, M. (2017, October 12). Sally Jones: UK punk singer who became leading Isis recruiter. ***The Guardian***. https://www.theguardian.com/world/2017/oct/12/sally-jones-the-uk-punk-singer-who-became-isiss-white-widow

Weisburd, D., & Britt, C. (2014). ***Statistics in criminal justice***. Springer.

Weisburd, D., Groff, E. R., & Yang, S-M. (2012). ***The criminology of place***. Oxford University Press.

Welsh, L., Skinns, L., & Sanders, A. (2021). ***Sanders & Young's criminal justice*** (5th ed.). Oxford University Press.

The World Bank. (2022). ***GovData360. Reliability of police services***. https://govdata360.worldbank.org/indicators/hadd24444

World Economic Forum. (2016). ***The global competitiveness report 2016–2017***. https://www.weforum.org/reports/the-global-competitiveness-report-2016-2017-1/

Wortley, R. (2017). Situational precipitators of crime. In: R. Wortley & M. Townsley (Eds.), ***Environmental criminology and crime analysis*** (2nd ed.). Routledge.

Zedner, L. (2009). ***Security***. Routledge.

5. EDUCATION

THE EFFICIENCY AND EFFECTIVENESS OF EDUCATION SYSTEMS – A COMPARATIVE ANALYSIS

Tommaso Agasisti Prof. Dr.[1], Marta Cannistrà[1], Dr. Giovanna D'Inverno[2,4], and Kristof De Witte Prof. Dr.[2,3]

[1] Politecnico di Milano, Italy
[2] KU Leuven, Belgium
[3] UNU-Merit, the Netherlands
[4] University of Pisa, Italy

5.1. INTRODUCTION

National authorities from all over the world are committed to ensuring inclusive and equitable quality education, to promote lifelong opportunities for all and to improve learning outcomes (UNESCO, 2016). Indeed, education is one of the key levers for countries' competitiveness and economic development (Hanushek & Woessman, 2011a; Stevens & Weale, 2004). Public investment in education can be conceived as an instrument that governments can activate for improving innovation, creativity, culture and well-being. More educated societies are not only more economically prosperous but are also more able to cope with the societal challenges of current times, as for example those listed in the United Nations Sustainable Development Goals (SDGs). The ambition of continuously building a better world for all – i.e. more sustainable, inclusive and rich with opportunities – goes hand in hand with the ability to develop modern, effective and efficient educational systems.

What does such an educational system look like? Although it is difficult to answer this question, especially because of the heterogenous preferences of decision makers and citizens, some general features of a desirable educational system are typically shared by politicians, scholars and analysts. These general features can be summarised as follows: (i) wide participation in all levels of education, from universal preschool settings to open and diversified tertiary education, (ii) equality of opportunities that should avoid students being excluded from educational experiences because of their social, economic and cultural status, and (iii) the ability to equip all students with the necessary competences, knowledge and skills to live a satisfying life under economic, social and cultural viewpoints.

The way to transform these objectives into specific characteristics of the educational systems is a matter of policy (and political) debate, though different countries and areas of the world have opted for certain approaches (for example, free education at all levels and no tracking of the students at any time). Others have adopted completely different ones (for example, restricted access to higher levels of education and a system funded by students and families' fees, plus subsidies for disadvantaged ones). The differences that characterise the educational systems are the result of profound and long political processes, and generally reflect wider visions of the welfare systems at play in specific areas of the world (see interesting discussions in Peter et al. (2010), West & Nikolai (2013), among others). Given the wide heterogeneity across countries – as well as within them – assessing the best setting for an educational system, by means of empirical analyses, is virtually impossible. Moreover, it can even be a misleading exercise if it does not consider the differences in preferences, traditions and cultures of the single countries.

At the same time, comparing quantitative data that describe different educational systems is not only legitimate, but even desirable. Data can provide a snapshot of characteristics of the educational systems, the number of resources they use and the results they generate. Knowing the numbers is a prerequisite for any potential choice that is in the hands of the decision makers. They must be aware of similarities and differences, quantify the key phenomena and then mix this information with political priorities and convictions, as well as with policy options and experiences. Several institutions serve the purpose of providing information about the educational systems on a regular basis. The most famous example is probably the annual publication by the Organisation for the Economic Cooperation and Development (OECD), 'Education at a Glance' – for the latest edition, see OECD (2021a). Nonetheless, the European Commission provides an annual statistical yearbook, the Education and Training Monitor, commenting on policy grounds – see the latest edition (EU Commission, 2021). In addition, the statistical agency of the Commission (Eurostat) includes the list of indicators about education in the standard, core set of variables publicly accessible. A number of other institutions (not all related to the governments) publish data and comment on them on a regular basis – see, for example, Eurydice, the European University Association, the International Association of Universities, the World Bank and the National Center for Education Statistics in the US. These repositories of data and analysis constitute some of the sources used in this chapter. This chapter, however, builds an analytical framework that allows the selection of indicators and variables coherent with an evaluative objective. Specifically, the indicators selected here can compare some key features of the educational systems that lead to an efficiency measurement to compare the human and financial resources invested (inputs) with their results (outcomes and outputs) – see the next section.

In addition to the focus on the efficiency dimension, this chapter illustrates a set of data that encompasses all the policy-related areas for evaluating an educational system: effectiveness, equity and users' satisfaction. Such an approach can be considered a specific contribution of this analysis to the work of policymakers, specifically the necessity to consider the performance of educational systems in a multidimensional perspective. In so doing, the key recommendation

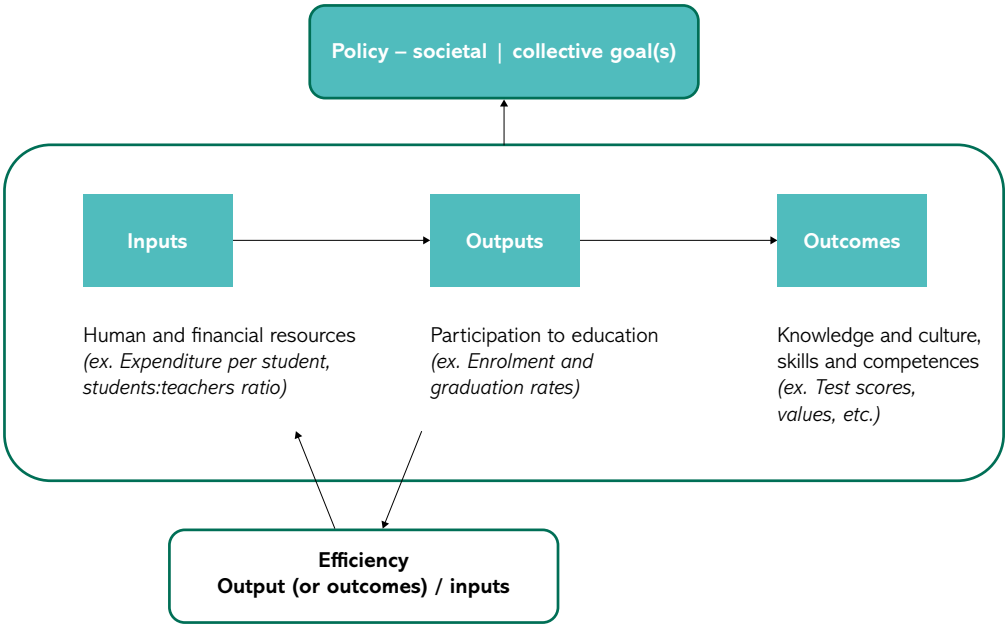
is to avoid an excessive attention to one single, narrow dimension and to evaluate the existence of trade-offs and complementarities of the various factors that contribute to the overall performance of the educational system.
As anticipated, the selection of indicators included in this chapter is the result of careful judgement based on various elements: theoretical relevance, the capacity of covering different areas of educational activities, relevance to policy-making (for example, the possibility to activate policy levers) and data availability. In such a perspective, the very selection of data presented here is a first by-product of the report, aiming to point the attention of policymakers and analysts to an intentional and reasoned set of information.

5.1.1. Reference framework

The framework used in this chapter resembles the assessment of the effectiveness of public policy interventions, with a specific attention to the education context. Broadly speaking, any public intervention is conceived to obtain a public goal, which is the objective of the policy. To obtain the goals, resources are invested: these constitute the inputs of the policy. These inputs can be measured through variables that reflect the human and financial resources employed in specific activities (processes), that can lead – if appropriately structured – to desired results. The results, in turn, can be conceptualised as outputs or outcomes; while the former measures the volume of activities generated by the policy, the latter indicates the medium to long-run effects of the policy or intervention. In this perspective, the outcomes might be generated because of the ability of educational systems to produce acceptable output levels, and to produce them efficiently. Adopting such a framework, efficiency can be preliminarily defined as the ability to maximise outputs (and outcomes), given the level of available inputs, or to minimise the inputs to reach the given outputs.

The framework should be customised with specific reference to the educational sector. The specific indicators and measures, this way, should regard education while maintaining its general view. Consequently, inputs can be defined as the human, structural and financial resources employed in education – such as teachers, academic staff, students' previous capabilities and their socio-economic background, expenditure per student and spaces devoted to instructional activities. Outputs can be measured by means of enrolment or graduation rates – in other words, with the most direct information about the volume of operations generated by the educational activities (similar measures can refer to number of courses, number of hours of teaching, number of degrees awarded, etc.). Lastly, outcomes are the long-term effects generated by the educational activities: the creation of new knowledge, both in its economically-related manner and in influencing values, and culture and attitudes of individuals. While the present descriptions are excessively schematic, it has the advantage of setting the scene in a direct and simplified way.
A schematic representation of the framework is proposed in Figure A.

Figure A: The conceptual framework for analysing inputs, outputs and outcomes



This chapter does not consider the relations between processes and activities, specifically. In other words, it does not explore the mechanisms through which the resources invested are transformed into results (outputs or outcomes). On the one hand, the chapter lists all the main relevant variables that measure inputs, outputs and outcomes. On the other hand, the indicators are then used to assess the efficiency of the educational system, considering the transformation process as a 'black box'. This approach does not neglect the importance of exploring such mechanisms (see, for example, the interesting analyses proposed by Hanushek and Woessmann (2011b) about the production of high scores in international, standardised tests), but the decision here is to focus on (i) comparing indicators and (ii) provide synthetic measures of educational systems' efficiency.

The fundamental idea of the chapter is to provide simple, intuitive and actionable information to decision makers, who then can decide if and how to intervene. A specific note is worth discussing here. The chapter is structured under the assumption that having information can help the policy discussion within countries, between different ideas and priorities. Data themselves cannot induce decisions, which are always the result of a discussion that considers policy objectives, analyses of the as-is situations, comparisons with different contexts, previous experiences and political orientations. In this vein, data are one of the ingredients for such a discussion. For example, by observing the differences in the expenditure per student, one government can undertake a reflection about investing more resources in the system each year. Or again, by being aware of differentials in the graduation rates, politicians can prioritise new policies for supporting at-risk students. Making data actionable requires that their reading must be simple, meaning that they can be easily readable and understandable by all the actors involved in the decisions. Analyses that are excessively complicated – in formal and methodological terms – make the responsibility of assuming decisions more difficult, and for this reason should be avoided or limited to specific cases. The analytical framework proposed here is intentionally essential, with the choice of (i) selecting widely used indicators and (ii) presenting direct descriptive statistics as a main instrument for comparing the characteristics of the educational systems.

5.1.2. The goal of the chapter

This chapter aims at giving an overview of inputs, outputs and outcome, and satisfaction together with an efficiency, effectiveness and a cost-effectiveness analysis. In detail, it pursues two main goals.

The first is to document the main characteristics of the educational systems in a selected group of countries, with an international (global) perspective. When possible, the analysis includes countries from Europe, Oceania, Asia and North America. Moreover, when available, data are reported in a time dynamic, with the intent to detect changes and evolutions of the key phenomena over time. The purpose of such selection is to compare the features and performance of educational systems across countries with a medium-high level of economic development, if possible, over time. This benchmarking exercise should inform the decision makers about similarities and differences that can be evaluated appropriately – and stimulate consequent decisions as outlined in the previous section. It should be noted, however, that despite identifying best practices, we cannot simply copy policy practices from one country to another. The focus in the present report is on a holistic assessment of countries, rather than on specific interventions (which would require policy evaluation techniques such as experimental and quasi-experimental designs).

The second objective is to propose a statistical analysis that assesses the efficiency of educational systems, defined as the ability to reach the obtained outputs with minimal costs. In times of tight public budgets, any resource invested counts for stimulating the economy in a positive way, or vice versa, and we can search for austerities in public budgets by learning from the best-performing countries. Efficiency of public expenditure is an imperative in the current context, and the efficiency of educational systems can be evaluated by comparing how the financial and human resources invested in the field pay back in terms of results such as academic achievement and educational diffusion. (An example of this kind of analysis is in Agasisti et al. (2019) – see also the literature review there). The efficiency perspective goes well beyond the pure comparison of raw indicators, as it explicitly includes a theoretical assumption about the positive relationship between investments in the field and specific results generated in it.

5.1.3. The structure of the chapter

To pursue the goals, this chapter is divided into two sections: the first describes the main components of the educational systems, according to the analytical framework discussed above: inputs, outcomes and outputs; the second constructs composite indicators to analyse how these dimensions interact with each other, through an efficiency analysis.

Throughout the first section, the selected list of indicators (see next section) is presented and some comments are offered to interpret the data in a policy-related orientation. In the second section, the methodology used for the efficiency analysis is presented, along with the description of the data used for the empirical analysis, and the results are then illustrated and presented.

The first part refers to the following list of countries, when data are available: European countries *(Estonia, Poland, Slovenia, Czech Republic, Latvia, Slovakia, Lithuania, Hungary, Croatia, Bulgaria, Romania, Denmark, Finland, Sweden, Norway, Portugal, Italy, Spain, Malta, Greece, Cyprus, the Netherlands, Belgium, the United Kingdom, Germany, Ireland, Austria, Switzerland, France and Luxembourg)*, North American countries *(Canada and United States of America)*, Oceania *(New Zealand and Australia)*, Asia *(The Republic of Korea and Japan)*.

5.1.4. The choice of indicators

In this section, the criteria for including the indicators into the empirical analysis are reported and discussed (see Table A).

Table A: List of indicators adopted in the analysis

Level	Description	Source	Years available	values
Inputs	Government expenditure on primary education as % of GDP (%)	Eurostat	From 2000 to 2017	percentage
	Government expenditure on secondary education as % of GDP (%)	Eurostat	From 2000 to 2017	
	Government expenditure on tertiary education as % of GDP (%)	Eurostat	From 2000 to 2017	
	Annual expenditure per student in primary education (ISCED 1)	Eurostat	From 2012 to 2019	Purchasing power standard (PPS)
	Annual expenditure per student in lower secondary education (ISCED 2)	Eurostat	From 2012 to 2019	
	Annual expenditure per student in upper secondary non-tertiary education (ISCED 3-4)	Eurostat	From 2012 to 2019	
	Annual expenditure per student in tertiary education (ISCED 5-8)	Eurostat	From 2012 to 2019	
	Distribution of funding sources on primary education (ISCED 1)	Eurostat	2019	Million Purchasing power standard (PPS)
	Distribution of funding sources on lower secondary education (ISCED 2)	Eurostat	2019	
	Distribution of funding sources on upper secondary education and non-tertiary education (ISCED 3 and 4)	Eurostat	2019	
	Distribution of funding sources on tertiary education (ISCED 5-8)	Eurostat	2019	
Outputs	Enrolment rate for 15-19 year-old	OECD	From 2005 to 2020	percentage
	Upper secondary graduation rate from 2017 to 2019	OECD	From 2017 to 2019	
	Entry rate in tertiary type A education	OECD	From 2010 to 2020	
	Tertiary graduation rate (type A)	OECD	From 2010 to 2020	
	Age range at which at least 90% of the population of school age are enrolled	OECD	2020	Age range
Outcomes	Mean PISA test score in mathematics, reading or science	OECD (PISA)	2009; 2012; 2015; 2018	mean =500, std. dev=100
	Mean ICCS civic knowledge test score	IEA (ICCS)	2009; 2016	
	Mean ICCS scores for attitudes towards equal gender rights	IEA (ICCS)	2009; 2016	mean =10, std.dev=2
	Mean ICCS scores for attitudes towards equal rights for ethnic groups	IEA (ICCS)	2009; 2016	
	Percentage of students supporting democratic values	IEA (ICCS)	2009; 2016	percentage
	Percentage of 25-34 year-old that has obtained basic qualification (at least ISCED 4)	OECD	From 2007 to 2020	
	Percentage of 25-34 year-old that has attained tertiary qualification (ISCED 5-8)	OECD	From 2007 to 2020	
	Percentage of 25-64 year-old with primary education (ISCED 0-2)	OECD	From 2012 to 2021	
	Percentage of 25-64 year-old with secondary education (ISCED 3-4)	OECD	From 2012 to 2021	
	Percentage of 25-64 year-old with tertiary education (ISCED 5-8)	OECD	From 2012 to 2021	
Trust	Perceived quality of education system	European Quality of Life Survey	2011; 2016	from 1 (very low) to 10 (very high)

The inputs of the educational systems are considered by measuring three indicators of expenditure on education. *The total expenditure on education (as % GDP)* is a measure of quantity of available resources, although dependent upon the absolute value of the GDP (for the same % GDP, richer countries are investing more resources than poorer). It is also a measure of policy priority – the higher the proportion of GDP invested in education, the higher is the consideration of this policy domain by governments. The data is presented separately by level (pre-primary and primary, secondary and tertiary education), from 2016 to 2020. It should be noted that this period is still in the aftermath of the 2008 financial crisis. As shown by the OECD, compared to 2007 public investment per capita in 2013 had fallen in 17 out of 33 OECD countries (OECD, 2015). The *annual expenditure by student in purchasing power standard*, separated by educational level, is a measure of the intensity of spending in the sector.
The information is expressed on a student basis to consider the differences in the size of the country. In addition to the data reported in its absolute 2019 values, the chapter also reports the percentage change (increase or decrease) in the period between 2012 and 2018. In this sense, the indicator indicates the policy attention devoted by politicians to the educational sector (investments or divestments, with the related intensity). Lastly, the *distribution of funding sources (as a total of expenditure in education)* indicates whether the available resources come from the investments by the government and other public sources or by private agents (families and students, foundations, companies, etc.). This indicator measures the importance of the private sector in supporting the educational system.

The chapter includes four indicators for the outputs, related to the enrolment and graduation rates in the educational systems. The *enrolment rate among 15–19-year-old students* indicates the proportion of students in this age cohort that are enrolled into a (typically secondary) educational programme. This variable measures the degree of participation of young students in secondary education, as a volume of formal education 'produced' in the system. In addition to the absolute value in the last year, the trend between 2010 and 2020 is illustrated. The *upper secondary education graduation rate* represents the estimated percentage of people who will graduate from secondary education over their lifetime. This indicator reflects the effectiveness of the secondary education cycle – in other words, its ability to provide students with a secondary education degree. The other two indicators are the *entry rates* and the *graduation rates in type A tertiary education* (that is, university-level education). Both measure the percentage of the population enrolled or graduated from tertiary education up to a certain age – 25 years old for entry and 30 years old for graduation. These two variables indicate both the accessibility of the tertiary educational system (entry rate) and its ability to produce a high number of students to complete the formative cycle (graduation rate). The difference between entry and graduation rates is an indirect, raw measure of the effectiveness of the tertiary education cycle.

Lastly, the outcomes of educational systems are measured with several indicators. First, the *average scores in OECD's PISA (Programme for International Student Assessment) tests in reading, mathematics and science* represent a measure of the 15-year-old students' knowledge in three important domains for social and economic life. The measures are reported for the last four available waves, i.e. 2009, 2012, 2015 and 2018.
Second, there is a set of indicators measuring the attitudes and values of students in various non-cognitive domains: *(i) test scores in civic knowledge, (ii) test scores in attitudes towards equal gender rights, (iii) test scores in attitudes towards equal rights for ethnic groups and (iv) percentage of students supporting democratic values.* These indicators are proxies for the ability of the educational systems to produce individuals with values, attitudes and lifestyles who are coherent with modern societies beyond the pure cognitive skills.
Third, there is an indicator measuring the *proportion of adult population (25–64 years old) who have attained an educational level* (i.e. obtained an educational degree) – separated by primary, secondary or tertiary education. This indicator measures whether an educational system can equip its adult population with a certain level of education.

5.2. GENERAL PERFORMANCE

In this section the indicators identified according to the criteria presented above – and described accordingly – are reported, commented on and discussed, with the purpose of outlining the main features of the selected educational systems.

5.2.1. Inputs

The discussion of the outcomes produced by the educational system needs to be preliminarily complemented with an analysis of how much countries invest and contribute to its effectiveness. For this aim, this paragraph describes the resources invested in the educational sectors.

Figures 1a, 1b and 1c compare the *government expenditure on education as a proportion of GDP* (by different levels) from 2016 to 2020. When considering primary and pre-primary education, on average countries invested around 1.5% of GDP, with some notable exceptions (Figure 1a). Sweden invested more than 3% of their GDP to primary and pre-primary education in all the years. On the other hand, Bulgaria, Lithuania and Romania are economies investing less on primary education (between 0.7% and 0.9% of GDP). As argued by Wolff and Roth (2018), it is the sum of declining investments at all government levels: 'Investment spending in education – mainly done by the state governments for universities, and local governments for schools – has been declining or, at best, stagnating for 20 years'. For all countries, on average, the investment in primary education is increasing over the years (from an average of 1.7% in 2016 to 1.9% in 2020), with many countries – especially from Northern Europe – investing much more in 2020 than in 2016. Moving the attention to government expenditure on secondary education (see Figure 1b), the average percentage of GDP invested is around 1.7%. On average, countries with the highest rate of GDP devolved to secondary education in the later years are Belgium (2.44%), Finland (2.44%) and France (2.34%) – the same countries that invested more in 2020. The highest divestments are registered in Poland, Denmark and Hungary. Concerning investments in tertiary education (see Figure 1c), countries invested 0.9% of GDP on average from 2016 to 2020. Finland, Denmark and the Netherlands are the countries with the highest proportion of GDP for tertiary education, at around 5%. This data states that northern regions' governments devote policy attention to investments in this sector. The lowest rates are observed in Italy, Ireland, Luxembourg and Spain.

Overall, the image emerging from this data is that the amount of resources overall employed for education at all levels seems quite stable, especially for tertiary education. This evidence must be read together with the constantly strong political debate about the importance of education which, however, seems not to influence decisions about allocation of funding (at least, on average). Also, it is interesting to note that secondary education level absorbs more resources than tertiary and primary education, despite the latter being often considered to be the one that builds the premises for high returns in the long run and is able to compensate better for differences in the socio-economic status of families. These considerations hold for the Netherlands, too, which shows a high rate of GDP devoted to secondary education (2.1% in 2020), against the resources allocated for tertiary education (1.3% in 2020).

Figure 1a: Government expenditure on primary education as percentage of GDP – from 2016 to 2020

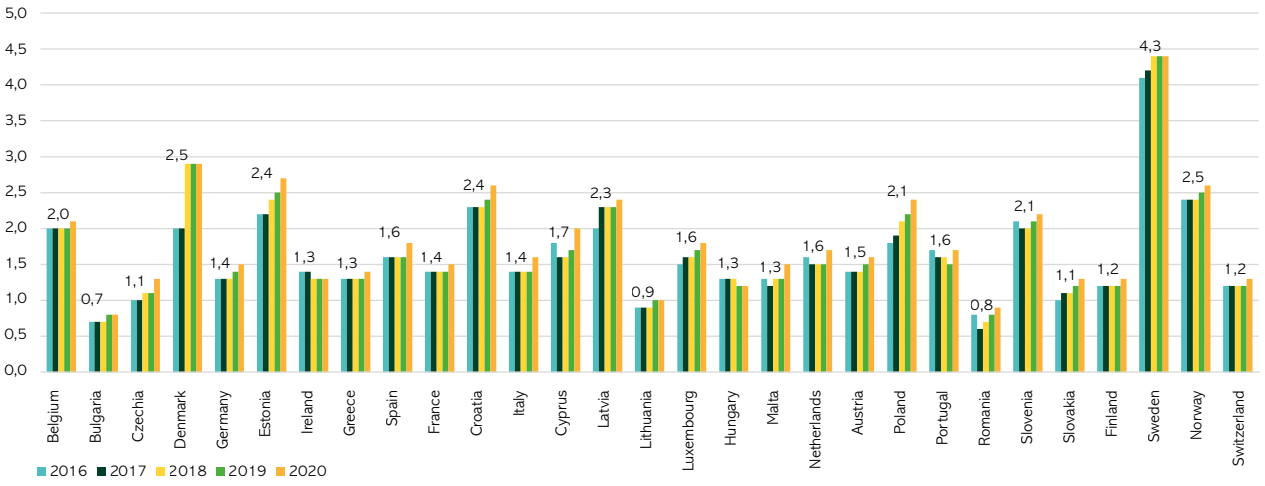


Figure 1b: Government expenditure on secondary education as percentage of GDP – from 2016 to 2020

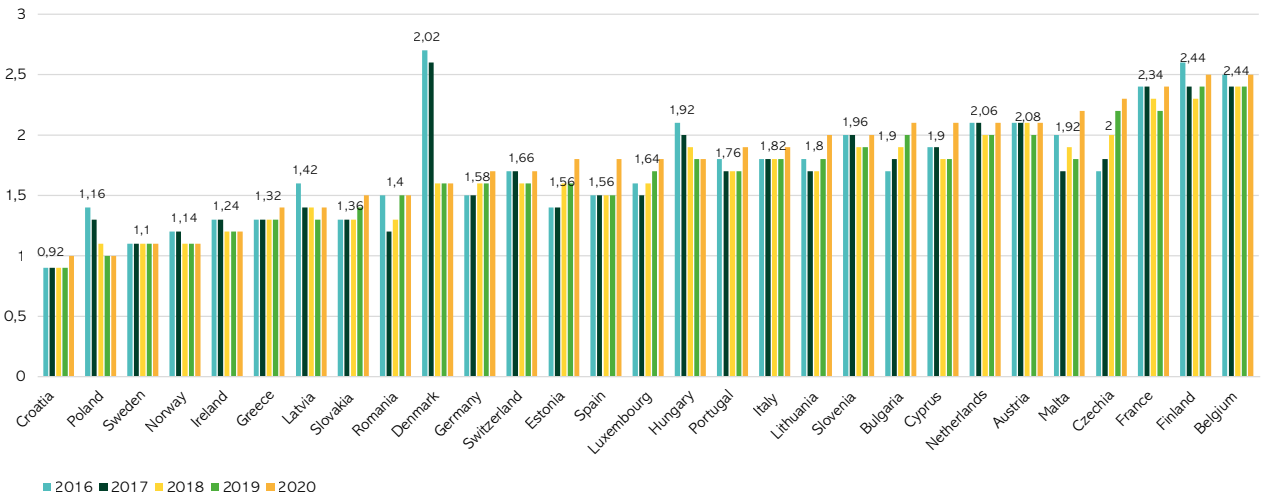
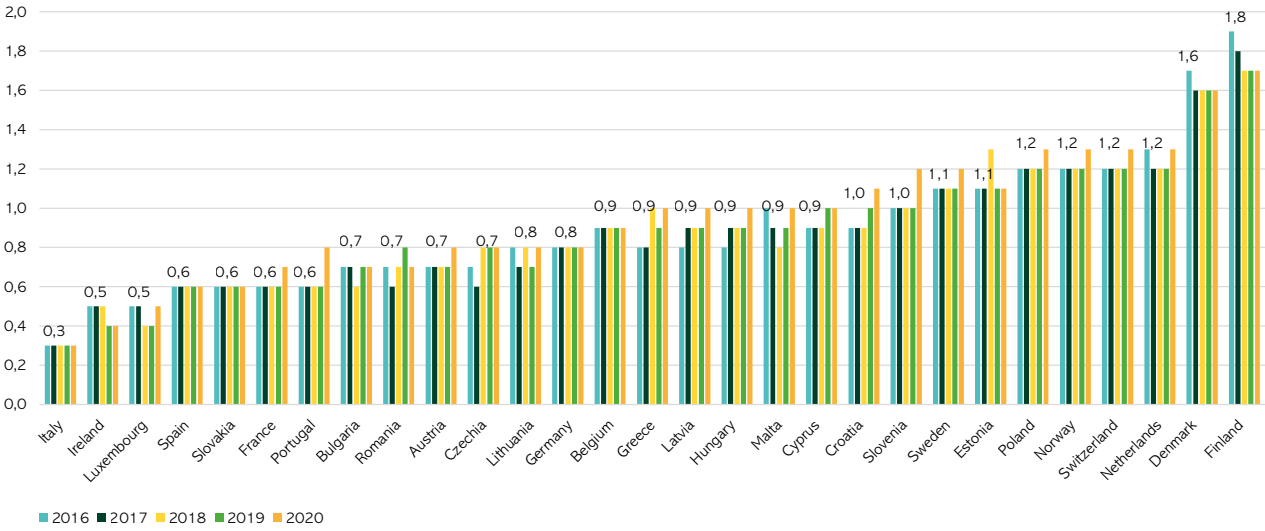


Figure 1c: Government expenditure on tertiary education as percentage of GDP – from 2016 to 2020



If the government expenditure as percentage of GDP represents the political attention to education, the *government expenditure on education per student* measures the intensity of funding relative to the size of the educational system. Tables 1a, 1b, 1c and 1d show this indicator by levels: primary, lower secondary, upper secondary, non-tertiary and tertiary.

Luxembourg, Switzerland and Norway are the countries with the highest annual government expenditure on primary education with an average of 13 806, 11 673 and 9923 PPS[1] respectively, while Hungary, Bulgaria and Romania are the lowest with 3696, 2985 and 1567 PPS, respectively. However, Hungary increased its investment per student by 51% from 2012 to 2019, suggesting a positive trend in this sense. Other important increases in annual expenditure per students in primary levels are observed in Malta and Estonia, with 53% and 41% respectively. The final consideration relates to the investment by years: on average investment increases, moving from 5756 to 6971 PPS. It is interesting to highlight here that this increase is probably due to the smaller number of students, given that the proportion of funding on GDP is quite stable over years (see above). Similar considerations can be made for annual expenditure per student in secondary education (Tables 1b and 1c). Again, it is interesting to observe that the highest increase in this indicator over the years is registered for those countries which, at the beginning of the period, invested less money in the field.

[1] The PPS is the purchasing power standard, an artificial currency unit standardised by country: with the same amount, it is possible to buy the same amount of goods in all the listed countries.

For lower secondary education Romania, Malta, Bulgaria and Lithuania register an average increase of 164%, 79%, 72% and 40%, respectively, while for upper secondary education Romania, Hungary, Malta and the Czech Republic increase the expenditure per student by 126%, 53%, 51% and 45% respectively from 2012 to 2019.[2] Government expenditure per student in tertiary education (Tables 1c) again show a particularly high value for Luxembourg, always at the top of these rankings, with an average investment of 34 128 PPS. It is followed by Switzerland, Sweden and Norway with 20 009 PPS, 20 563 PPS and 22 021 PPS, respectively. At the bottom of this ranking are Croatia with 4613 PPS per student, Bulgaria with 3102 PPS and Greece with 2099 PPS. A decrease in expenditure per tertiary education student over the last few years is registered for some countries: Cyprus, Finland, Norway, Greece, Ireland and Latvia experienced the most evident decreases (between −7% and −36%). It is interesting to note that the Netherlands increases the investment per student at every level, but some differences can be highlighted. Indeed, the increase in expenditure per student is 15.5%, 9.3%, 14.4% and 5.7% in primary, lower secondary, upper secondary and tertiary, respectively.

Table 1a: Annual expenditure per student in primary education from 2012 to 2018

Country	2012	2013	2014	2015	2016	2017	2018	2019	Mean by country	Increase percentage
Malta	4.143,9	4.448,6	4.564,7	4.709,2	4.802,2	4.916,4	5.583,7	6.349,3	4.939,8	53,2%
Hungary	3.270,9	3.956,0	2.736,8	3.698,7	3.725,4	3.532,4	3.717,7	4.937,3	3.696,9	50,9%
Estonia	4.432,8	5.227,3	4.270,3	4.389,2	4.561,3	4.965,4	5.501,6	6.253,4	4.950,2	41,1%
Romania	1.586,5	1.545,7	1.370,6	1.418,6	1.360,2	1.519,6	1.672,3	2.069,7	1.567,9	30,5%
Lithuania	3.671,8	3.751,1	3.836,6	4.040,6	4.298,0	4.281,4	4.322,7	4.751,6	4.119,2	29,4%
Greece	3.641,8	3.810,4	4.056,7	4.083,5	4.030,4	3.989,5	4.316,6	4.682,6	4.076,4	28,6%
Germany	5.700,0	5.832,9	6.149,1	6.311,9	6.369,4	6.490,9	6.807,2	7.211,3	6.359,1	26,5%
France	4.982,7	5.143,2	5.234,0	5.381,3	5.315,6	5.562,5	5.785,3	6.206,0	5.451,3	24,6%
Italy	5.622,3	5.706,8	5.674,2	6.050,0	5.595,9	6.108,8	6.155,1	6.810,4	5.965,4	21,1%
Poland	4.652,5	4.803,6	4.908,1	5.046,2	4.665,7	5.011,7	5.345,9	5.627,9	5.007,7	21,0%
Croatia					7.500,2	7.770,6	8.428,5	9.048,5	8.187,	20,6%
Austria	7.494,6	8.047,8	8.128,0	8.696,3	8.805,9	8.777,2	8.912,8	8.737,7	8.450,	16,6%
Sweden	7.945,1	7.939,1	7.984,6	8.244,5	8.248,3	8.707,0	8.914,2	9.181,1	8.395,5	15,6%
Finland	6.324,7	6.285,2	6.461,3	6.977,8	6.842,9	6.675,0	6.911,0	7.307,2	6.723,1	15,5%
Netherlands	6.073,8	6.344,6	6.152,8	6.366,9	6.228,4	6.432,0	6.791,9	7.013,2	6.425,5	15,5%
United Kingdom	6.635,4	6.844,9	7.526,2	8.100,6	7.303,0	7.255,0	7.248,8	7.525,6	7.304,9	13,4%
Spain	4.556,5	4.367,0	4.447,4	4.691,1	4.726,6	4.852,6	4.930,2	5.123,5	4.711,9	12,4%
Norway		9.830,8	9.698,7	9.777,2	9.180,2	9.683,6	10.645,7	10.649,4	9.923,7	8,3%
Cyprus	7.659,5	7.094,6	7.189,9	7.637,3	7.812,3	7.584,5	8.030,8	8.205,1	7.651,8	7,1%
Luxembourg	14.508,8	12.535,6	14.525,3	15.205,5	12.321,6	12.943,9	13.793,2	14.617,6	13.806,4	0,7%
Slovenia	6.525,5	6.232,2	6.215,0	5.845,1	5.697,6	5.740,6	6.122,1	6.269,2	6.080,9	-3,9%
Denmark	8.674,4	8.711,1	8.845,9		7.764,0	8.098,3	8.231,2	8.231,4	8.365,2	-5,1%
Ireland	6.551,2	5.961,2	5.775,6	5.558,2	5.418,3	5.659,4	5.842,2	5.976,0	5.842,8	-8,8%
Latvia	5.316,4	4.321,8	4.795,3	4.972,6	4.606,6	4.266,5	4.329,9	4.529,8	4.642,4	-14,8%
Switzerland	11.785,4	11.606,5			11.623,2	11.656,9	11.693,0		11.673,	-0,8%
Portugal	4.185,1	4.898,3	5.057,5	5.023,0	5.080,2	5.585,8	5.617,3		5.063,9	34,2%
Slovakia	3.721,1	4.106,5	4.240,1	4.836,1	4.678,9	4.555,7	4.696,9		4.405,	26,2%
Czechia	3.447,0	3.478,3	3.593,0	3.783,9	3.554,5	3.986,5	4.380,2		3.746,2	27,1%
Bulgaria	2.315,5	2.801,4	2.986,5	2.947,6	3.125,7	3.240,8	3.481,8		2.985,6	50,4%
Mean by year	5.756,49	5.915,45	5.793,49	5.915,11	6.042,84	6.201,74	6.489,99	6.971,45		21,1%

[2] The calculus for the percentage increase in this indicator considers data from 2019 and from 2012, but for countries missing information in these years the closest data is used (e.g. the most recent year in Table 1c for the Czech Republic data is for 2018, since 2019 is missing).

Table 1b: Annual expenditure per student in lower secondary education from 2012 to 2018

Country	2012	2013	2014	2015	2016	2017	2018	2019	Mean by country	Increase percentage
Romania	1.719,3	1.912,5	2.481,1	2.703,8	2.648,8	3.053,1	3.566,8	4.540,0	2.828,2	164,1%
Malta	5.028,2	5.670,0	5.413,0	6.732,4	8.676,4	8.442,0	9.556,2	10.157,0	7.459,4	79,1%
Bulgaria	2.626,1	3.059,4	3.350,1	3.450,8	3.609,6	3.989,6	4.519,2		3.515,	72,1%
Lithuania	3.367,8	3.449,3	3.687,3	3.776,4	3.985,1	4.046,9	4.330,5	4.719,0	3.920,3	40,1%
Czechia	5.666,9	5.706,4	5.957,0	6.302,3	5.978,2	6.739,7	7.478,6		6.261,3	32,0%
Hungary	3.332,6	2.886,5	2.831,6	3.411,9	4.004,0	3.421,0	3.587,6	4.309,2	3.473,1	29,3%
Estonia	5.127,9	5.148,6	4.551,9	4.762,8	4.848,6	5.121,5	5.722,2	6.529,4	5.226,6	27,3%
Germany	7.009,0	7.173,8	7.573,5	7.796,0	7.896,0	8.101,1	8.464,3	8.884,5	7.862,3	26,8%
Portugal	5.795,0	6.731,4	6.756,6	6.591,6	6.992,4	7.296,9	7.293,8		6.779,7	25,9%
Poland	4.598,9	4.834,3	4.888,7	4.888,6	4.908,4	4.734,2	5.235,2	5.620,6	4.963,6	22,2%
Finland	9.817,1	9.821,0	10.165,8	11.009,1	10.893,9	10.669,9	11.026,9	11.654,6	10.632,3	18,7%
Luxembourg	14.874,2	14.098,5	15.527,6	15.521,1	15.292,7	15.510,8	17.240,3	16.783,8	15.606,1	12,8%
Italy	6.406,4	6.150,4	6.254,9	6.711,8	6.276,6	6.752,9	6.913,5	7.177,7	6.580,5	12,0%
France	6.947,2	7.009,6	7.183,2	7.351,0	7.295,7	7.397,6	7.468,7	7.755,2	7.301,	11,6%
Slovenia	7.068,7	6.780,4	6.944,2	6.790,6	6.925,8	7.181,1	7.789,2	7.883,9	7.170,5	11,5%
Cyprus	8.861,3	8.518,0	8.693,7	9.200,1	9.476,2	9.433,5	9.534,1	9.850,6	9.195,9	11,2%
Netherlands	8.752,6	9.100,0	8.706,1	9.078,7	8.991,7	9.005,1	9.416,3	9.567,0	9.077,2	9,3%
United Kingdom	6.859,6	8.059,0	7.895,4	6.684,1	6.641,1	6.862,6	7.236,9	7.470,7	7.213,7	8,9%
Sweden	8.624,9	8.589,9	8.623,2	8.912,9	8.906,5	9.203,9	9.373,9	9.330,6	8.945,7	8,2%
Austria	10.473,2	10.933,8	11.007,3	11.534,0	11.657,8	11.521,8	11.273,1	11.262,2	11.207,9	7,5%
Belgium					9.525,5	9.915,6	10.018,7	10.189,0	9.912,2	7,0%
Slovakia		4.061,6	4.373,3	4.394,9	4.408,8	4.161,7	4.311,3		4.285,3	6,1%
Denmark	9.011,5	9.047,1	10.056,2		7.641,5	8.082,8	8.111,6	9.558,5	8.787,	6,1%
Norway		10.328,6	10.343,1	10.740,0	9.931,6	9.797,4	10.805,9	10.848,1	10.399,2	5,0%
Switzerland	13.834,5	14.343,1			14.626,6	14.369,5	14.426,2		14.320,	4,3%
Spain	6.330,7	5.565,6	5.643,5	5.949,4	5.921,6	5.991,3	5.951,0	6.288,9	5.955,3	-0,7%
Greece	4.793,7	4.860,8	4.960,3	5.021,0	4.677,0	4.599,8	4.944,9	4.661,6	4.814,9	-2,8%
Latvia	5.355,8	4.315,2	4.780,9	5.010,5	4.645,4	4.351,6	4.373,9	4.610,5	4.680,5	-13,9%
Ireland	8.234,9	7.672,4	7.477,0	6.931,3	6.532,6	5.956,5	6.776,1	6.846,7	7.053,4	-16,9%
Mean by year	7.151,95	6.993,83	6.893,57	6.971,43	7.372,97	7.438,32	7.818,86	8.187,47		

Table 1c: Annual expenditure per student in upper secondary and non-tertiary education from 2012 to 2018

Country	2012	2013	2014	2015	2016	2017	2018	2019	Mean by country	Increase percentage
Romania	1.805,7	2.045,0	2.318,4	2.570,5	2.483,1	3.003,5	3.339,0	4.092,1	2.707,2	126,6%
Hungary	3.290,0	3.123,1	6.093,2	5.682,5	5.731,0	6.083,8	6.273,7	5.055,0	5.166,5	53,6%
Malta	6.848,8	7.632,8	7.134,1	8.881,4	8.479,4	8.382,0	9.923,3	10.360,6	8.455,3	51,3%
Czechia	4.786,7	4.868,0	5.209,0	5.612,0	5.391,0	5.821,7	6.973,1		5.523,1	45,7%
Lithuania	3.966,7	4.375,2	4.349,0	3.894,0	3.899,2	3.959,7	4.463,8	5.336,1	4.280,5	34,5%
Slovakia	3.840,3	4.263,9	4.689,3	5.175,4	4.736,1	5.072,0	5.132,1		4.701,3	33,6%
Croatia					3.785,3	4.097,5	4.513,4	4.829,7	4.306,5	27,6%
Bulgaria	2.258,9	2.601,9	2.864,3	2.849,0	2.899,0	3.023,3	3.181,8		2.811,2	22,3%
Slovenia	5.375,6	5.457,1	5.422,0	5.597,9	5.414,5	5.782,4	6.234,8	6.617,5	5.737,7	21,3%
Cyprus	9.002,9	8.649,8	8.821,5	9.373,2	9.765,0	10.287,9	11.073,9	10.812,7	9.723,4	20,1%
Germany	7.907,7	8.039,5	8.340,6	8.521,0	8.552,3	8.816,4	9.219,2	9.523,2	8.615,	16,6%
Spain		5.975,0	6.042,5	6.436,5	6.698,8	6.925,4	6.912,4	7.215,5	6.600,9	15,7%
Netherlands	7.892,9	8.187,9	8.319,3	8.645,5	8.829,4	8.447,3	9.444,2	9.031,2	8.599,7	14,4%
France	9.028,3	9.227,3	9.356,2	9.548,0	9.400,0	9.375,4	9.569,7	10.020,6	9.440,7	11,0%
Luxembourg	14.541,6	13.433,6	14.714,0	14.185,7	14.612,6	14.746,0	16.225,2	16.038,2	14.812,1	10,3%
Poland	3.876,4	3.976,8	4.078,4	4.224,7	4.424,6	4.433,5	4.631,9	4.814,7	4.307,6	8,8%
Sweden	9.908,6	9.634,0	9.566,8	9.892,9	9.776,1	10.328,4	10.716,3	10.754,7	10.072,2	8,5%
Norway		13.119,0	13.083,6	13.192,7	12.793,6	13.296,9	14.220,2	14.135,6	13.405,9	7,7%
Italy	6.725,9	6.733,9	6.256,6		6.634,0	7.187,5	8.608,1	7.195,3	7.048,8	7,0%
Belgium					10.133,6	10.305,6	10.402,1	10.620,1	10.365,4	4,8%
Austria	10.478,3	10.646,9	10.543,6	11.027,5	11.313,4	11.101,2	11.206,6	10.706,0	10.877,9	2,2%
Portugal	5.619,4	6.273,5	5.951,8	6.026,6	6.037,0	6.685,7	6.287,8		6.126,	0,2%
Latvia	6.052,6	4.521,1	5.083,7	5.721,2	5.513,0	5.458,7	5.640,2	6.050,1	5.505,1	0,0%
Switzerland		9.260,4		14.217,0	9.477,1	9.363,7	9.228,6		10.309,4	-0,3%
Finland	7.087,8		6.941,2	6.882,7		6.032,5	6.275,8	6.797,5	6.669,6	-4,1%
Estonia	5.748,6	4.605,3	4.751,2	5.249,0	4.946,9	5.075,1	5.872,5	5.134,4	5.172,9	-10,7%
Denmark	10.002,8	10.120,6	12.135,4		8.615,6	8.549,8	8.681,4	8.879,1	9.569,2	-11,2%
Greece			4.136,5		3.820,2	3.592,4	3.499,0	3.397,3	3.689,1	-17,9%
Ireland	10.414,1	10.388,6	9.262,9	6.964,4	7.078,1	7.339,4	8.178,7	8.323,6	8.493,7	-20,1%
United Kingdom	6.835,2	6.792,5	7.507,3	7.116,5	6.608,8	6.577,5	7.090,4	7.501,9		
Mean by year	6.804	7.075	7.147	7.500	7.167	7.305	7.767	8.130		

Table 1d: Annual expenditure per student in tertiary education from 2012 to 2018

Country	2012	2013	2014	2015	2016	2017	2018	2019	Mean by country	Increase percentage
Cyprus	7.543,9	7.519,8	6.522,7	6.702,6	5.893,2	6.367,9	5.299,8	4.783,2	6.329,1	-36,6%
Finland	15.164,6	14.687,2	14.816,7	14.528,9	13.959,5	13.049,3	12.582,5	12.541,2	13.916,2	-17,3%
Norway			25.228,8	20.677,6	20.537,4	20.823,0	22.522,0	22.341,9	22.021,8	-11,4%
Greece	2.403,3	2.057,1	2.105,8	2.268,3		1.790,4	1.878,6	2.195,6	2.099,9	-8,7%
Ireland	10.715,4	9.979,2	9.296,2	13.563,4	13.133,0	12.378,5	12.324,8	12.169,0	11.694,9	-7,3%
Latvia	5.581,3	4.105,2	5.304,0	6.010,9	3.924,2	3.823,2	4.383,9	5.176,0	4.788,6	-7,3%
Austria	13.013,7	12.773,2	12.881,9	13.486,0	13.589,9	13.281,6	13.835,2	13.208,5	13.258,8	-2,8%
Luxembourg			33.996,9	36.249,7	34.292,5	34.251,0	31.788,1	34.189,2	34.127,9	-0,3%
Germany	13.586,1	12.938,0	13.125,2	13.088,3	13.090,3	13.161,8	13.661,8	13.607,7	13.282,4	0,2%
Spain	7.311,8	7.035,3	7.032,1	7.110,1	6.797,5	6.990,0	6.968,3	7.249,7	7.061,9	3,0%
Sweden	20.073,3	20.244,5	20.730,4	21.552,2	20.291,4	20.196,7	20.678,7	20.740,7	20.563,5	3,3%
France	9.967,3	10.083,3	10.178,6	10.406,0	9.963,8	9.960,8	10.065,1	10.344,6	10.121,2	3,8%
Switzerland		19.399,2			20.123,0	20.270,9	20.243,2		20.009,1	4,4%
Italy	6.719,2	6.973,5	6.985,5	6.993,2	6.916,4	7.127,0	7.293,7	7.267,4	7.034,5	4,6%
Portugal		5.249,5	5.850,5	6.165,5	5.632,8	5.608,0	5.540,3		5.674,4	5,5%
Lithuania	5.375,6	5.145,2	5.933,5	5.701,7	4.183,4	4.272,2	5.015,0	5.679,6	5.163,3	5,7%
Netherlands	13.257,3	13.615,1	13.847,4	13.743,1	14.658,5	13.398,6	14.705,6	14.019,0	13.905,6	5,7%
Malta	14.253,2	15.226,0	15.681,1	15.985,6	15.023,2	13.470,0	14.542,3	16.489,7	15.083,9	8,3%
Slovakia		6.129,4	7.505,0	10.561,6	6.901,9	6.672,7	6.831,6		7.433,7	11,5%
Croatia					4.062,3	4.616,7	4.592,2	5.180,9	4.613,	13,0%
Belgium					12.859,4	13.310,4	13.869,1	14.766,9	13.701,5	14,8%
Denmark	14.815,9	15.443,9	15.950,5		17.573,8	16.854,3	17.393,2	18.954,3	16.712,3	17,4%
Slovenia	6.959,7	7.002,2	7.008,4	7.262,9	7.500,8	8.141,8	9.539,6	10.263,8	7.959,9	36,2%
Poland	4.989,7	5.507,2	5.777,8	6.346,6	5.846,8	6.358,1	6.853,4	7.856,4	6.192,	57,5%
Hungary	4.390,2	5.356,8	5.165,8	4.924,0	5.795,3	6.609,3	7.189,7	7.001,5	5.804,1	59,5%
Czechia	5.347,5	4.947,9	5.039,4	5.496,5	5.395,4	5.956,1	8.634,5		5.831,	61,5%
Bulgaria	2.371,7	2.491,5	2.780,8	2.767,3	2.774,0	4.204,1	4.328,7		3.102,6	82,5%
Romania	3.549,7	2.909,6	3.953,0	4.121,6	4.723,6	5.201,6	5.753,6	6.788,2	4.625,1	91,2%
Estonia	4.146,2	5.808,7	7.391,6	7.711,9	8.537,6	7.765,7	8.751,5	8.578,2	7.336,4	111,1%
United Kingdom	13.982,9	14.574,7	13.023,9	14.153,2	14.461,8	14.373,0	14.657,6	14.702,4		
Mean by year	8.936	9.123	10.486	10.676	10.981	10.676	11.057	11.844		

So far, only the government expenditure is considered to quantify the investment in education. However, it is relevant to explore more deeply how different sources of funding are distributed among countries (Figures 2a, 2b, 2c and 2d). These elaborations, provided by the Eurostat databases, show the *composition of educational investments among public (general), private and international ones*. Capturing differences in terms of types of educational funding is useful for benchmarking purposes: it allows the detection of differences in political inclinations and the capacity to attract external (private or international) investors for the sector. In detail, private expenditure refers to private sources of funding such as households, enterprises, non-profit organisations and religious institutions, while international expenditure refers to total expenditure for educational institutions from international sources.

Starting from the lowest educational level, Figure 2a visually highlights an important contribution of state funding for primary education: government funding covers around 90% of the total sources, and in countries such as Romania, Finland and Norway this rate is almost 100%. Countries with the highest proportion of private investments are Malta, Slovenia, Greece and Spain. A non-zero rate of international funding is present for Lithuania, Luxembourg and Poland, but this accounts for less than 5% of the total. Secondary education funding (referring to Figures 2b and 2c) shows a smaller proportion of public sources (even if it is still above 80% on average), leaving room for private sources. Indeed, the highest proportion of private funding refers to Greece and Ireland in lower education, and to the Netherlands, Slovenia and Poland for higher education with rates above 20% of the total funding. The international investments are close to 10% of the total expenditure in Latvia and Lithuania for upper secondary education. As in the previous representation, a different story is depicted for the case of tertiary education. Figure 2d clearly shows a more heterogeneous composition of funding sources for the selected countries. Public investments represent an important source for Luxembourg, Romania and Malta accounting for more than 85% of the total. Considering private investments, Cyprus and Latvia, followed by Croatia and the Netherlands, reach almost 50% and 40% respectively, while international investments are attracted by Latvia, Lithuania and Greece for around 15%.

Figure 2a: Distribution of sources for educational expenditure by primary education (ISCED 1)

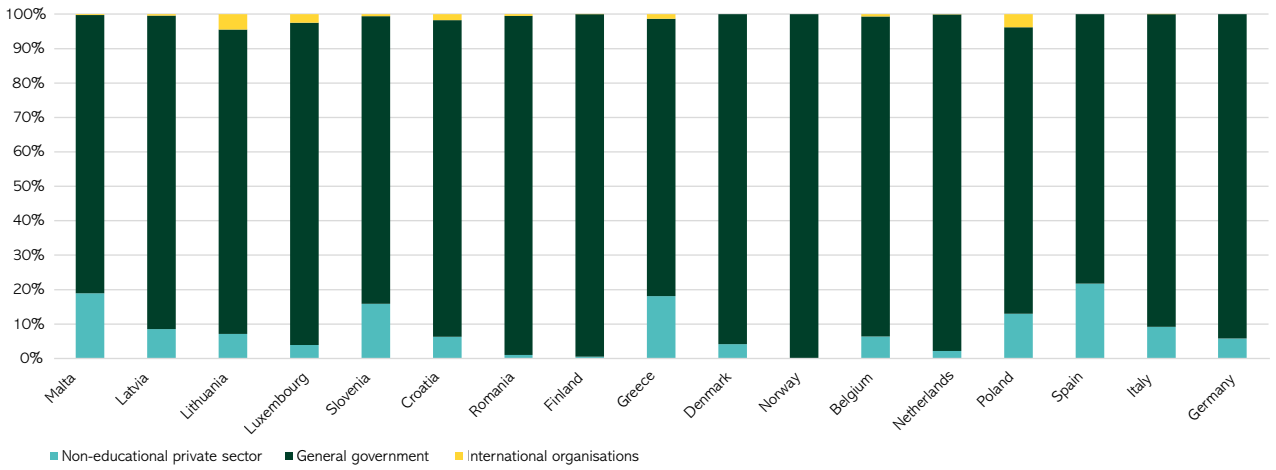


Figure 2b: Distribution of sources for educational expenditure by lower secondary education (ISCED 2)

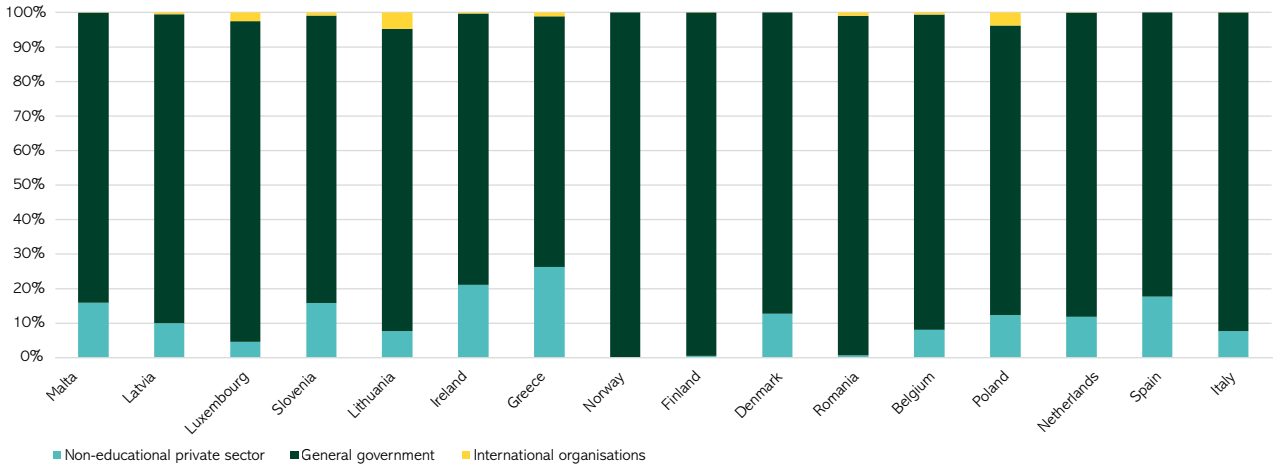


Figure 2c: Distribution of sources for educational expenditure by upper secondary and non-tertiary education (ISCED 3–4)

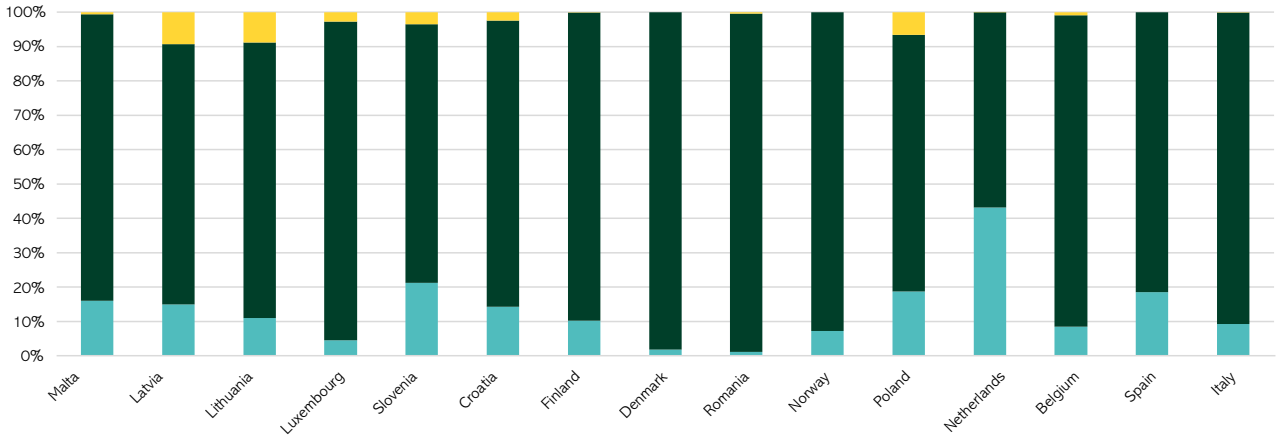
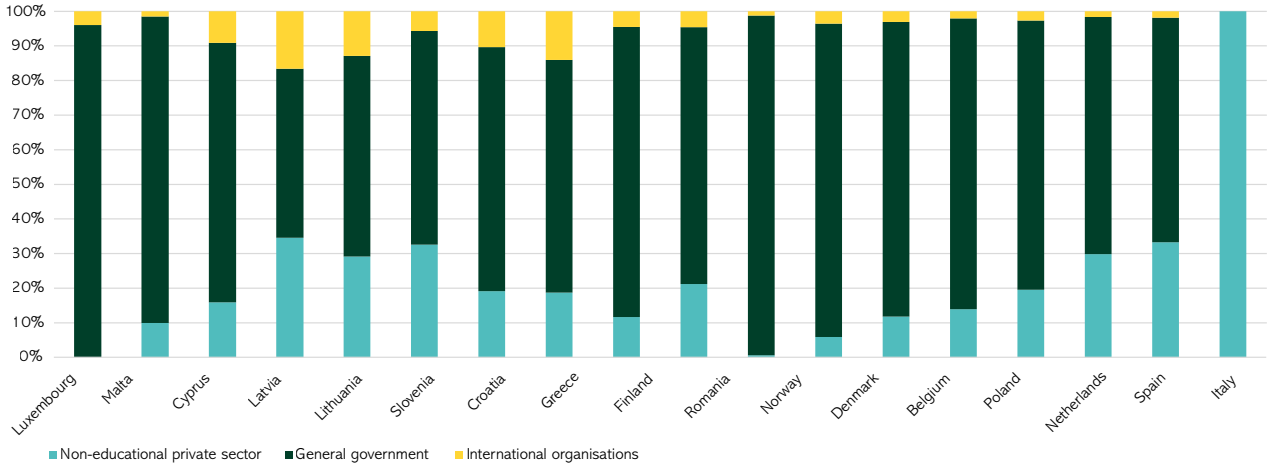


Figure 2d: Distribution of sources for educational expenditure by tertiary education (ISCED 5–8)



5.2.2. Outputs

According to the conceptual framework adopted in this chapter, the inputs are main drivers of the educational system, but the outputs represent the short-term educational effect. As anticipated, the following indicators are discussed: (i) enrolment rate for 15–19-year-olds, (iii) upper secondary graduation rate, (iii) entry, and (iv) graduation rates in tertiary-type A education (i.e. three-to-four-year programmes – normally it comprises bachelor and masters degrees).[3]

The first indicator about educational outputs relates the *enrolment rate for 15–19-year-old students in secondary education* to describe the universal nature of the educational system. For the considered age groups, education is no longer mandatory in most countries. Countries with the highest rate of enrolment in secondary school are Ireland (93.6%), Slovenia (94.1%) and Belgium (94.2%), while the lowest are observed in Austria (79.7%), Luxembourg (76.5%) and Canada (72.3%).

[3] Tertiary education type A refers to largely theory-based programmes designed to provide relevant qualifications for entry to advanced research programmes and professions with high skill requirements, such as medicine, dentistry or architecture. Duration at least three years full-time, though usually four or more years. These programmes are not exclusively offered at universities; and not all programmes nationally recognised as university programmes fulfil the criteria to be classified as tertiary-type A. Tertiary-type A programmes include second degree programmes, such as the American master's degree (Education at a Glance, 2014).

Table 2 presents the mean percentage increase in enrolment rate by regions between 2010 and 2015 and between 2015 and 2020. Considering global macro-areas, Central and Eastern Europe show a negative difference in both time windows, even if with lower intensity (from −3.22% to −0.79%). Northern and Western European countries, the ones with the highest enrolment rates, shows a constant positive trend of +0.61% and +0.55% between 2010 and 2015, and +0.46% and +0.52% between 2015 and 2020, respectively. Southern Europe is significantly increasing enrolment rates among 15–19-year-olds, with a percentage increase of 1.18% and 2.99% in the two year windows.

Table 2: Enrolment rate among 15–19-year-old students

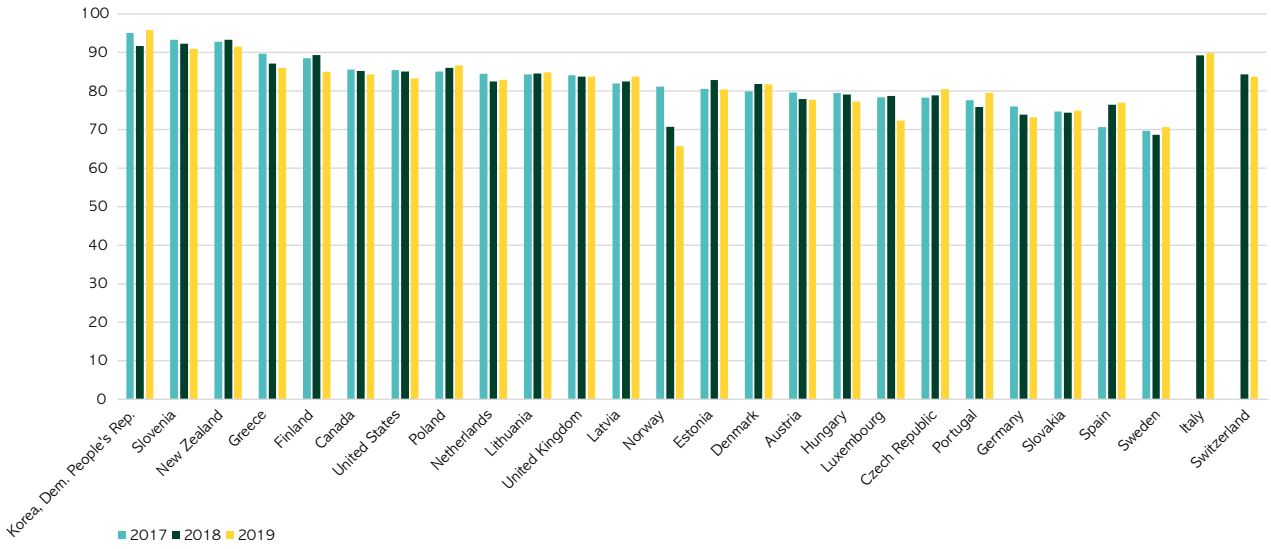
Region	Percentage increase in enrolment rate among 15-19 year-old students (from 2010 to 2015) - %	Percentage increase in enrolment rate among 15-19 year-old students (from 2015 to 2020) - %	Country	Enrolment rate among 15-19 year-old students (2020) - %
Central and Eastern Europe	-3,22%	-0,79%	Czech Republic	90,01
			Estonia	87,71
			Hungary	82,86
			Lithuania	93,28
			Latvia	92,16
			Poland	92,35
			Slovenia	94,13
			Slovakia	83,53
Eastern Asia	1,44%	-2,91%	Korea, Dem. People's Rep.	83,92
Northern America	0,01%	-0,45%	Canada	72,34
			United States	83,03
Northern Europe	0,61%	0,46%	Denmark	86,41
			Finland	86,60
			Norway	87,22
			Sweden	88,02
Oceania	6,38%	-2,24%	Australia	87,89
			New Zealand	82,17
Southern Europe	1,18%	2,99%	Spain	86,95
			Greece	87,64
			Italy	85,87
			Portugal	89,51
Western Europe	0,55%	0,52%	Austria	79,75
			Belgium	94,24
			Switzerland	84,88
			Germany	86,88
			France	86,89
			United Kingdom	83,45
			Ireland	93,59
			Luxembourg	76,54
			Netherlands	92,46

The second output indicator is the *upper secondary graduation rate*: it is the estimated percentage of people who will graduate from secondary education over their lifetime. The OECD (2020) suggests that this indicator is not a measure of the proportion of graduates in a country at a specific time, but a measure of the probability of someone in the country graduating in the long term, based on current graduation patterns. Therefore, graduation rates are sensitive to any changes in education systems, such as the introduction of new programmes or variation in a programme's duration.

Figure 3 compares this rate over the last three years: 2017, 2018 and 2019. Greece, Slovenia and Finland are the European countries with the highest rate with 93%, 92% and 89% respectively, while United Kingdom[4] and Sweden are the lowest (around 70%). The Netherlands obtains a good ranking too, with 92.46% of enrolment rate. The Netherlands' data shows positive results in terms of 15–19-year-old enrolment rates, always above 80% (specifically, 84.5%, 82.5% and 83.9% in 2017, 2018 and 2019 respectively).

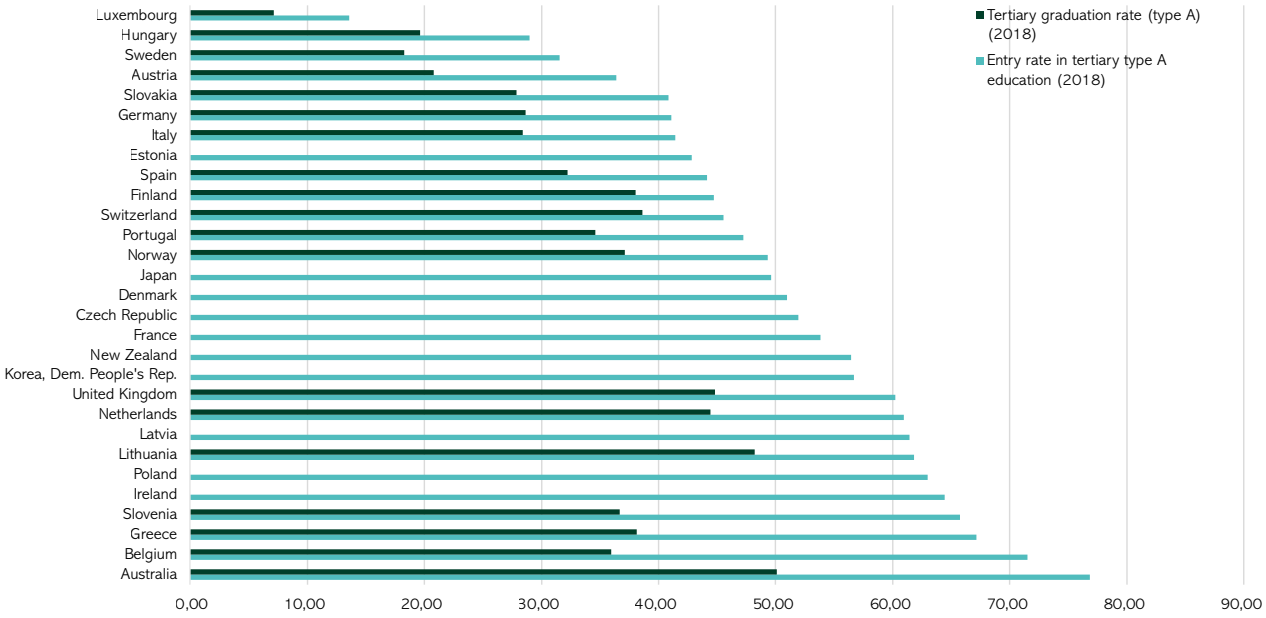
[4] The case of UK must be treated with caution because the high variability over these years of the UK data does not offer precise considerations due to the statistical errors in prediction.

Figure 3: Upper secondary education graduation rate (2018)



Moving to the tertiary education outputs, Figure 4 shows the entry rate and the graduation rate from tertiary education (type A according to ISCED classification). Graduation is measured by the sum of net graduation rates. For countries that are unable to provide information on net graduation, the data refer to gross graduation rates, i.e. the number of graduates, regardless of their age, divided by the population at the typical graduation age (up to 30 years old). The graduation rates for countries with a high proportion of international students (e.g. Australia and New Zealand) may be artificially inflated, as all international graduates are considered as first-time graduates, regardless of their previous education in other countries. The net entry rate for a specific age is obtained by dividing the number of first-time entrants to each type of tertiary education by the total population in the corresponding age group (up to 25 years old). The sum of net entry rates is calculated by adding the rates for each year of age. It is worth underlining that both indicators refer to 2018, implying that the difference between the two rates is not necessarily due to the abandonment of students (nonetheless, it represents a raw measure of the system's effectiveness). Some comparisons among countries are allowed. The lowest entry rate in tertiary education emerges for Luxembourg, Hungary and Sweden, with 14%, 28% and 31% respectively. This could be explained by the high rate of students studying abroad. This is especially the case of Luxembourg where the small size of the country – and consequently the limited educational offer – may convince students to move outside to keep on with their studies. On the other hand, Greece, Belgium and Australia have the highest scores with rates around 70%. If the attention moves to the rate of graduation, Australia, Lithuania and the United Kingdom show the highest percentage (over 40%).

Figure 4: Entry and graduation rates in tertiary-type A education



5.2.3. Outcomes

5.2.3.1. PISA indicators of educational achievement

The OECD conducts internationally standardised and nationally representative tests to measure the performance of 15-year-olds in reading, mathematics and science (Programme for the International Student Assessment – PISA). It has carried out surveys every three years since 2000, and in 2018. Performance scores are standardised, with a mean of 500 test-score points and a standard deviation of 100 points across the OECD countries. As explained by the OECD (2014a), not all PISA results can be compared over time due to differences in scaling, sampling and testing conditions. To assess the last years' trends of student performance, the waves of 2009, 2012, 2015 and 2018 of the three subjects are considered in this chapter.

Table 3 documents the average scores by countries between 2009 and 2018 for the three subjects. Few insights about mathematics scores are listed here, and similar considerations hold for both reading and science. Bulgaria, Croatia and Romania achieved the lowest 2018 scores. Southern European countries obtain the lowest scores on average in 2018, while Northern European countries score the highest. Western European countries score very close to the 500 points mean in all three subjects. The first positions in the three rankings are covered by Estonia, Finland and Canada for reading and science, while Estonia, the Netherlands and Poland hold the position for mathematics. The Netherlands obtained positive results in all the waves for the three subjects, almost always above the OECD average. Anyway, it is evident that the trend is negative, registering decreasing scores from 2009 to 2018 of 7 points, 33 points and 19 points in mathematics, reading and science, respectively.

Table 3: Standardised test scores in PISA from 2009 to 2018 in mathematics, reading and science

Region	Country	Math				Reading				Science			
		2009	2012	2015	2018	2009	2012	2015	2018	2009	2012	2015	2018
Oceania	Australia	514	504	494	491	515	512	503	503	527	521	510	503
Western Europe	Austria	496	506	497	499	470	490	485	484	494	506	495	490
Western Europe	Belgium	515	515	507	508	506	509	499	493	507	505	502	499
Central and Eastern Europe	Bulgaria	428	439	441	436	429	436	432	420	439	446	446	424
Northern America	Canada	527	518	516	512	524	523	527	520	529	525	528	518
Central and Eastern Europe	Croatia	460	471	464	464	476	485	487	479	486	491	475	472
Southern Europe	Cyprus			437	451		449	443	424		438	433	439
Central and Eastern Europe	Czech Republic	493	499	492	499	478	493	487	490	500	508	493	497
Northern Europe	Denmark	503	500	511	509	495	496	500	501	499	498	502	493
Central and Eastern Europe	Estonia	512	521	520	523	501	516	519	523	528	541	534	530
Northern Europe	Finland	541	519	511	507	536	524	526	520	554	545	531	522
Western Europe	France	497	495	493	495	496	505	499	493	498	499	495	493
Western Europe	Germany	513	514	506	500	497	508	509	498	520	524	509	503
Southern Europe	Greece	466	453	454	451	483	477	467	457	470	467	455	452
Central and Eastern Europe	Hungary	490	477	477	481	494	488	470	476	503	494	477	481
Western Europe	Ireland	487	501	504	500	496	523	521	518	508	522	503	496
Southern Europe	Italy	483	485	490	487	486	490	485	476	489	494	481	468
Central and Eastern Europe	Latvia	482	491	482	496	484	489	488	479	494	502	490	487
Central and Eastern Europe	Lithuania	477	479	478	481	468	477	472	476	491	496	475	482
Western Europe	Luxembourg	489	490	486	483	472	488	481	470	484	491	483	477
Southern Europe	Malta	463		479	472	442		447	448	461		465	457
Western Europe	Netherlands	526	523	512	519	508	511	503	485	522	522	509	503
Oceania	New Zealand	519	500	495	494	521	512	509	506	532	516	513	508
Northern Europe	Norway	498	489	502	501	503	504	513	499	500	495	498	490
Central and Eastern Europe	Poland	495	518	504	516	500	518	506	512	508	526	501	511
Southern Europe	Portugal	487	487	492	492	489	488	498	492	493	489	501	492
Central and Eastern Europe	Romania	427	445	444	430	424	438	434	428	428	439	435	426
Central and Eastern Europe	Slovakia	497	482	475	486	477	463	453	458	490	471	461	464
Central and Eastern Europe	Slovenia	501	501	510	509	483	481	505	495	512	514	513	507
Southern Europe	Spain	483	484	486	481	481	488	496		488	496	493	483
Northern Europe	Sweden	494	478	494	502	497	483	500	506	495	485	493	499
Western Europe	United Kingdom	492	494	492	502	494	499	498	504	514	514	509	505
Northern America	United States	487	481	470	478	500	498	497	505	502	497	496	502

The second data elaboration using PISA scores is reported in Figures 5a, 5b and 5c, one for each subject of assessment. The analysis shows the average score in the four PISA waves, together with the percentage increase from 2009 to 2018. The greatest increase in mathematics from 2009 to 2018 is obtained by Poland, Latvia and Ireland, which improved their scores by 4.2%, 2.9% and 2.5% respectively.[5] Part of this improvement can be explained by their relative position in the ranking over time, as low performers can more easily move quickly upwards than high performers. From 2009 to 2018, Poland moved from 15th to 3rd, Latvia from 26th to 16th and Ireland from 22nd to 13th. In this regard, it is interesting to observe that among these countries only Poland scores, on average, above 500 (the standardised mean). On the contrary, Australia, New Zealand and Finland show a substantial decrease in test scores, but they are still scoring – on average – above the mean. Moving the attention to reading average scores and increases/decreases over time, Figure 6b shows that Ireland, Estonia and Spain considerably improve their performance by 4.5%, 4.4% and 3.0% respectively, with an average score of 514, 515 and 488. The bottom of the ranking is taken by the Netherlands, Greece and Cyprus with an average decrease in reading performance of −5.1%.

[5] Cyprus is not mentioned here even it is at the top of this ranking because the information about 2009 and 2012 is missing, so its comparability with other countries is weak. Cyprus did not participate to the assessment in 2009 while for 2012, data about mathematics are missing.

These countries lost 24–25 PISA points from 2009 to 2018. A word of caution is needed for the interpretation of the development of these scores. Countries like the Netherlands, Belgium, France and Germany cope with a growing percentage of pupils coming from non-Western immigrant families, where they are not used to speaking the language of the country at home. Accordingly, it is important to consider the demographic composition of the pupil population, especially with regarding to reading, and to guide the policy reflection and actions towards equal educational opportunity and inclusiveness in education (OECD, 2017). To confirm the important improvements in mathematics and reading, Estonia and Poland, together with Sweden, register the highest increase in science too, even if its magnitude is significantly lower (around 0.6%). Indeed, most countries show a decrease in this subject (−10 points on average between 2009 and 2018). Finland, again, covers the last position in this negative ranking, with 5.8% lower scores. Also in this case, it is worth mentioning that Finland is always among the top three best performers in absolute terms from 2009 to 2018.

Figure 5a: PISA mathematics scores from 2009 to 2018 – absolute mean and percentage increase

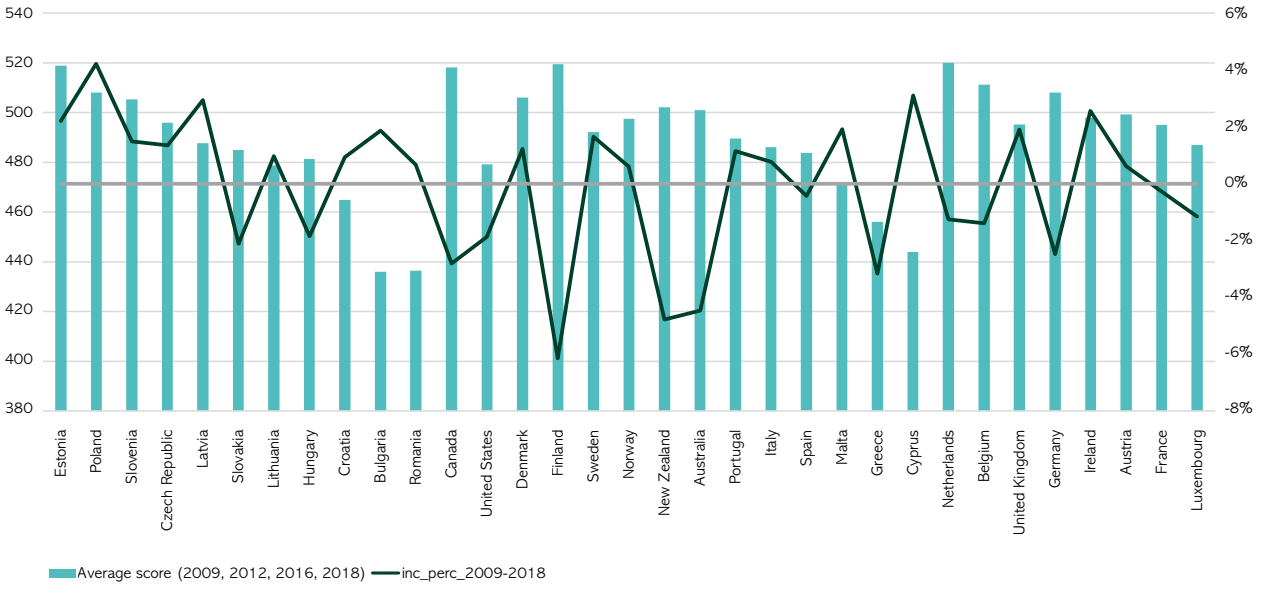


Figure 5b: PISA reading scores from 2009 to 2018 – absolute mean and percentage increase

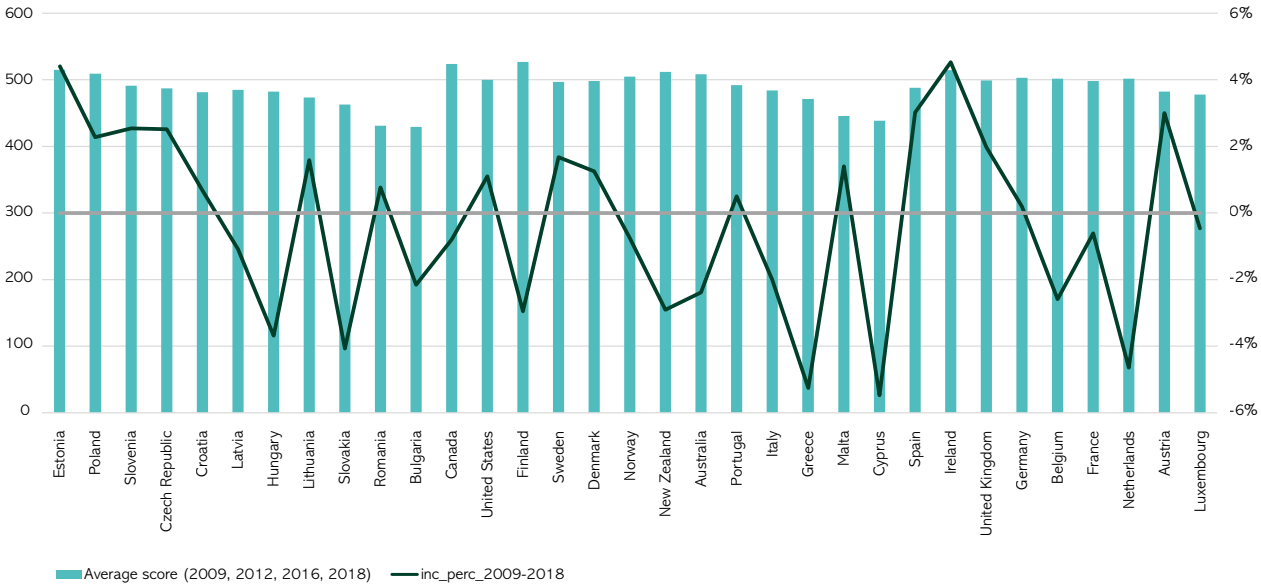
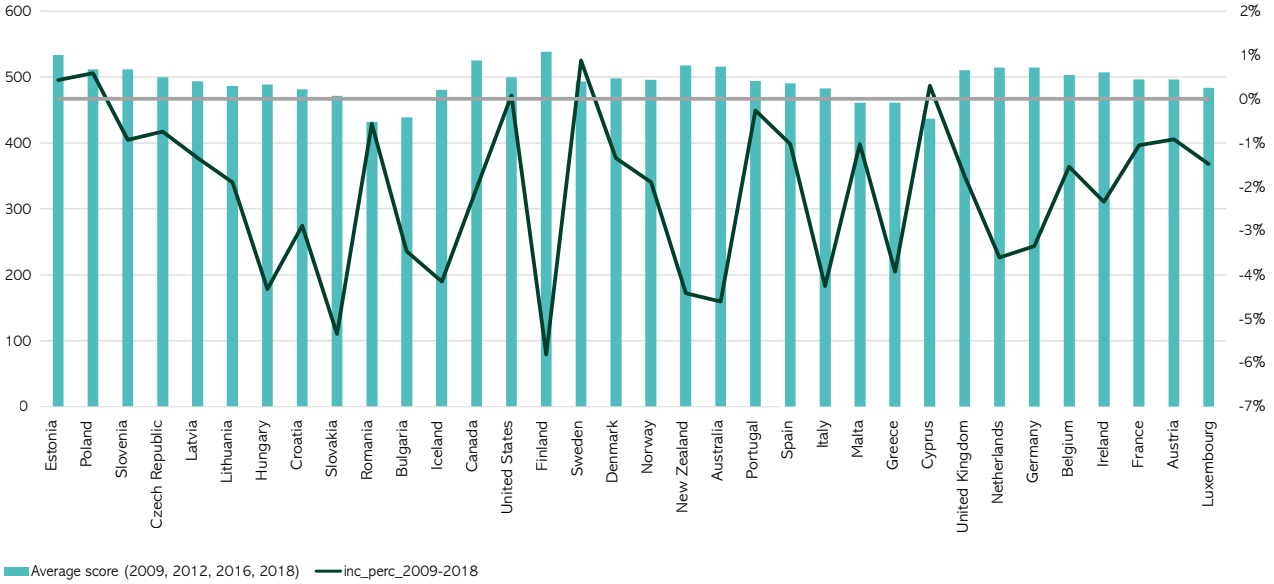


Figure 5c: PISA science scores from 2009 to 2018 – absolute mean and percentage increase



5.2.3.2. ICCS indicators of civic knowledge, value beliefs and attitudes

The general cognitive skills obtained through studying the traditional subjects discussed above enable people to find a job and become active citizens. However, active citizenship shows different dimensions, beyond their achievement of academic performance. In this view, the International Civic and Citizenship Education Study (ICCS) investigated the ways in which young people are prepared to undertake their roles as citizens in a range of countries in the second decade of the twenty-first century. The assessments, taking place in 2011 and 2016, cover students' knowledge and understanding of civic and citizenship, together with their value beliefs, attitudes and activities. The 2016 assessment is the continuation of the one from 2009, so the two waves can be compared and give some idea about how the education systems changed in shaping the attitudes and values in this area. ICCS targeted grade 8 students (enrolled in secondary school), involving 2800 schools from 24 countries, among which 21 in 2009 and 13 in 2016 are included in this chapter. To give the reader an overview, ICCS aims at investigating four spheres of civic and citizenship participation:

- students' knowledge and understanding of civics and citizenship and the factors associated with variations in this civic **knowledge**;
- students' current and expected future involvement in civic-related activities, their perceptions of their capacity to engage in these activities, and their perceptions of the value of civic **engagement**;
- students' beliefs about contemporary civil and civic issues in society, including those concerned with civic institutions, rules, and social principles (democracy, citizenship and diversity), as well as their perceptions of their communities and threats to the world's **future**;
- the ways in which countries organise civic and citizenship education, with a particular focus on general approaches, the curriculum and its delivery, and the processes used to facilitate future citizens' civic engagement and interaction within and across communities.

In this chapter, a selection of ICCS variables is used as outcome indicators: the civic knowledge measure, measures of (i) attitudes towards equal gender rights; (ii) attitudes towards equal rights for ethnic groups, and (iii) support for basic democratic values.

The civic knowledge measure is assessed by ICCS and represents the students' knowledge and understanding of concepts and issues related to civics and citizenship. The indicator about attitudes towards gender rights, instead, is the mean of answers to the following statements student need to evaluate on a Likert scale: 'Men and women should have equal opportunities to take part in government'; 'Men and women should have the same rights in every way'; 'Women should stay out of politics'; 'When there are not many jobs available, men should have more right to a job than women'; 'Men and women should get equal pay when they are doing the same jobs'; 'Men are better qualified to be political leaders than women'. The indicator about beliefs towards equal rights for ethnic groups is calculated with the same procedure. The sentence to be evaluated by students are the following: 'All <ethnic/racial groups>

should have an equal chance to get a good education in <country of test>'; 'All <ethnic/racial groups> should have an equal chance to get good jobs in <country of test>'; 'Schools should teach students to respect <members of all ethnic/racial groups>'; '<Members of all ethnic/racial groups> should be encouraged to run in elections for political office'; '<Members of all ethnic/racial groups> should have the same rights and responsibilities'. Lastly, the percentage of students supporting basic democratic values is an authors' elaboration stated for the percentage of students who agree with a set of situations (five in 2009 and three in 2016) about the democratic values of a society. The reference situations (for the 2016 assessment) are: i) people are allowed to publicly criticise the government; ii) all adult citizens have the right to elect their political leaders and iii) people are able to protest if they think a law is unfair. It should be noted that the test scores reported here do not necessarily reflect the quality of a country's education, as test scores also depend on other factors; at the same time, it helps in understanding how the different educational systems differ from each other under this dimension.

The main results from the 2016 assessment (Table 4)[6] can be summarised as follows. First, the highest scores in civic knowledge are obtained by Northern European countries: Denmark, Sweden, Finland and Norway. The lowest positions are covered by Latvia, Lithuania, Bulgaria and Malta. Interestingly, despite its low position in the score of civic knowledge, Malta has the second highest score in the attitudes towards gender and ethnical group rights. Estonia, Italy and Slovenia show the lowest scores in the attitudes towards equal rights (gender and ethnical groups). Lastly, more than 50% of respondent students from the Netherlands and Finland show support for democratic values, while the last positions are covered by Lithuania, Estonia and Latvia.

Table 4: Performance in ICCS test in 2009 and 2016

Region	Country	Civic knowledge	Attitudes towards gender rights	Attitudes towards ethnic groups	Students supporting democratic values (perc.)
Central and Eastern Europe	Croatia	528,73	117,06	210,40	0,42
Central and Eastern Europe	Poland (*)	539,12			0,71
Central and Eastern Europe	Slovakia (*)	527,28			0,79
Central and Eastern Europe	Slovenia	532,76	98,11	138,39	0,37
Central and Eastern Europe	Bulgaria	495,72	207,72	303,68	0,35
Central and Eastern Europe	Lithuania	511,07	125,09	186,79	0,33
Central and Eastern Europe	Estonia	545,17	116,86	146,45	0,30
Central and Eastern Europe	Latvia	497,79	213,58	307,13	0,27
Northern Europe	Finland	577,42	164,38	221,95	0,52
Northern Europe	Sweden	579,81	310,04	395,63	0,49
Northern Europe	Norway	564,73	346,87	407,47	0,41
Northern Europe	Denmark	585,99	509,34	560,31	0,37
Oceania	New Zealand (*)	517,72			0,57
Southern Europe	Italy	526,50	102,22	143,95	0,38
Southern Europe	Malta	493,31	362,23	465,54	0,34
Southern Europe	Cyprus (*)	453,26			0,78
Southern Europe	Greece (*)	478,28			0,81
Southern Europe	Spain (*)	507,39			0,79
Western Europe	Belgium (Flanders)	539,06	98,34	165,51	0,54
Western Europe	Netherlands	529,50	165,69	208,29	0,54
Western Europe	Austria (*)	505,67			0,81
Western Europe	Ireland (*)	537,36			0,68
Western Europe	Luxembourg (*)	487,26			0,80

[6] For those countries not joining the 2016 assessment, the table reports the last data available (2009), identifying them with (*). In this case, only the overall score of civic knowledge and the percentage of students supporting democratic values (DEMVAL) are reported. GENEQL and ETHRGHT are not comparable between waves.

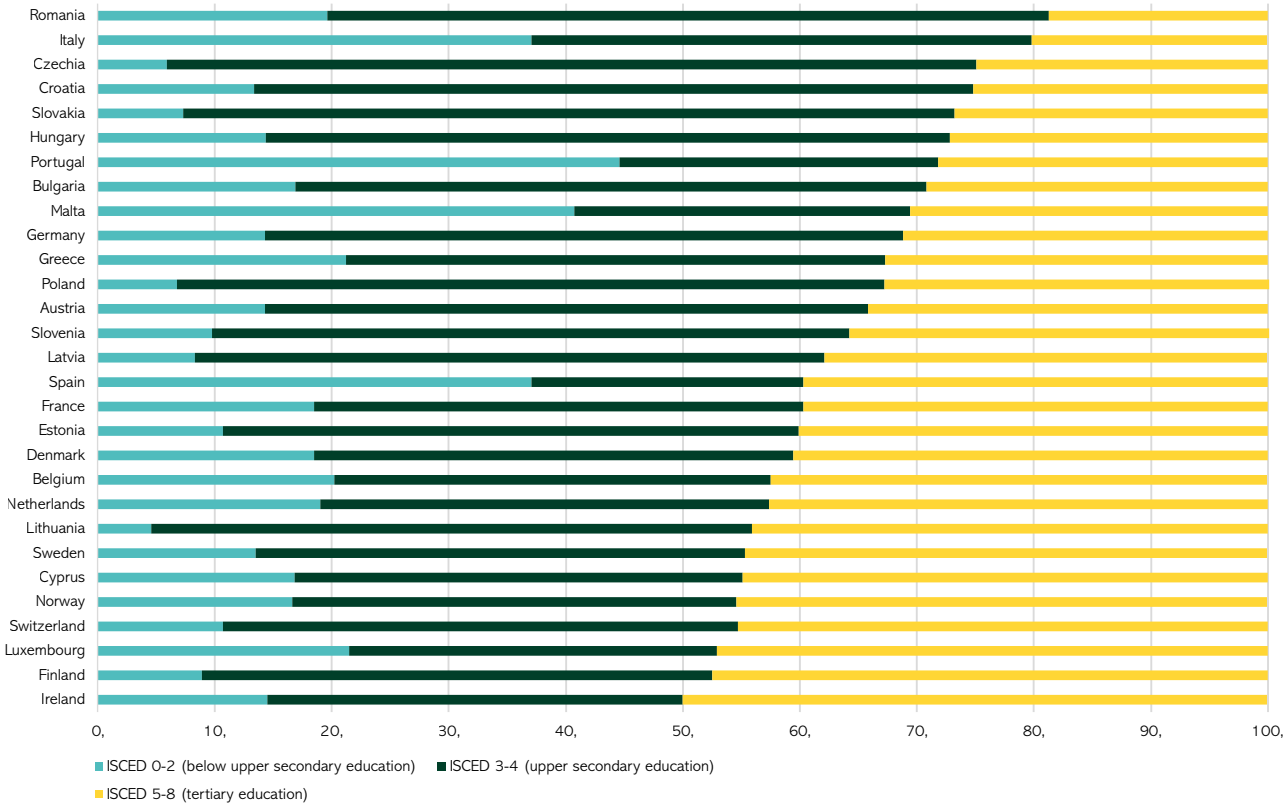
5.2.3.3. Educational attainment

Another outcome indicator measures the highest level of education completed by the 25–64-year-old population. In Figure 6, the attainment levels are divided into below upper secondary, upper secondary and tertiary education in 2020 (the latest available data). The idea behind this representation is to give an overview of the composition of educational completion among countries.

Countries belonging to Eastern and Central Europe, such as Lithuania, Czech Republic, Poland and the Slovakia, show the lowest rate of primary educational attainment, while the highest are registered in Spain (37%), Italy (37%), Malta (40%) and Portugal (44%). When considering tertiary education attainment, Italy is among the last positions, with only 20% of adult population with a degree. At the top of this ranking, Luxembourg (47%), Finland (47%) and Ireland (50%) show the highest percentage of graduates among 25–64-year-olds.

Ireland, Finland and Luxembourg are the countries with the greatest share of the 25–64-year-old population with tertiary education. Among the countries with the lowest share of the 25–64-year-old population with tertiary education, Italy presents a sizeable share of 25–64-year-old population with an educational attainment below upper secondary education (37%). More generally, almost all countries display a higher share of the 25–64-year-old population with upper secondary education than below upper secondary education, with a few remarkable exceptions: Spain (37% vs 23%), Malta (41% vs 29%) and Portugal (45% vs 27%). The Netherlands is aligned with the average with 19% of the population with below upper secondary education, 38% with upper secondary education and 43% with tertiary education.

Figure 6: 25–64-year-old population by educational attainment level in 2020

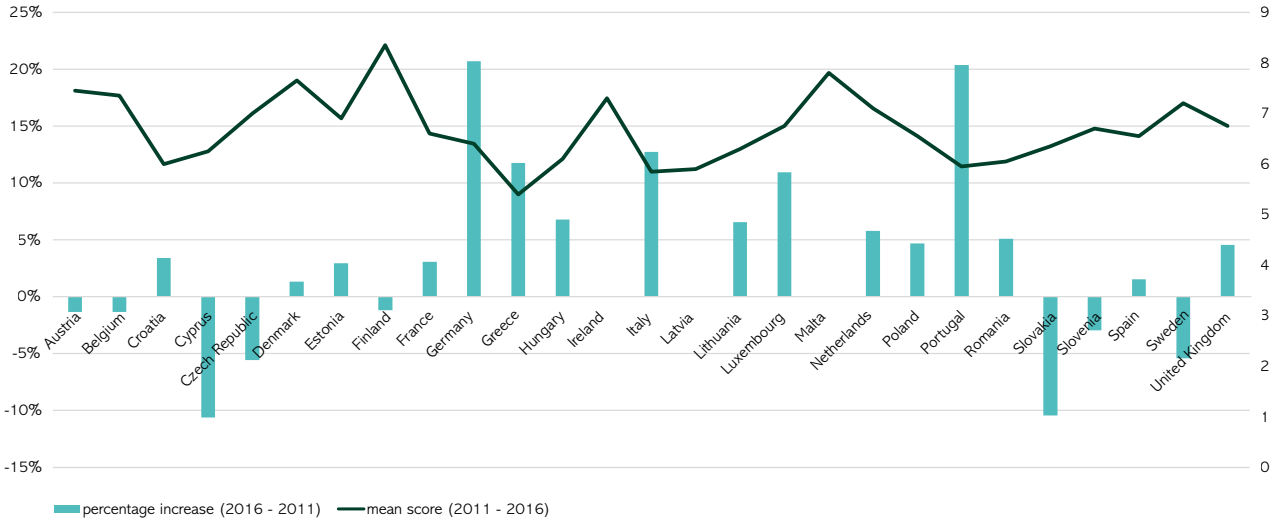


5.2.3.4. Perceived quality of educational system

In the perspective of assessing the outcomes of the educational systems, it is interesting to understand how citizens perceive the quality of the educational sector, comparing this perception of low- and high-achieving countries (the latter defined according to the indicators above). In so doing, the indicator of the perceived quality of the education system is supplied by the European Quality of Life Survey (EQLS) (Eurofound, 2012). The survey aims to monitor and analyse the quality of life in the EU. Carried out in 2003, 2007, 2011 and 2016, the EQLS documents the living conditions and social situation of European citizens, and it includes subjective and objective measures: reported attitudes and preferences, as well as resources and experiences. The indicator considered for this analysis refers to a question in EQLS about a *general evaluation (opinion) of the quality level of educational system in each country*. Possible answers are from 1 (very low) to 10 (very high).[7]

Figure 7 shows the average scores and the percentage difference between 2011 and 2016 waves obtained by the participating countries being part of this report. The highest mean perceived performance is registered in Finland, Denmark and Malta, followed by Austria, Belgium and Ireland. The percentage difference between assessment is particularly high in Germany and Portugal, where the improvement of this indicator is in the order of 20%. On the other hand, negative differences emerge in Cyprus, the Czech Republic, the Slovakia and Sweden with −10%, −5%, −10% and −5%, respectively. Lastly, Netherlands shows a 5% increase in the score about perception of the educational system with a score of 7.1 against the 6.68 average of participating countries.

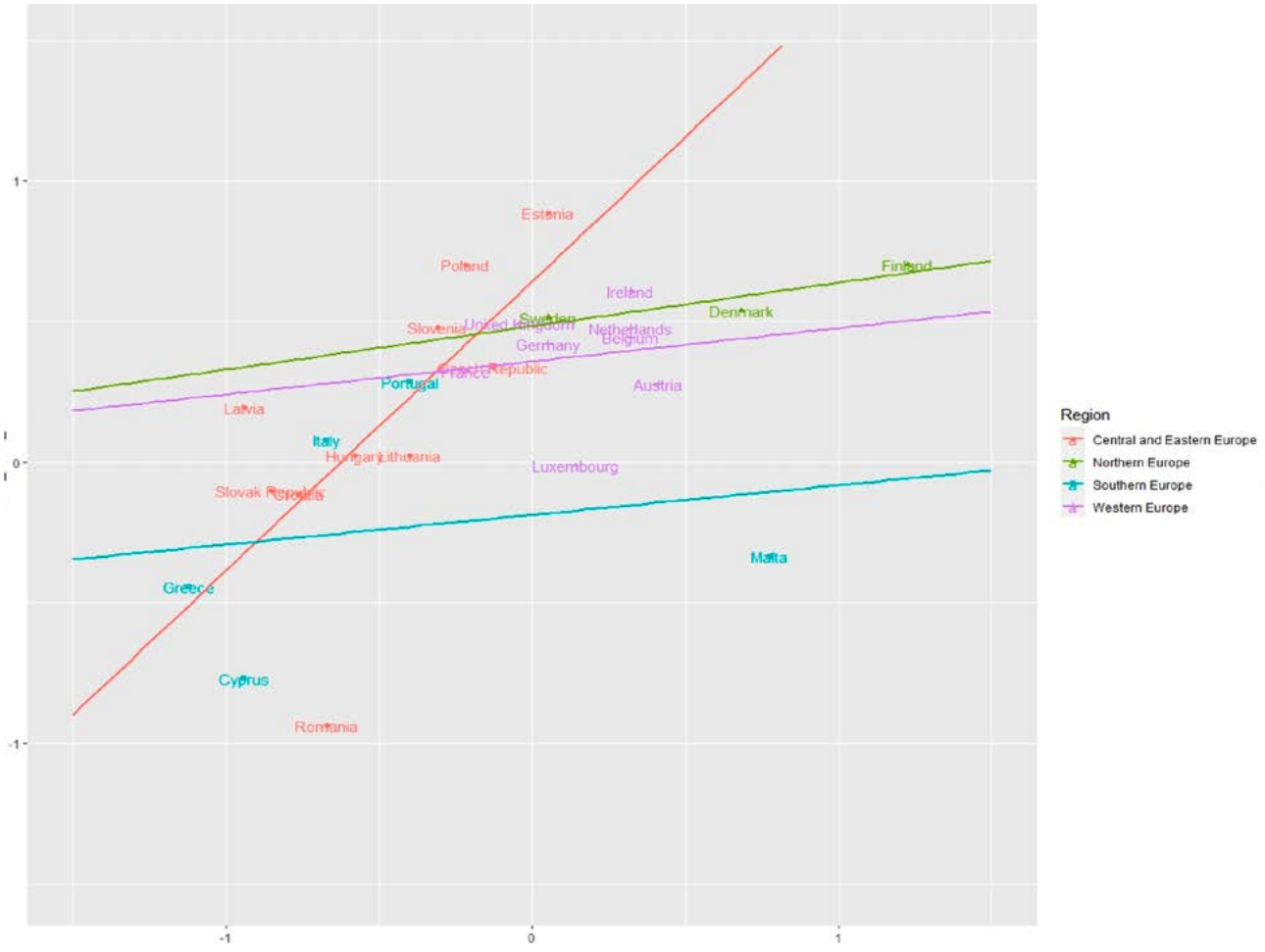
Figure 7: Perceived quality of educational system - average score and mean percentage increase from 2011 to 2016



It is interesting to compare the perceived quality of educational system, assessed by EQLS in 2016, with the most recent performance obtained in PISA 2018. In doing this, the scores in mathematics and reading are averaged by country, to standardise them. To effectively compare these results with those from the survey, the score of perceived quality has been standardised too. Figure 8 shows the plot of these two indicators, where the coordinates of each point represent the two scores for each country. The colours are useful to highlight the European regions, together with their trend axis. The latter element is expected to increase, meaning that the higher the perception of the educational system, the higher the students' performance. Interestingly, the trend with the slope closer to 1 is related to Central and Eastern Europe.[8] Thus, the perception of citizens from these countries are aligned with the results obtained by their students. Instead, if we look at the remaining regions the slopes are flatter (data must be interpreted with caution, given the limited number of observations). If looking country by country, it is worth noticing that most countries are positioned above the bisector, meaning that the perception is lower than the performance. In those cases, governments need to work towards a more effective communication of the value of their educational system, to realign the perception with the reality. The perception and the PISA scores in the Netherlands are quite well aligned, with this country positioning just above the bisector.

[7] Data from Bulgaria and Norway are not shown due to this being missing or uncertain.
[8] In this figure, Bulgaria has been excluded for inconsistencies in data availability and elaboration.

Figure 8: Perceived quality of educational system and mean scores in PISA



5.3. PERFORMANCE ANALYSIS

In this second part of the chapter, we shift from descriptive statistics, as an approach based on single indicators, towards performance analysis, as a multidimensional approach that tries to observe how the various indicators relate each other. Educational performance is analysed along two dimensions. First, we assess the effectiveness of education systems by benchmarking educational systems with respect to their outputs. To this extent, outputs are aggregated in a single index, which can represent the education produced by a specific system in a simple and comprehensive way, while considering the complexity of the various output indicators at the same time. Second, we add the educational resources to the analysis when measuring the educational efficiency. Both types of indicators represent benchmarking tools well rooted in the efficiency literature. They account for the fact that countries have heterogeneous preferences and priorities, which are reflected in different decisions about the inputs used and outputs produced. We start by outlying in an intuitive way the methodology used to obtain both indicators. Next, we discuss the data, followed by a discussion of the results.

5.3.1. Methodology

In the earlier section, the benchmarking of countries took place at one dimension at the time. There are, however, two issues with a one-dimensional analysis. First, although this type of benchmarking allows us to overview the performance of countries in one specific variable, it ignores that countries might have heterogenous preferences and diverging priorities, which lead to different political decisions (D'Inverno & De Witte, 2020). For example, while some countries might emphasise the universal participation of children in early childhood and care, other countries might set the priority to the most disadvantaged families. A one-dimensional benchmarking would ignore this trade-off that countries face. As a second issue, a one-dimensional analysis ignores the fact that some countries spend considerably more resources on one policy dimension than others. This might be due to different policy priorities, or due to historical, social or economic reasons. Nevertheless, we should account for these differences in inputs when assessing the outputs (D'Inverno et al., 2020).

The data envelopment analysis (DEA) model is a technique to account for these two issues. With respect to the first issue, the DEA model is a mathematical technique that handles multiple inputs and outputs, and aggregates them in the most favourable way. With respect to the second issue, the DEA model provides a measure of efficiency defined as the ratio between the aggregated outputs and the aggregated inputs.

The efficiency score is computed by comparing the evaluated observation to the best observations in the class, i.e. the best practice observations. When the efficiency score is equal to 1, the evaluated observation is deemed efficient and a best practice. For a best practice, it is impossible to achieve more outputs given the used inputs, or to use fewer inputs given the produced outputs. If the efficiency score is less than 1, the evaluated observation is deemed inefficient. Input inefficiency assesses how much the resources could be reduced to achieve the given level of outputs, if the evaluated observation worked in a similar way to the best practice observation. Output inefficiency measures how much the outputs could be increased for a given level of inputs, if the evaluated observation works as efficiently as the best practice observation. For each observation found inefficient, the performance improvement can be driven by looking at relevant peers – that is, units that are dealing with similar levels of inputs or outputs but in a more efficient way. In this way it is possible to identify target levels of inputs to be used as well as target levels of outputs to be achieved, for the inefficient unit to improve its performance. To this extent, the potential reduction of inputs or the potential increase of outputs are computed such that the observation becomes more efficient.

DEA is the most popular technique for efficiency analysis (De Witte & López-Torres, 2017). It has been developed by Charnes et al. (1978), and has nowadays multiple extensions such as accounting for outlying observations, environmental variables and returns to scale (e.g. Thanassoulis et al., 2016). Alternative approaches are econometric techniques such as the stochastic frontier analysis (SFA) model (Aigner et al., 1977). Given the limited number of observations in the present analysis, we limit the analysis to the traditional DEA model. This model does not impose any specific relationship between inputs and outputs, and works under the assumption of constant returns to scale.

Following the same rationale, the benefit-of-the-doubt (BoD) approach is a commonly used aggregating technique to construct composite indicators and, accordingly, to measure effectiveness. The BoD approach is inspired by DEA and labelled as such after Melyn and Moesen (1991). Similarly to DEA, it aggregates multiple outputs in the most

favourable way, to give more emphasis on the indicators where the evaluated observation performs relatively better compared to the other units (Cherchye et al., 2007). The composite indicator score ranges between 0 and 1, where 1 denotes that the evaluated observation is a best practice. A score lower than 1 suggests that, even if evaluated in the most favourable way, the unit under analysis is underperforming compared to the other units and there is room to improve the performance indicators by looking at the detected best practices.

In the present analysis, we construct the efficiency and the effectiveness score by comparing the evaluated observations year by year. An advantage of this approach is its intuitiveness, but also allows a comparison of evaluated observations with the best practices, providing quantitative information that can be useful for supporting decision-making. The analyses are proposed year by year – in other words, it accounts for year-specific variation that might affect the outputs (e.g. economic cycle, inflation). Only a few studies provide cross-country comparisons and fewer include all educational stages (Dominguez-Gil et al., 2021; Stumbrienė et al., 2020; Stumbrienė et al., 2022). More technical details on the DEA model and the BoD approach are provided in the appendix.

5.3.2. Data

In the construction of a performance indicator, the selection of inputs and outputs is an important step. More than the specifics of the model (e.g. accounting or not accounting for outliers), they determine the findings. On the one hand, the input and outputs have been determined based on the existing literature. A widely cited literature review on efficiency in education observed that multiple papers draw conclusions based on a similar set of inputs and outputs (De Witte & López-Torres, 2017). In the present paper, we follow the main variables detected in this review. On the other hand, as the present analysis covers an international comparison, we are constrained by the data that are available for multiple countries. In case data were missing for specific years, we imputed them by a linear extrapolation of the available years.

We focus the analysis on a set of well-comparable countries over the period 2015–2018. The *ex ante* comparability of countries is important to avoid unnatural best practices. For example, if we added developing countries to the analysis, they might determine the best practice frontier as they spend little of their resources on education. As the education production frontier is characterised by decreasing returns to scale (i.e. reaching higher quality education is increasingly more expensive), a misleading comparison could arise.

In the analysis, we distinguish the four key stages of education systems:

- early childhood education (ISCED 0);
- primary education (ISCED 1);
- lower and upper secondary education (ISCED 2–3);
- tertiary education (ISCED 5–8).

For each level, we consider a set of inputs and outputs that signal the aims of the level. As indicated by Titl and De Witte (2021), it is important to add a quality dimension to the efficiency scores. Without a quality indicator (e.g. test scores, attendance), the efficiency score ignores that students should not only 'go through' an education institution but should also acquire knowledge, skills and attitudes. Education economists have been shown in that perspective, since Hanushek (1986) that it is not the resources and time spent as such that matters for efficient education production, but how the resources and time have been used. The quality indicator accounts for this insight. For ISCED 0, we use the participation in early childhood education as the quantity indicator, and the percentage of low socio-economic status (SES) students that attended early childhood education as a quality indicator. Reaching the latter group of disadvantaged students is considerably more difficult than for the more advantaged student populations. For ISCED 1 (i.e. primary education), we include comparable test scores at the age of 10, in particular the mathematics knowledge and skills as measured in the international TIMSS assessment and the reading comprehension as measured in the international PIRLS assessment (http://timssandpirls.bc.edu). The latter indicator is important as research has been showing that reading comprehension is an important foundation for later academic performance. For ISCED 2 and 3 (i.e. lower and upper secondary education), we use the completion rates as a quantity indicator, and mathematics test scores at the age of 15, as measured in the international PISA assessment. We caution the reader that some educational systems might have variation between lower and upper secondary education that cannot be further explored due to lack of more refined data (e.g. the Netherlands). Finally, for ISCED 5–8 (i.e. higher education), we use graduation rates as a quantity output indicator, while immediate participation in the labour market is a quality indicator.

The *input* indicator is represented by the financial and human resources that are invested in the education system. In particular, we include the *Government expenditure as a percentage of GDP* and the *student/teacher ratio* at each key stage.
In summary, we have the following set of input and output indicators:

Table 5: Inputs and outputs adopted in the efficiency analysis.

Stage	Input	Output	Source
ISCED 0	Government expenditure as % of GDP	Participation rate in early childhood education	World Bank
	Student/Teacher ratio	Percentage of (disadvantaged) 15-year-old pupils who attended early childhood education for "two years and more"	OECD
ISCED 1	Government expenditure as % of GDP	TIMSS math	IEA
	Student/Teacher ratio	PIRLS reading	IEA
ISCED 2-3	Government expenditure as % of GDP	Completion rate	World Bank
	Student/Teacher ratio	PISA math	OECD
ISCED 5-8	Government expenditure as % of GDP	Graduates from tertiary education	World Bank
	Student/Teacher ratio	Employment rate	OECD

5.3.3. Empirical results

In the following, the empirical results are presented by educational stages. First, educational systems are benchmarked with respect to their outputs and accordingly, their effectiveness is assessed. Second, when resources are also considered, the efficiency is measured. We remind the reader that the effectiveness and efficiency scores range between 0 and 1, where 1 denotes that the country educational system under evaluation is detected as best practice. For both indicators, a table shows the scores computed for 2015 to 2018, along with a solid red or green triangle denoting the greatest performance decrease or increase reported across the countries between 2015 and 2018. In addition, a box plot is provided for both indicators reporting the countries sorted by their median values, along with their minimum and maximum values from 2015 to 2018. Finally, clusters of educational systems are identified exploring both the effectiveness and the efficiency dimensions. Median values are considered to split the country educational systems into four quadrants.

5.3.3.1. Findings for early childhood education (ISCED 0)

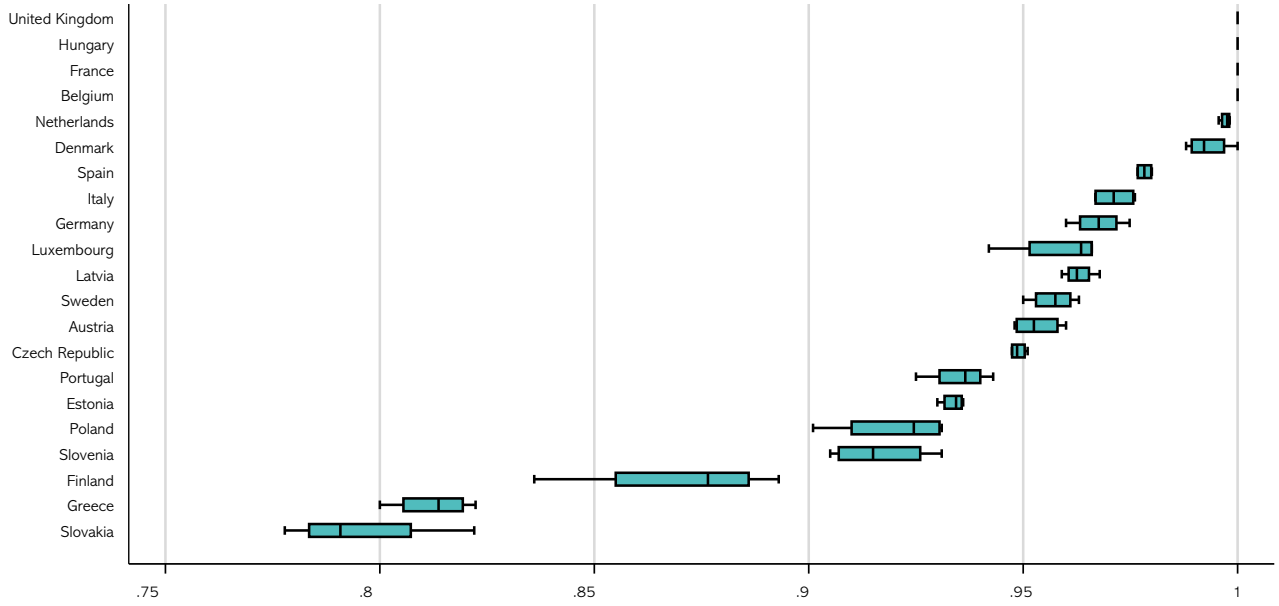
At the level of early child education, we measure the performance of 21 countries. The estimates of effectiveness display an average value of 0.946 suggesting that, overall, the countries are performing relatively well in terms of participation rate in early childhood and share of disadvantaged 15-year-old pupils who attended early childhood (Table 6a and Figure 9a). On average, countries could increase their early childhood outputs by 5.4%, if they could perform as well as the best practices. The United Kingdom, Hungary, France, Belgium and the Netherlands are the most effective systems for early childhood education. In any evaluated year, these countries are able to reach the highest outputs. The opposite holds for the Slovakia, Greece and Finland. Although there are some differences in effectiveness depending on the evaluated year, in the country with the lowest effectiveness score, the Slovakia, the outputs could increase by 21% in 2015 and 18% in 2018. Few considerations can be made for the case of Finland (for more details see Stumbrienė et al., 2022). Starting from 1990, the Finnish system has foreseen the option of either a place in day care or a child home care allowance. Therefore, the early childhood participation is subject to parents' choice, and this explains the low numbers. In Table 1a, we highlight how the effectiveness scores evolve over time. We observe that Poland, the Slovakia and Finland are the educational systems that display the greatest improvement over time, while the opposite holds for Greece, Italy and Germany.
In the Netherlands, the effectiveness of the early childhood provision seems stable at a very high level.

Table 6a: EU countries' effectiveness scores (2015–2018) – ISCED 0

Region	Country	2015	2016	2017	2018	2018 vs 2015
Central and Eastern Europe	Czech Republic	0,9474	0,9475	0,9510	0,9497	△
Central and Eastern Europe	Estonia	0,9300	0,9354	0,9360	0,9333	△
Central and Eastern Europe	Hungary	1,0000	1,0000	1,0000	1,0000	
Central and Eastern Europe	Latvia	0,9590	0,9628	0,9678	0,9622	△
Central and Eastern Europe	Poland	0,9010	0,9310	0,9190	0,9300	▲
Central and Eastern Europe	Slovakia	0,7924	0,7778	0,7892	0,8220	▲
Central and Eastern Europe	Slovenia	0,9050	0,9090	0,9210	0,9310	
Northern Europe	Denmark	0,9937	0,9906	0,9880	1,0000	△
Northern Europe	Finland	0,8360	0,8740	0,8790	0,8930	▲
Northern Europe	Sweden	0,9500	0,9560	0,9630	0,9590	△
Southern Europe	Greece	0,8164	0,8110	0,8223	0,8000	▼
Southern Europe	Italy	0,9760	0,9753	0,9669	0,9668	▼
Southern Europe	Portugal	0,9360	0,9250	0,9430	0,9370	△
Southern Europe	Spain	0,9797	0,9767	0,9768	0,9800	
Western Europe	Austria	0,9480	0,9490	0,9560	0,9600	△
Western Europe	Belgium	1,0000	1,0000	1,0000	1,0000	
Western Europe	France	1,0000	1,0000	1,0000	1,0000	
Western Europe	Germany	0,9748	0,9687	0,9665	0,9600	▼
Western Europe	Luxembourg	0,9660	0,9420	0,9660	0,9610	▽
Western Europe	Netherlands	0,9982	0,9980	0,9972	0,9956	▽
Western Europe	United Kingdom	1,0000	1,0000	1,0000	1,0000	
	EU Mean	**0,9433**	**0,9443**	**0,9480**	**0,9496**	**0,9463**

▲ *largest increase* | ▼ *largest decrease*

Figure 9a: Distribution of EU countries' effectiveness scores (2015–2018) – ISCED 0



Next, we add the resources spent on the analysis. These estimates of efficiency are presented in Figure 9b and Table 6b. They display an average value of 0.583, suggesting that there is some room for improvement in the management of resources by an average reduction of 42% (Table 6b and Figure 9b). Following the reasoning introduced above, this evidence can be partly explained by the presence of decreasing returns to scale (i.e. reaching higher quality education is increasingly more expensive). The United Kingdom, Greece and the Netherlands report the highest efficiency scores in the evaluated time frame. The efficiency analysis detects the United Kingdom in any time period as a best practice country, suggesting that the resources spent deliver the highest outcomes. The opposite holds for Sweden, Finland and Poland, which should be able to achieve more value for money. In particular, for the given resources, Poland can

increase its early childhood outputs by 67% if it could work as efficiently as the best practices. For the Netherlands, the efficiency of early childhood education ranges between 0.837 in 2016 and a benchmark position (i.e. 1) in 2018. Overall, from Table 1b, we observe a positive trend in the efficiency of early childhood education provision. Considering the efficiency evolution over time, we observe that Slovenia, Denmark, Greece and the Netherlands are the educational systems that display the greatest improvement over time, while the opposite holds for the Czech Republic, Poland, Belgium and France.

Table 6b: EU Countries' efficiency scores (2015–2018) – ISCED 0

Region	Country	2015	2016	2017	2018	2018 vs 2015
Central and Eastern Europe	Czech Republic	0,7547	0,5690	0,5901	0,5892	▼
Central and Eastern Europe	Estonia	0,6983	0,7116	0,7781	0,7961	▲
Central and Eastern Europe	Hungary	0,6679	0,4983	0,4706	0,5438	▽
Central and Eastern Europe	Latvia	0,5318	0,3805	0,3734	0,3880	▽
Central and Eastern Europe	Poland	0,5097	0,3535	0,3054	0,3300	▼
Central and Eastern Europe	Slovakia	0,5625	0,4483	0,4744	0,4764	▽
Central and Eastern Europe	Slovenia	0,3780	0,3928	0,4338	0,4628	▲
Northern Europe	Denmark	0,3129	0,3084	0,3752	0,4209	▲
Northern Europe	Finland	0,4234	0,3180	0,3032	0,3445	▽
Northern Europe	Sweden	0,2844	0,2049	0,2381	0,2655	▽
Southern Europe	Greece	0,8879	0,8784	1,0000	1,0000	▲
Southern Europe	Italy	0,7006	0,6359	0,6632	0,6512	▽
Southern Europe	Portugal	0,6413	0,4574	0,5267	0,5827	▽
Southern Europe	Spain	0,7574	0,5948	0,6848	0,7363	▽
Western Europe	Austria	0,5992	0,5230	0,5744	0,5952	▽
Western Europe	Belgium	0,7251	0,5390	0,4802	0,5257	▼
Western Europe	France	1,0000	0,8290	0,4839	0,4985	▼
Western Europe	Germany	0,5779	0,5883	0,5975	0,5644	▽
Western Europe	Luxembourg	0,4628	0,4208	0,5800	0,4921	△
Western Europe	Netherlands	0,9107	0,8372	0,9502	1,0000	▲
Western Europe	United Kingdom	1,0000	1,0000	1,0000	1,0000	
	EU Mean	**0,9433**	**0,9443**	**0,9480**	**0,9496**	**0,9463**

▲ *largest increase* | ▼ *largest decrease*

Figure 9b: Distribution of EU Countries' efficiency scores (2015–2018) – ISCED 0

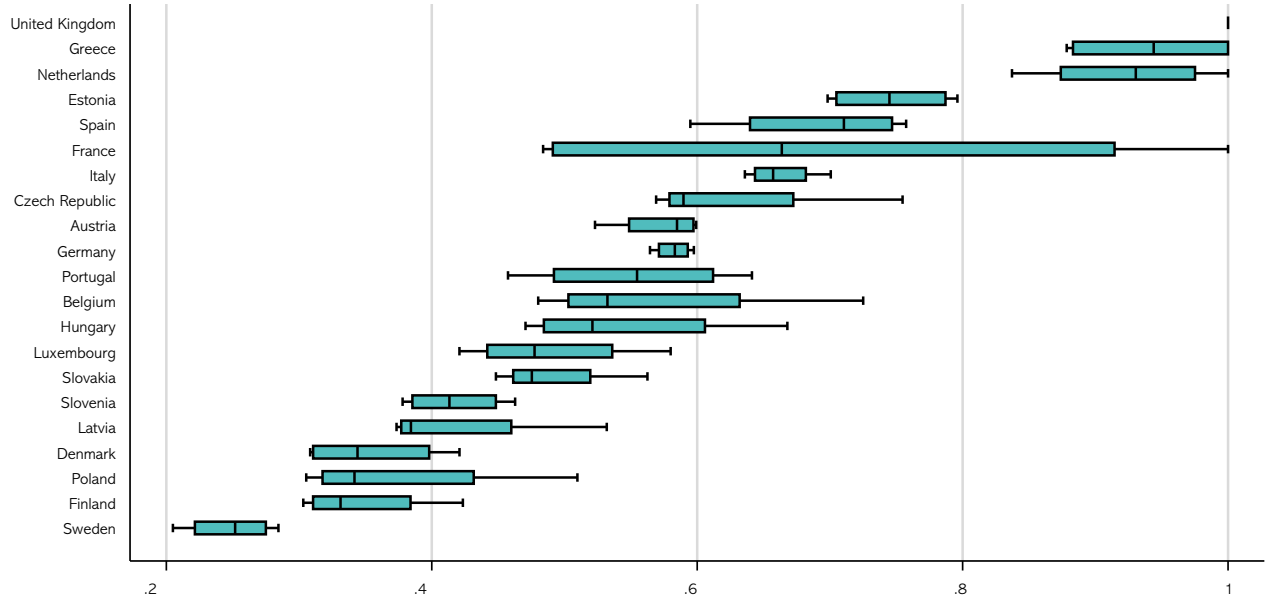
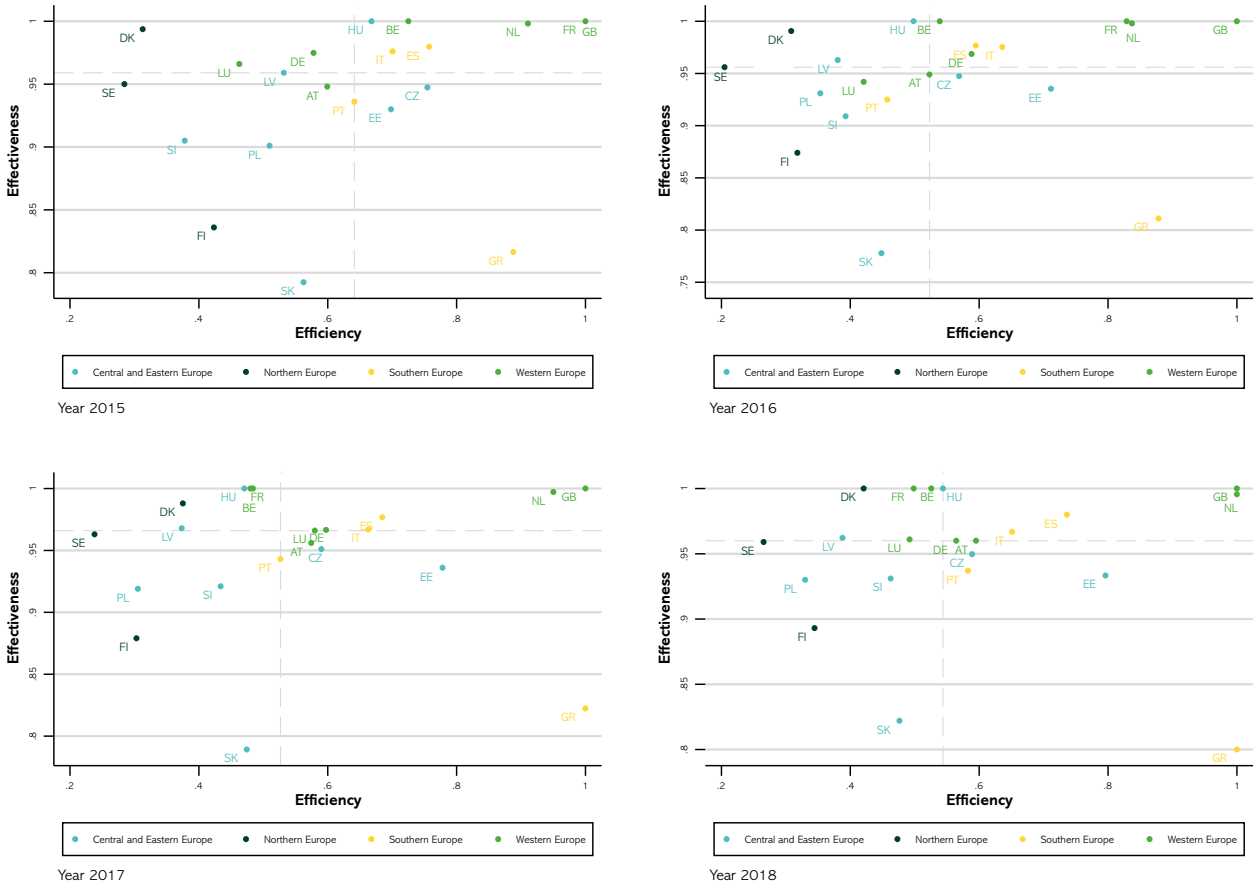


Figure 9c shows the distribution of country educational systems by year and displayed by region. Based on the median values, we distinguish four quadrants. We observe that most of the Western European countries are positioned above the median level of effectiveness. Concerning the level of efficiency, Southern European countries are usually above the medial level, as they are characterised by low levels of investment, while the opposite holds for Northern European countries, usually below the median level. Specifically, the United Kingdom, the Netherlands and Spain are the countries found to be the most effective and efficient over time, while the opposite holds for Poland, Slovenia, the Slovakia and Finland.

Figure 9c: EU Countries' effectiveness vs efficiency (2015–2018) – ISCED 0



5.3.3.2. Findings for primary education (ISCED 1)

At the level of primary education, we measure the performance of 22 countries for which we have comparable data.

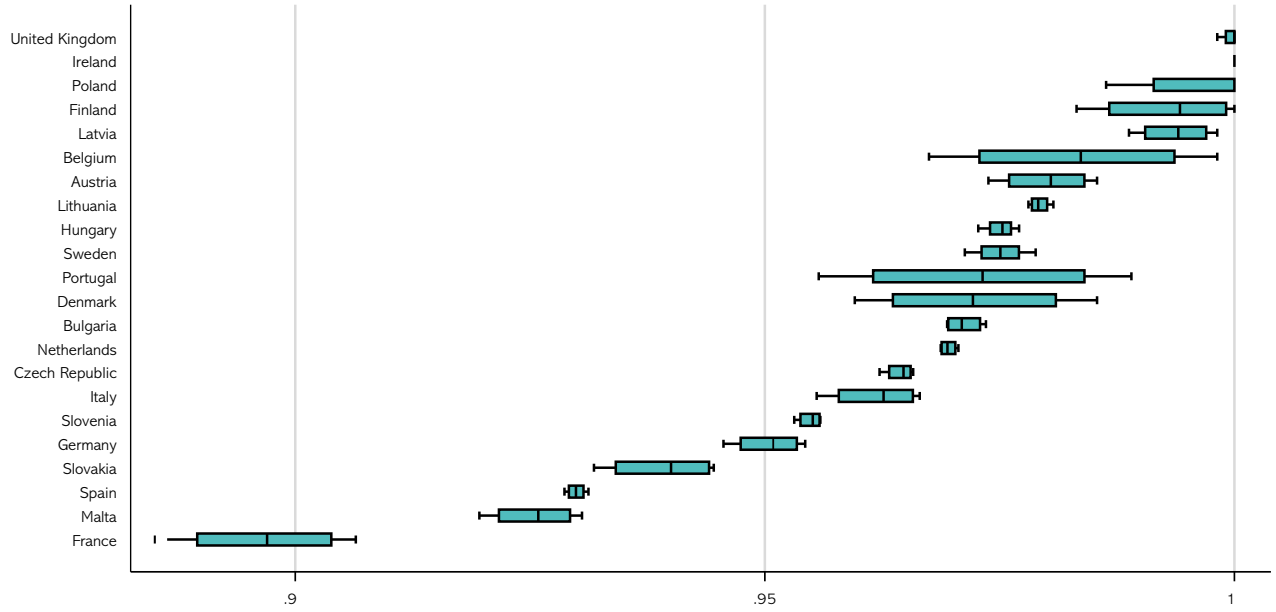
In Table 7a and Figure 10a we provide the estimates of the effectiveness analysis, in which we solely focus on the primary education outcomes. The estimates of effectiveness display an average value of 0.967, suggesting that overall the countries are performing quite well in terms of mathematics and reading test scores. On average, a country could increase its test scores by 3.3% if it performed as effectively as the best practices. However, this mean hides significant heterogeneity. The United Kingdom, Ireland, Poland and Finland are the most effective systems for primary education. These countries were showing best practice for at least one year. The opposite holds for France, Malta and Spain, which could increase their primary education outcomes by more than 10% (in 2018 for France). Considering the effectiveness evolution over time (i.e. Table 7a), we observe that Lithuania, Poland and the United Kingdom are the educational systems that display the greatest improvement over time, while the opposite holds for Denmark, Belgium and Portugal. The Netherlands could increase its primary education outputs by 3.2% if it worked as effectively as the best practice countries.

Table 7a: EU Countries' effectiveness scores (2015–2018) – ISCED 1

Region	Country	2015	2016	2017	2018	2018 vs 2015
Central and Eastern Europe	Bulgaria	0,9694	0,9735	0,9723	0,9696	△
Central and Eastern Europe	Czech Republic	0,9653	0,9658	0,9643	0,9622	▽
Central and Eastern Europe	Hungary	0,9753	0,9771	0,9752	0,9727	▽
Central and Eastern Europe	Latvia	0,9982	0,9958	0,9922	0,9888	▽
Central and Eastern Europe	Lithuania	0,9781	0,9788	0,9794	0,9807	▲
Central and Eastern Europe	Poland	0,9863	0,9965	1,0000	1,0000	▲
Central and Eastern Europe	Slovakia	0,9446	0,9436	0,9365	0,9318	▽
Central and Eastern Europe	Slovenia	0,9557	0,9559	0,9545	0,9531	▽
Northern Europe	Denmark	0,9854	0,9766	0,9677	0,9596	▼
Northern Europe	Finland	1,0000	0,9982	0,9902	0,9832	▽
Northern Europe	Sweden	0,9753	0,9788	0,9749	0,9713	▽
Southern Europe	Italy	0,9650	0,9665	0,9602	0,9555	▽
Southern Europe	Malta	0,9305	0,9280	0,9238	0,9196	▽
Southern Europe	Portugal	0,9890	0,9790	0,9673	0,9557	▼
Southern Europe	Spain	0,9296	0,9312	0,9302	0,9287	▽
Western Europe	Austria	0,9854	0,9827	0,9782	0,9738	▽
Western Europe	Belgium	0,9982	0,9891	0,9782	0,9675	▼
Western Europe	France	0,9064	0,9012	0,8928	0,8864	▽
Western Europe	Germany	0,9543	0,9525	0,9493	0,9456	▽
Western Europe	Ireland	1,0000	1,0000	1,0000	1,0000	
Western Europe	Netherlands	0,9689	0,9706	0,9700	0,9687	▽
Western Europe	United Kingdom	0,9982	1,0000	1,0000	1,0000	▲
	EU Mean	0,9709	0,9701	0,9662	0,9625	0,9674

▲ *largest increase* | ▼ *largest decrease*

Figure 10a: Distribution of EU Countries' effectiveness scores (2015–2018) – ISCED 1



Next, we add the investments to the education production function. The estimates of efficiency display an average value of 0.780, suggesting that there is a room for improvement in the management of resources by an average reduction of 22% (Table 7b and Figure 2b). Ireland, Germany, the Czech Republic and Lithuania report the highest efficiency score. The opposite holds for Latvia, Belgium, Poland and Denmark. It is interesting to look at Belgium and Denmark, which are countries with a large education budget that has decreasing primary education outcomes. Consequently, for their current education budget, they could increase their primary education test scores by 40%

if they worked as efficiently as the best practices. Considering the efficiency evolution over time, we observe that Hungary, Latvia and Malta are the educational systems that display the greatest improvement over time, while the opposite holds for Portugal, Slovenia and France. As higher quality education is increasingly more expensive, the Netherlands reports a quite low efficiency score compared to other countries. For its current investments, it would be able to increase primary education outcomes by 28% if it produced as efficiently as the best practices.

Table 7b: EU Countries' efficiency scores (2015–2018) – ISCED 1

Region	Country	2015	2016	2017	2018	2018 vs 2015
Central and Eastern Europe	Bulgaria	0,9582	0,9515	0,9647	0,9466	▽
Central and Eastern Europe	Czech Republic	1,0000	1,0000	1,0000	1,0000	
Central and Eastern Europe	Hungary	0,8849	0,8729	0,9895	1,0000	▲
Central and Eastern Europe	Latvia	0,6108	0,6198	0,6317	0,7096	△
Central and Eastern Europe	Lithuania	0,9705	0,9200	0,9773	1,0000	△
Central and Eastern Europe	Poland	0,5543	0,5625	0,5891	0,5707	△
Central and Eastern Europe	Slovakia	0,8441	0,8299	0,8802	0,9116	△
Central and Eastern Europe	Slovenia	0,8907	0,7261	0,6199	0,6097	▼
Northern Europe	Denmark	0,5721	0,5559	0,5320	0,5074	▽
Northern Europe	Finland	0,7370	0,7323	0,7398	0,7392	△
Northern Europe	Sweden	0,6525	0,6614	0,6279	0,6372	▽
Southern Europe	Italy	0,7277	0,7599	0,7620	0,7429	△
Southern Europe	Malta	0,6902	0,7242	0,7701	0,7926	▲
Southern Europe	Portugal	0,7234	0,6867	0,6496	0,6201	▼
Southern Europe	Spain	0,6759	0,6707	0,6971	0,7374	△
Western Europe	Austria	0,7725	0,7547	0,7691	0,7812	△
Western Europe	Belgium	0,6162	0,6144	0,6034	0,5991	▽
Western Europe	France	0,8992	0,8830	0,8494	0,7928	▼
Western Europe	Germany	1,0000	1,0000	1,0000	1,0000	
Western Europe	Ireland	0,9766	1,0000	1,0000	1,0000	△
Western Europe	Netherlands	0,6391	0,6369	0,6883	0,7192	△
Western Europe	United Kingdom	0,8651	0,8213	0,7991	0,8948	△
	EU Mean	**0,7846**	**0,7720**	**0,7791**	**0,7869**	**0,7807**

▲ *largest increase* | ▼ *largest decrease*

Figure 10b: Distribution of EU Countries' efficiency scores (2015–2018) – ISCED 1

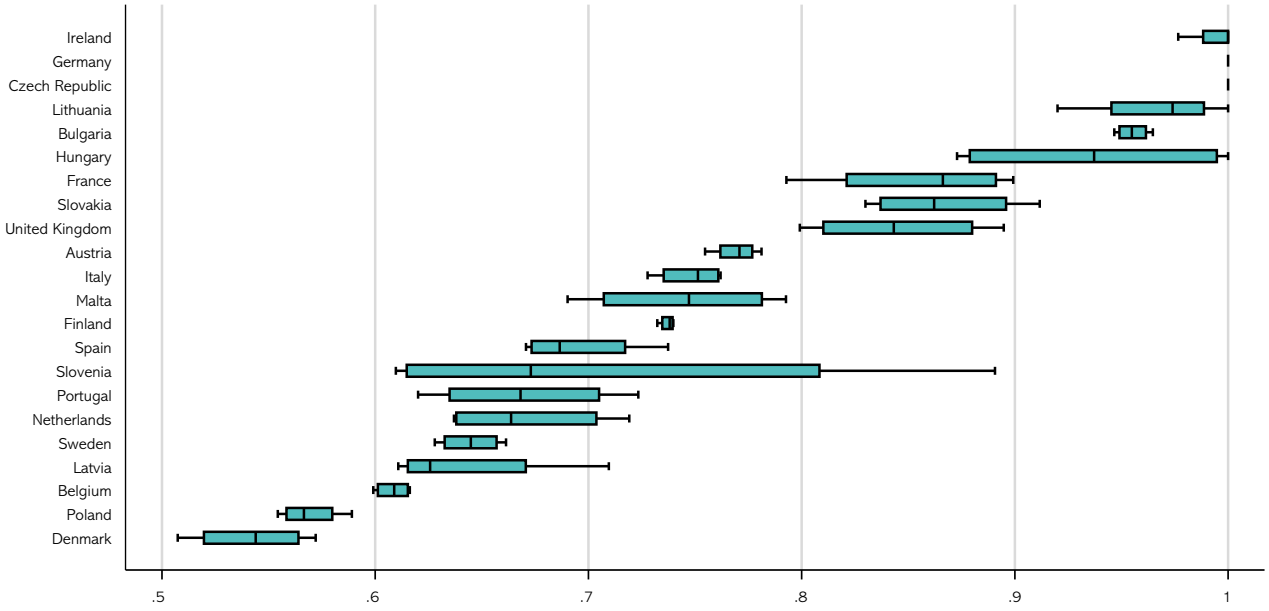
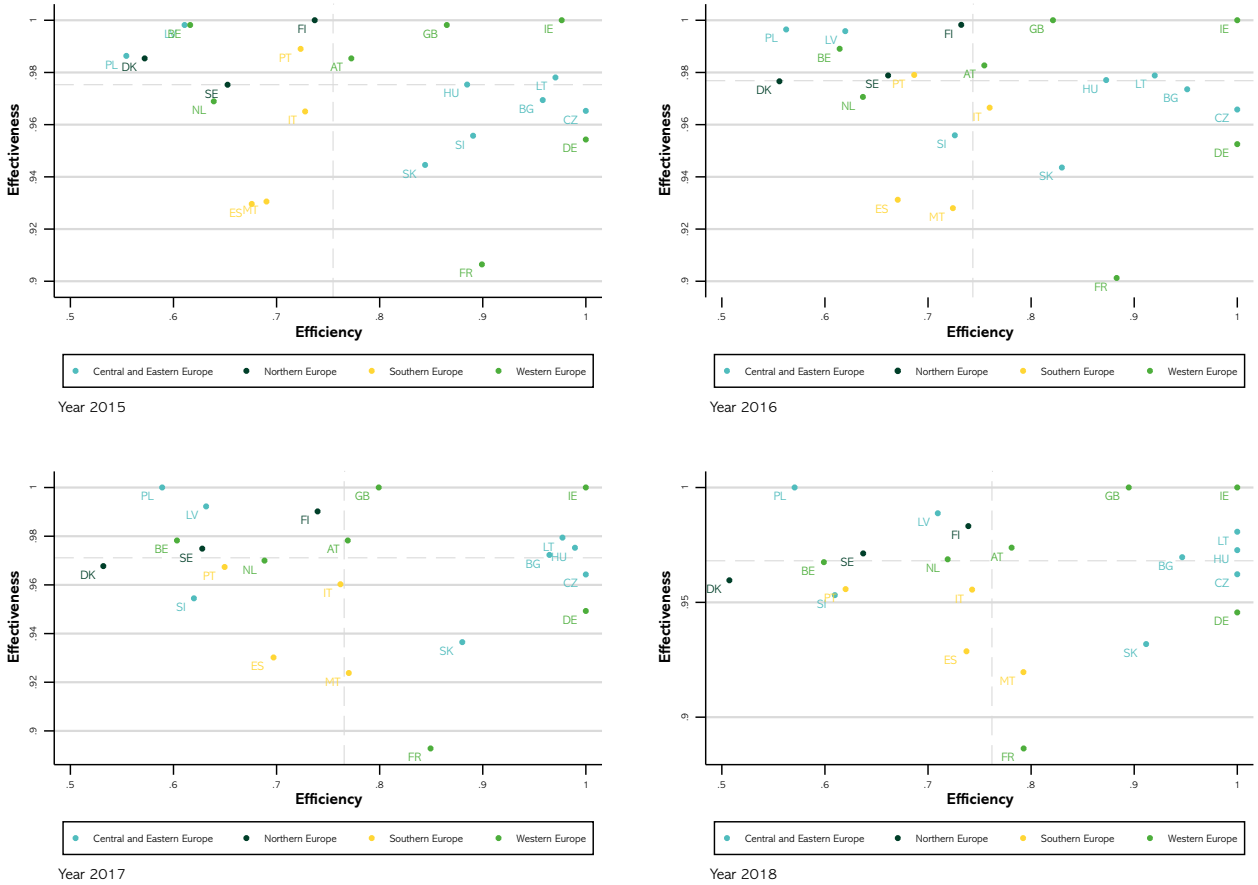


Figure 10c shows the distribution of country educational systems by year and displayed by region. We observe that most of the Southern Europe countries are positioned below the median level of effectiveness. Concerning the level of efficiency, Central and Eastern Europe countries are usually above the medial level, while the opposite holds for Northern and Southern European countries, usually below the median level. Specifically, Austria, Ireland, the United Kingdom and Lithuania are the countries found to be the most effective and efficient over time, while the opposite holds for most of the Southern Europe countries.

Figure 10c: EU countries' effectiveness vs efficiency (2015–2018) – ISCED 1



5.3.3.3. Findings for secondary education (ISCED 2–3)

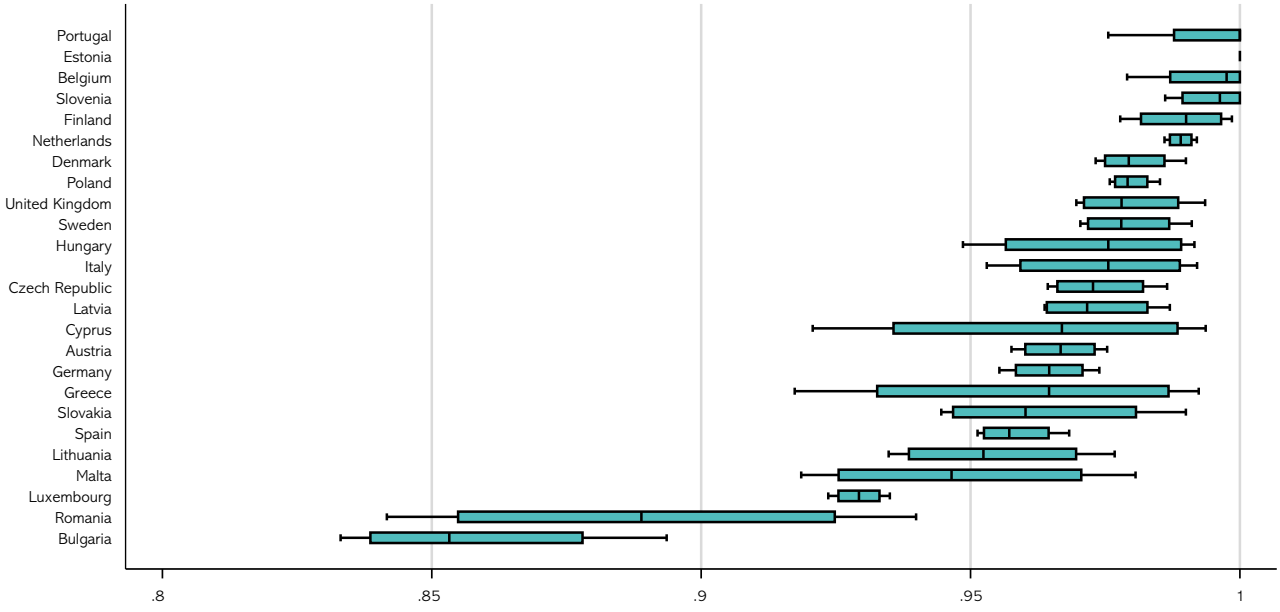
At the level of secondary education, we measure the performance of 25 countries for which we have comparable data. The estimates of effectiveness display an average value of 0.965, suggesting that overall the countries are performing quite well in terms of mathematics test scores and completion rate (Table 8a and Figure 11a). Portugal, Estonia, Belgium and Slovenia are the most effective systems for secondary education. These countries are, at least in one time period, showing best practice. The opposite holds for Romania, Bulgaria and Luxembourg. In Bulgaria, the secondary education outcomes could improve by 17% if they educated as effectively as the best practice countries. Considering the effectiveness evolution over time, we observe that Belgium, Portugal and Poland are the educational systems that display the greatest improvement over time, while the opposite holds for Romania, Cyprus and Greece. The Netherlands could increase its secondary education outputs by 1% if it worked as effectively as the best practice countries.

Table 8a: EU countries' effectiveness scores (2015–2018) – ISCED 2–3

Region	Country	2015	2016	2017	2018	2018 vs 2015
Central and Eastern Europe	Bulgaria	0,8936	0,8624	0,8441	0,8331	▽
Central and Eastern Europe	Czech Republic	0,9865	0,9776	0,9679	0,9643	▽
Central and Eastern Europe	Estonia	1,0000	1,0000	1,0000	1,0000	
Central and Eastern Europe	Hungary	0,9916	0,9866	0,9645	0,9486	▽
Central and Eastern Europe	Latvia	0,9870	0,9787	0,9646	0,9637	▽
Central and Eastern Europe	Lithuania	0,9768	0,9624	0,9423	0,9348	▽
Central and Eastern Europe	Poland	0,9778	0,9758	0,9805	0,9852	▲
Central and Eastern Europe	Romania	0,9399	0,9097	0,8681	0,8417	▼
Central and Eastern Europe	Slovakia	0,9900	0,9715	0,9490	0,9446	▽
Central and Eastern Europe	Slovenia	1,0000	1,0000	0,9926	0,9861	▽
Northern Europe	Denmark	0,9900	0,9820	0,9767	0,9732	▽
Northern Europe	Finland	0,9985	0,9945	0,9855	0,9778	▽
Northern Europe	Sweden	0,9911	0,9827	0,9733	0,9704	▽
Southern Europe	Cyprus	0,9936	0,9832	0,9507	0,9207	▼
Southern Europe	Greece	0,9923	0,9812	0,9480	0,9174	▼
Southern Europe	Italy	0,9921	0,9856	0,9655	0,9530	▽
Southern Europe	Malta	0,9806	0,9605	0,9325	0,9186	▽
Southern Europe	Portugal	0,9756	1,0000	1,0000	1,0000	▲
Southern Europe	Spain	0,9537	0,9683	0,9607	0,9513	▽
Western Europe	Austria	0,9754	0,9707	0,9627	0,9576	▽
Western Europe	Belgium	0,9791	0,9951	1,0000	1,0000	▲
Western Europe	Germany	0,9739	0,9677	0,9615	0,9553	▽
Western Europe	Luxembourg	0,9350	0,9312	0,9274	0,9236	▽
Western Europe	Netherlands	0,9860	0,9880	0,9900	0,9920	△
Western Europe	United Kingdom	0,9935	0,9836	0,9725	0,9696	▽
	EU Mean	**0,9781**	**0,9720**	**0,9592**	**0,9513**	**0,9652**

▲ *largest increase* | ▼ *largest decrease*

Figure 11a: Distribution of EU countries' effectiveness scores (2015–2018) – ISCED 2–3



The estimates of efficiency display an average value of 0.876, suggesting that there is a room for improvement in the management of resources by an average reduction of 12% (Table 8b and Figure 3b). The United Kingdom, Romania and Estonia report the highest efficiency score. The opposite holds for Cyprus, Malta and Belgium. In Belgium, the secondary education outcomes could increase by 29% given its spending on education. Considering the efficiency evolution over time, we observe that Latvia, Lithuania, Poland and Greece are the educational systems that display the greatest improvement over time, while the opposite holds for Bulgaria, Sweden, Germany and Luxembourg. The Netherlands is more efficient than the average countries, although it could still increase its secondary education outcomes by 4% if it used its education budget as efficiently as the best practice countries.

Tables 8c–8f present the identified peers and targets for the years 2015–2018. Spain, Estonia, the United Kingdom and Romania represent the most recurrent peers. By looking at these best practices, inefficient countries might potentially reduce the government expenditure as percentage of GDP by 0.22 – 0.30 points and the teacher to student ratio by 0.01–0.02 points. Similarly, they can potentially increase mathematics test scores by 0.01–0.02 points and the completion rate by 0.01–0.03 points. The United Kingdom and Estonia are two educational systems that the Netherlands might consider as a benchmark and to improve their performance at the secondary education level.

Table 8b: EU countries' efficiency scores (2015–2018) – ISCED 2–3

Region	Country	2015	2016	2017	2018	2018 vs 2015
Central and Eastern Europe	Bulgaria	0,9593	0,9046	0,9187	0,8735	▼
Central and Eastern Europe	Czech Republic	0,9977	1,0000	1,0000	0,9646	▽
Central and Eastern Europe	Estonia	1,0000	1,0000	1,0000	0,9905	▽
Central and Eastern Europe	Hungary	0,8698	0,8122	0,8309	0,8766	△
Central and Eastern Europe	Latvia	0,8034	0,8050	0,9144	0,9750	▲
Central and Eastern Europe	Lithuania	0,8546	0,8061	0,9064	0,9568	▲
Central and Eastern Europe	Poland	0,9397	0,9136	0,9499	1,0000	▲
Central and Eastern Europe	Romania	1,0000	1,0000	1,0000	0,9708	▽
Central and Eastern Europe	Slovakia	0,9092	0,8953	0,9056	0,8942	▽
Central and Eastern Europe	Slovenia	0,9288	0,8791	0,8820	0,8664	▽
Northern Europe	Denmark	0,7821	0,7715	0,8121	0,8241	△
Northern Europe	Finland	0,8790	0,8504	0,8580	0,8810	△
Northern Europe	Sweden	0,9631	0,8969	0,8846	0,8471	▼
Southern Europe	Cyprus	0,7495	0,6262	0,6696	0,6775	▽
Southern Europe	Greece	0,9418	0,8958	0,9986	1,0000	▲
Southern Europe	Italy	0,9385	0,8382	0,8533	0,8618	▽
Southern Europe	Malta	0,7002	0,6246	0,6831	0,7371	△
Southern Europe	Portugal	0,8096	0,7615	0,7841	0,7874	▽
Southern Europe	Spain	1,0000	0,9436	0,9764	1,0000	
Western Europe	Austria	0,7856	0,7457	0,7620	0,7479	▽
Western Europe	Belgium	0,7212	0,6830	0,6903	0,7141	▽
Western Europe	Germany	0,9408	0,8962	0,8875	0,8466	▼
Western Europe	Luxembourg	0,8684	0,8074	0,8280	0,7799	▼
Western Europe	Netherlands	1,0000	0,9485	0,9592	0,9626	▽
Western Europe	United Kingdom	1,0000	1,0000	1,0000	1,0000	
	EU Mean	**0,8937**	**0,8522**	**0,8782**	**0,8814**	**0,8764**

▲ *largest increase* | ▼ *largest decrease*

Table 8c: EU countries' targets and peers (2015) – ISCED 2–3

Country	Government expenditure as % of GDP		Teacher/Student ratio		Math test scores		Completion rate		Peers		
	Target	Potential reduction	Target	Potential reduction	Target	Potential increase	Target	Potential increase			
Austria	1,71	0,47	0,08	0,02	496,74	0,00	98,17	0,00	Spain	Estonia	Romania
Belgium	1,94	0,75	0,08	0,03	506,98	0,00	96,52	0,00	Spain	Estonia	Romania
Bulgaria	1,49	0,06	0,07	0,00	441,19	0,00	89,94	0,00	United Kingdom	Estonia	Romania
Cyprus	1,97	0,66	0,07	0,02	484,67	0,11	100,01	0,00	United Kingdom	Romania	
Czech Republic	1,72	0,00	0,08	0,00	492,33	0,00	99,29	0,00	United Kingdom	Estonia	Romania
Germany	1,90	0,12	0,08	0,00	505,97	0,00	95,89	0,05	Spain	Estonia	
Denmark	2,14	0,60	0,07	0,02	511,09	0,00	98,00	0,00	United Kingdom	Estonia	Romania
Spain	1,58	0,00	0,08	0,00	485,84	0,00	95,99	0,00	Spain		
Estonia	1,32	0,00	0,12	0,00	519,53	0,00	98,14	0,00	Estonia		
Finland	2,32	0,32	0,07	0,01	511,08	0,00	100,77	0,01	United Kingdom	Estonia	
United Kingdom	2,28	0,00	0,06	0,00	492,48	0,00	100,00	0,00	United Kingdom		
Greece	1,35	0,08	0,11	0,01	509,02	0,12	99,88	0,00	Estonia	Romania	
Hungary	1,50	0,22	0,08	0,01	476,83	0,00	99,80	0,00	United Kingdom	Estonia	Romania
Italy	1,63	0,11	0,08	0,01	489,73	0,00	99,85	0,00	United Kingdom	Estonia	Romania
Lithuania	1,33	0,23	0,11	0,02	503,57	0,05	98,31	0,00	Estonia	Romania	
Luxembourg	1,39	0,21	0,09	0,01	485,77	0,00	102,61	0,14	Estonia	Romania	
Latvia	1,34	0,33	0,10	0,02	491,07	0,02	99,34	0,00	Estonia	Romania	
Malta	1,37	0,59	0,09	0,04	478,64	0,00	101,57	0,03	Estonia	Romania	
Netherlands	2,19	0,00	0,07	0,00	512,25	0,00	93,02	0,00	Estonia		
Poland	1,39	0,09	0,10	0,01	504,47	0,00	103,23	0,07	Estonia	Romania	
Portugal	1,69	0,40	0,08	0,02	491,63	0,00	98,19	0,00	Spain	Estonia	Romania
Romania	1,28	0,00	0,08	0,00	443,95	0,00	94,60	0,00	Romania		
Slovakia	1,59	0,16	0,08	0,01	475,23	0,00	99,64	0,00	United Kingdom	Estonia	Romania
Slovenia	1,57	0,12	0,09	0,01	509,92	0,00	104,42	0,04	Spain	Romania	
Sweden	1,94	0,07	0,07	0,00	493,92	0,00	99,75	0,00	United Kingdom	Estonia	Romania
EU Mean	**1,68**	**0,22**	**0,08**	**0,01**	**492,56**	**0,01**	**98,68**	**0,01**			

Table 8d: EU countries' targets and peers (2016) – ISCED 2–3

Country	Government expenditure as % of GDP		Teacher/Student ratio		Math test scores		Completion rate		Peers	
	Target	Potential reduction	Target	Potential reduction	Target	Potential increase	Target	Potential increase		
Austria	1,62	0,55	0,08	0,03	497,48	0,00	99,98	0,02	Czech Republic	Romania
Belgium	1,81	0,84	0,07	0,03	507,35	0,00	101,99	0,01	Czech Republic	United Kingdom
Bulgaria	1,40	0,15	0,07	0,01	439,47	0,00	88,96	0,02	Czech Republic	Romania
Cyprus	1,58	0,94	0,08	0,05	484,52	0,10	100,73	0,00	United Kingdom	Romania
Czech Republic	1,62	0,00	0,08	0,00	494,71	0,00	99,25	0,00	Czech Republic	
Germany	1,79	0,21	0,07	0,01	504,00	0,00	101,30	0,12	Czech Republic	United Kingdom
Denmark	1,87	0,55	0,07	0,02	510,52	0,00	102,69	0,06	Czech Republic	United Kingdom
Spain	1,49	0,09	0,08	0,00	484,36	0,00	98,98	0,00	Czech Republic	Romania
Estonia	1,30	0,00	0,11	0,00	520,82	0,00	98,54	0,00	Estonia	
Finland	2,11	0,42	0,06	0,01	509,82	0,00	102,87	0,03	United Kingdom	
United Kingdom	2,05	0,00	0,06	0,00	495,58	0,00	100,00	0,00	United Kingdom	
Greece	1,25	0,15	0,09	0,03	473,78	0,05	100,52	0,00	Romania	
Hungary	1,52	0,35	0,08	0,02	484,22	0,01	101,08	0,00	United Kingdom	Romania
Italy	1,48	0,28	0,08	0,02	488,68	0,00	100,73	0,00	Czech Republic	United Kingdom
Lithuania	1,25	0,30	0,09	0,04	479,32	0,00	98,22	0,00	Estonia	Romania
Luxembourg	1,28	0,31	0,09	0,02	484,99	0,00	102,63	0,14	Estonia	Romania
Latvia	1,27	0,31	0,10	0,03	486,91	0,00	99,91	0,00	Estonia	Romania
Malta	1,32	0,79	0,09	0,05	476,34	0,00	99,95	0,02	Czech Republic	Romania
Netherlands	2,10	0,11	0,07	0,00	514,58	0,00	103,80	0,13	Czech Republic	United Kingdom
Poland	1,33	0,13	0,10	0,01	508,20	0,00	104,94	0,09	Estonia	Romania
Portugal	1,64	0,51	0,08	0,02	493,78	0,00	102,45	0,00	United Kingdom	Romania
Romania	1,16	0,00	0,08	0,00	439,28	0,00	93,20	0,00	Romania	
Slovakia	1,48	0,17	0,08	0,01	478,88	0,00	99,46	0,00	Czech Republic	United Kingdom
Slovenia	1,46	0,20	0,09	0,01	509,58	0,00	106,13	0,05	Czech Republic	Romania
Sweden	1,87	0,22	0,07	0,01	496,74	0,00	99,99	0,00	Czech Republic	United Kingdom
EU Mean	**1,56**	**0,30**	**0,08**	**0,02**	**490,56**	**0,01**	**100,33**	**0,03**		

Table 8e: EU countries' targets and peers (2017) – ISCED 2–3

Country	Government expenditure as % of GDP		Teacher/ Student ratio		Math test scores		Completion rate		Peers		
	Target	Potential reduction	Target	Potential reduction	Target	Potential increase	Target	Potential increase			
Austria	1,61	0,50	0,08	0,03	498,21	0,00	97,11	0,00	Czech Republic	Estonia	United Kingdom
Belgium	1,81	0,81	0,08	0,03	511,81	0,01	104,94	0,00	United Kingdom	Romania	
Bulgaria	1,41	0,12	0,07	0,01	437,76	0,00	85,17	0,00	Estonia	United Kingdom	
Cyprus	1,61	0,80	0,08	0,04	489,48	0,10	101,45	0,00	United Kingdom	Romania	
Czech Republic	1,72	0,00	0,08	0,00	497,09	0,00	99,21	0,00	Czech Republic		
Germany	1,77	0,22	0,07	0,01	502,02	0,00	98,85	0,11	Estonia	United Kingdom	
Denmark	1,72	0,40	0,08	0,02	509,96	0,00	99,81	0,04	Estonia	United Kingdom	
Spain	1,53	0,04	0,08	0,00	485,80	0,01	101,37	0,00	United Kingdom	Romania	
Estonia	1,32	0,00	0,11	0,00	522,12	0,00	98,94	0,00	Estonia		
Finland	2,01	0,33	0,06	0,01	508,56	0,00	101,74	0,02	Estonia	United Kingdom	
United Kingdom	2,01	0,00	0,06	0,00	498,67	0,00	100,00	0,00	United Kingdom		
Greece	1,35	0,00	0,11	0,01	533,83	0,18	101,16	0,00	Estonia		
Hungary	1,45	0,29	0,09	0,02	486,94	0,02	102,36	0,00	United Kingdom	Romania	
Italy	1,52	0,26	0,09	0,01	487,64	0,00	101,61	0,00	Czech Republic	United Kingdom	Romania
Lithuania	1,31	0,13	0,11	0,02	517,84	0,08	98,13	0,00	Estonia		
Luxembourg	1,31	0,27	0,09	0,02	484,20	0,00	92,39	0,04	Estonia	United Kingdom	
Latvia	1,34	0,13	0,11	0,01	530,25	0,08	100,48	0,00	Estonia		
Malta	1,31	0,61	0,10	0,04	487,86	0,03	97,60	0,00	Estonia	Romania	
Netherlands	2,01	0,09	0,07	0,00	516,90	0,00	103,16	0,14	Estonia	United Kingdom	
Poland	1,29	0,07	0,10	0,01	511,92	0,00	97,01	0,02	Estonia		
Portugal	1,75	0,48	0,08	0,02	516,83	0,05	106,71	0,00	United Kingdom	Romania	
Romania	1,24	0,00	0,08	0,00	434,60	0,00	91,80	0,00	Romania		
Slovakia	1,54	0,16	0,08	0,01	482,52	0,00	99,28	0,00	Czech Republic	United Kingdom	Romania
Slovenia	1,45	0,19	0,10	0,01	509,24	0,00	101,95	0,00	Czech Republic	Estonia	Romania
Sweden	1,88	0,24	0,07	0,01	499,56	0,00	99,87	0,00	Czech Republic	Estonia	United Kingdom
EU Mean	**1,57**	**0,25**	**0,08**	**0,01**	**498,46**	**0,02**	**99,28**	**0,01**			

Table 8f: EU countries' targets and peers (2018) – ISCED 2–3

Country	Government expenditure as % of GDP		Teacher/Student ratio		Math test scores		Completion rate		Peers		
	Target	Potential reduction	Target	Potential reduction	Target	Potential increase	Target	Potential increase			
Austria	1,54	0,52	0,08	0,03	498,94	0,00	96,58	0,00	Spain	United Kingdom	Poland
Belgium	1,85	0,74	0,08	0,03	523,47	0,03	109,15	0,00	Spain	United Kingdom	
Bulgaria	1,32	0,19	0,07	0,01	436,04	0,00	82,83	0,01	United Kingdom	Poland	
Cyprus	1,55	0,74	0,08	0,04	475,32	0,05	102,17	0,00	Spain	United Kingdom	
Czech Republic	1,76	0,06	0,07	0,00	499,47	0,00	99,17	0,00	Spain	United Kingdom	Poland
Germany	1,69	0,31	0,07	0,01	500,04	0,00	96,84	0,10	United Kingdom	Poland	
Denmark	1,49	0,32	0,08	0,02	509,40	0,00	96,10	0,01	United Kingdom	Poland	
Spain	1,55	0,00	0,09	0,00	481,39	0,00	104,06	0,00	Spain		
Estonia	1,32	0,01	0,10	0,00	525,19	0,00	99,34	0,00	Greece	Poland	
Finland	1,90	0,26	0,06	0,01	507,30	0,00	100,27	0,00	United Kingdom	Poland	
United Kingdom	1,96	0,00	0,06	0,00	501,77	0,00	100,00	0,00	United Kingdom		
Greece	1,30	0,00	0,12	0,00	451,37	0,00	101,80	0,00	Greece		
Hungary	1,41	0,20	0,10	0,01	549,16	0,14	103,64	0,00	Spain	Poland	
Italy	1,55	0,25	0,09	0,01	486,59	0,00	102,49	0,00	Spain	United Kingdom	Poland
Lithuania	1,28	0,06	0,11	0,02	481,19	0,00	98,04	0,00	Greece	Poland	
Luxembourg	1,23	0,35	0,09	0,02	483,42	0,00	89,23	0,00	United Kingdom	Poland	
Latvia	1,32	0,03	0,11	0,01	496,13	0,00	101,05	0,00	Greece	Poland	
Malta	1,27	0,45	0,10	0,04	483,95	0,03	97,05	0,00	Greece	Poland	
Netherlands	1,90	0,07	0,07	0,00	519,23	0,00	102,14	0,14	United Kingdom	Poland	
Poland	1,27	0,00	0,10	0,00	515,65	0,00	94,73	0,00	Poland		
Portugal	1,81	0,49	0,08	0,02	526,70	0,07	110,97	0,00	Spain	United Kingdom	
Romania	1,29	0,04	0,08	0,00	449,77	0,05	90,40	0,00	Spain	Poland	
Slovakia	1,57	0,19	0,08	0,01	486,16	0,00	99,10	0,00	Spain	United Kingdom	Poland
Slovenia	1,42	0,22	0,10	0,02	533,31	0,05	102,60	0,00	Spain	Poland	
Sweden	1,83	0,33	0,07	0,01	502,39	0,00	99,93	0,00	Spain	United Kingdom	Poland
EU Mean	**1,53**	**0,23**	**0,09**	**0,01**	**496,93**	**0,02**	**99,19**	**0,01**			

Figure 11b: Distribution of EU countries' efficiency scores (2015–2018) – ISCED 2–3

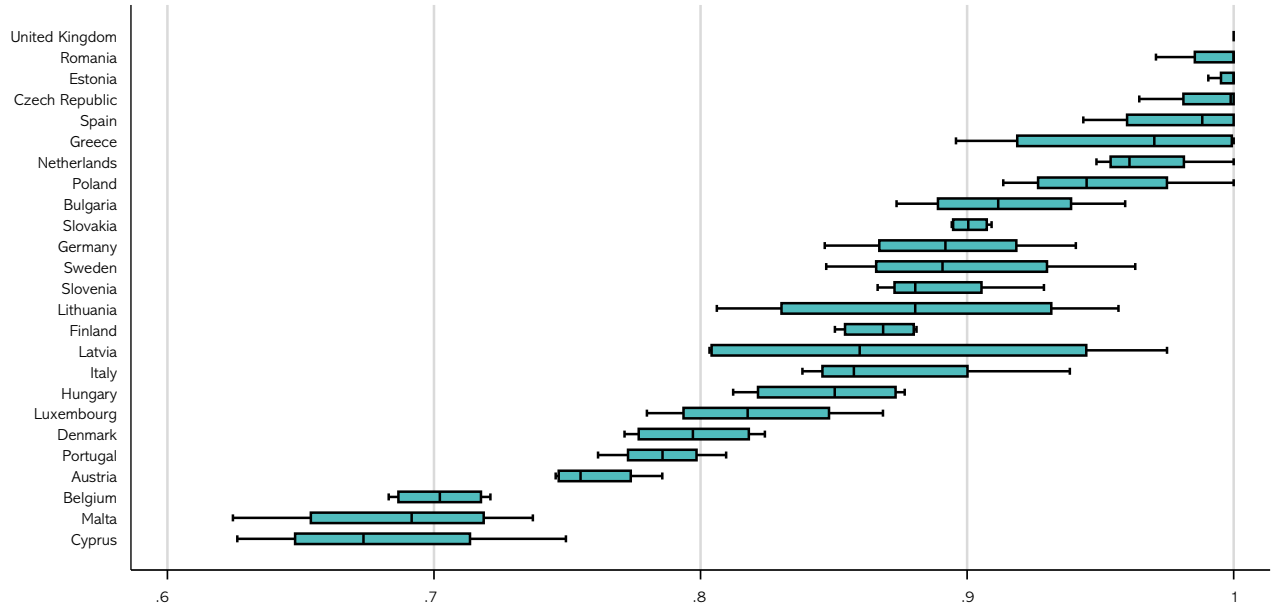
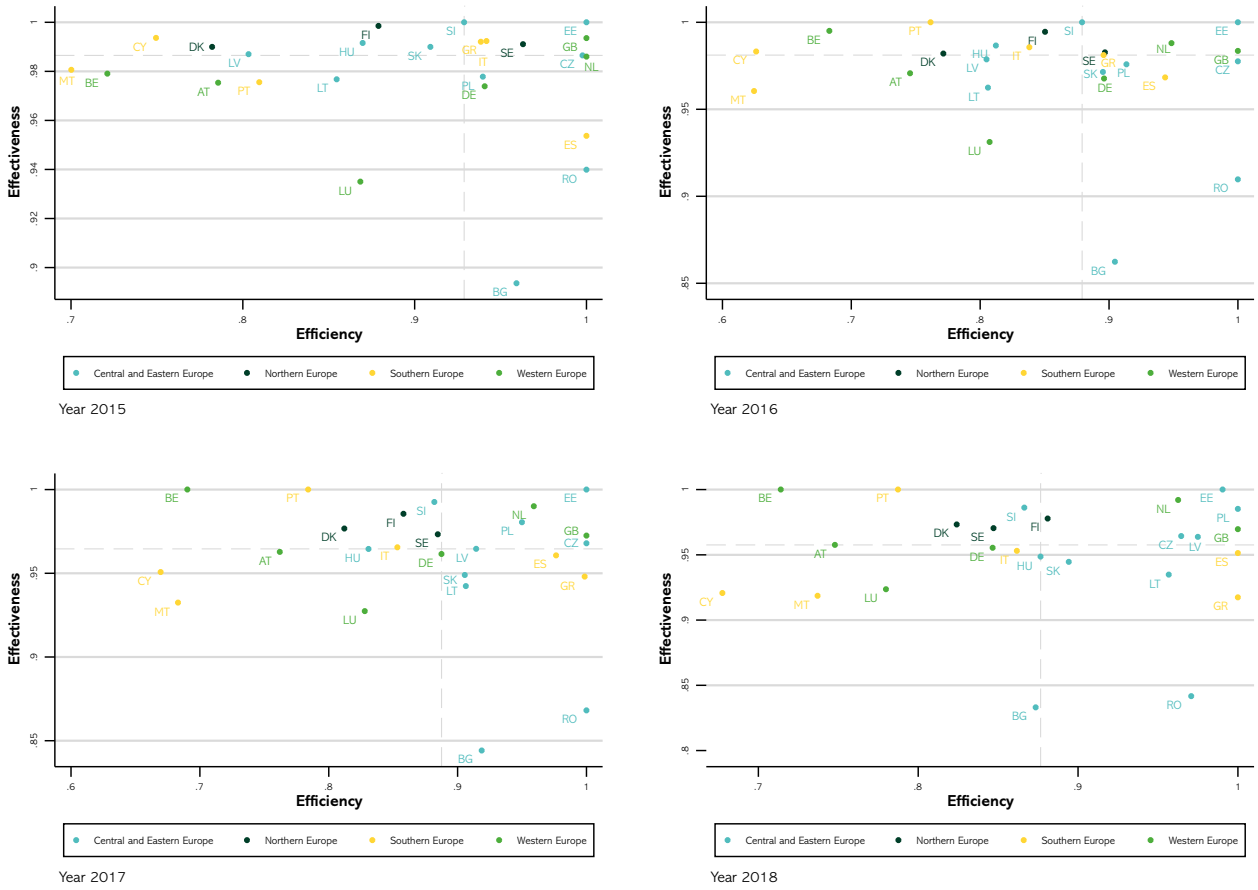


Figure 11c shows the distribution of country educational systems by year and displayed by region. We observe that Northern European countries are positioned above the median level of effectiveness, while most of Southern European countries are positioned below the median level. Concerning the level of efficiency, there are no clear patterns in terms of European region distribution. Estonia, the Netherlands and the United Kingdom are the countries found as the most effective and efficient over time. These findings are in line with previous studies for most of the countries (e.g. Thieme et al., 2012; Bogetoft et al., 2015). Bulgaria and Romania are the furthest countries compared to all the others and, in particular, they are quite efficient but not effective. This profile has been described as a 'deprived educational system', where few investments are provided while more might be required to boost the overall output level (Stumbrienė et al., 2022).

Figure 11c: EU countries' effectiveness vs efficiency (2015–2018) – ISCED 2v3



5.3.3.4. Findings for tertiary education (ISCED 5–8)

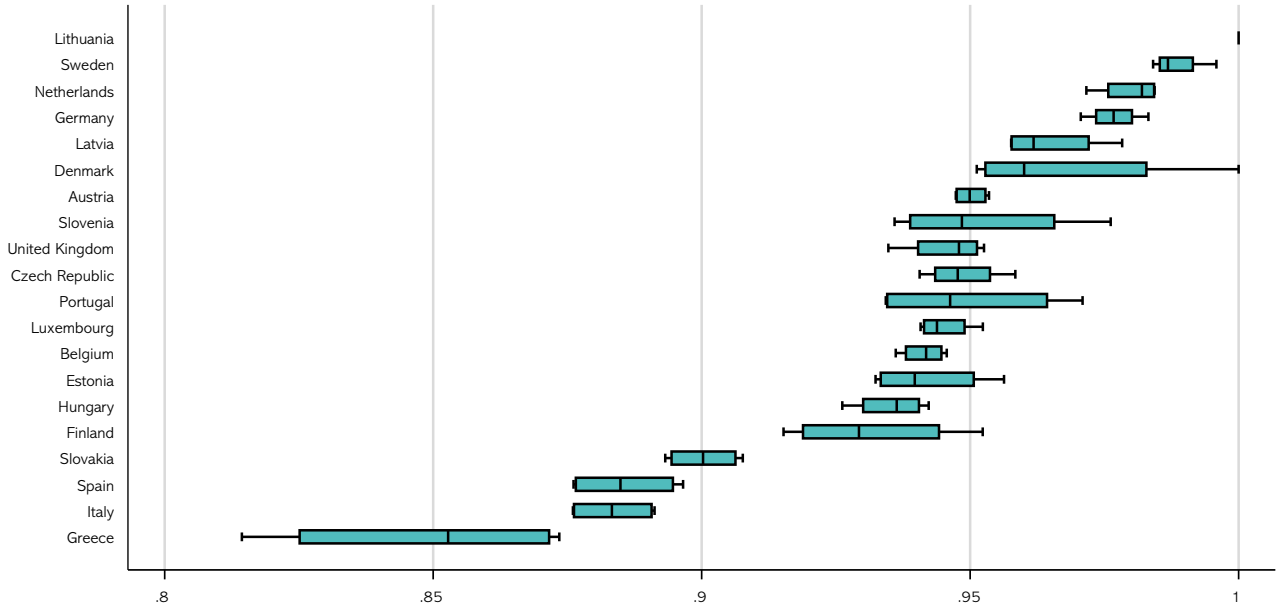
At the level of tertiary education, we measure the performance of 20 countries for which we have comparable data. The estimates of effectiveness display an average value of 0.941, suggesting that overall the countries are performing quite well in terms of graduation rate and employment rate (Table 9a and Figure 12a). Lithuania, Sweden and the Netherlands are the most effective systems for tertiary education. In the Netherlands, the tertiary education outputs could increase by 1.5% if it worked as effectively as the best practices. The opposite holds for Greece, Italy and Spain. In Greece, tertiary education outputs have an upwards potential of about 19%. Considering the effectiveness evolution over time, we observe that Slovenia, Finland and Portugal are the educational systems that display the greatest improvement over time, while the opposite holds for Estonia, Denmark and Greece.

Table 9a: EU countries' effectiveness scores (2015–2018) – ISCED 5–8

Region	Country	2015	2016	2017	2018	2018 vs 2015
Central and Eastern Europe	Czech Republic	0,9464	0,9406	0,9490	0,9584	△
Central and Eastern Europe	Estonia	0,9563	0,9324	0,9450	0,9343	▼
Central and Eastern Europe	Hungary	0,9262	0,9340	0,9387	0,9423	△
Central and Eastern Europe	Latvia	0,9576	0,9578	0,9658	0,9783	△
Central and Eastern Europe	Lithuania	1,0000	1,0000	1,0000	1,0000	
Central and Eastern Europe	Slovakia	0,8956	0,8932	0,9049	0,9077	△
Central and Eastern Europe	Slovenia	0,9418	0,9359	0,9552	0,9762	▲
Northern Europe	Denmark	0,9657	1,0000	0,9544	0,9512	▼
Northern Europe	Finland	0,9225	0,9152	0,9361	0,9523	▲
Northern Europe	Sweden	0,9959	0,9841	0,9871	0,9866	▽
Southern Europe	Greece	0,8359	0,8735	0,8697	0,8144	▼
Southern Europe	Italy	0,8764	0,8760	0,8901	0,8912	△
Southern Europe	Portugal	0,9343	0,9348	0,9577	0,9709	▲
Southern Europe	Spain	0,8761	0,8770	0,8928	0,8965	△
Western Europe	Austria	0,9522	0,9473	0,9535	0,9476	▽
Western Europe	Belgium	0,9437	0,9361	0,9399	0,9456	△
Western Europe	Germany	0,9832	0,9706	0,9771	0,9763	▽
Western Europe	Luxembourg	0,9456	0,9421	0,9524	0,9408	▽
Western Europe	Netherlands	0,9844	0,9716	0,9798	0,9842	
Western Europe	United Kingdom	0,9526	0,9348	0,9500	0,9459	▽
	EU Mean	**0,9396**	**0,9379**	**0,9450**	**0,9450**	**0,9419**

▲ *largest increase* | ▼ *largest decrease*

Figure 12a: Distribution of EU countries' effectiveness scores (2015–2018) – ISCED 5–8



The estimates of efficiency display an average value of 0.687, suggesting that there is room for improvement in the management of resources by an average reduction of 31% (Table 9b and Figure 12b). Luxembourg, Greece and the Czech Republic report the highest efficiency score. The opposite holds for Denmark, Austria and Sweden. Few considerations can be made for the case of Greece (for more details see Stumbrienė et al., 2022).
Due to the economic crisis, Greece had to progressively cut more and more on investments in higher education. At the same time, Greek higher education has experienced an increasing number of enrolments in tertiary education, resulting in stringent pressures on academic institution and staff, leading to overall higher level of estimated efficiency scores.

Considering the efficiency evolution over time, we observe that Latvia, Lithuania and the Slovakia are the educational systems that display the greatest improvement over time, while the opposite holds for Hungary, Slovenia, Belgium and the United Kingdom. As higher quality education is increasingly more expensive, the Netherlands reports a quite low efficiency score compared to other countries.

Table 9b: EU countries' efficiency scores (2015–2018) – ISCED 5–8

Region	Country	2015	2016	2017	2018	2018 vs 2015
Central and Eastern Europe	Czech Republic	1,0000	1,0000	1,0000	0,9413	▽
Central and Eastern Europe	Estonia	0,5578	0,4960	0,5905	0,6856	△
Central and Eastern Europe	Hungary	1,0000	0,8297	0,7919	0,7160	▼
Central and Eastern Europe	Latvia	0,6260	0,8537	0,9112	0,9552	▲
Central and Eastern Europe	Lithuania	0,7666	0,9845	0,9973	1,0000	▲
Central and Eastern Europe	Slovakia	0,5435	0,7761	0,7893	0,7824	▲
Central and Eastern Europe	Slovenia	0,8132	0,7732	0,7075	0,6727	▼
Northern Europe	Denmark	0,3646	0,3283	0,3196	0,3069	▽
Northern Europe	Finland	0,5624	0,5936	0,6050	0,5149	▽
Northern Europe	Sweden	0,4540	0,4277	0,4156	0,3887	▽
Southern Europe	Greece	1,0000	1,0000	1,0000	1,0000	
Southern Europe	Italy	0,8950	0,8656	0,8538	0,7799	▽
Southern Europe	Portugal	0,8077	0,7795	0,7988	0,8102	△
Southern Europe	Spain	0,7068	0,6898	0,6712	0,6211	▽
Western Europe	Austria	0,3968	0,3722	0,3888	0,3813	▽
Western Europe	Belgium	0,5891	0,5341	0,5190	0,4500	▼
Western Europe	Germany	0,5685	0,5295	0,5282	0,5031	▽
Western Europe	Luxembourg	1,0000	1,0000	1,0000	1,0000	
Western Europe	Netherlands	0,5346	0,4496	0,4711	0,4740	▽
Western Europe	United Kingdom	0,6512	0,5475	0,5022	0,4418	▼
	EU Mean	**0,6919**	**0,6915**	**0,6930**	**0,6713**	**0,6869**

▲ *largest increase* | ▼ *largest decrease*

Figure 12b: Distribution of EU countries' efficiency scores (2015–2018) – ISCED 5–8

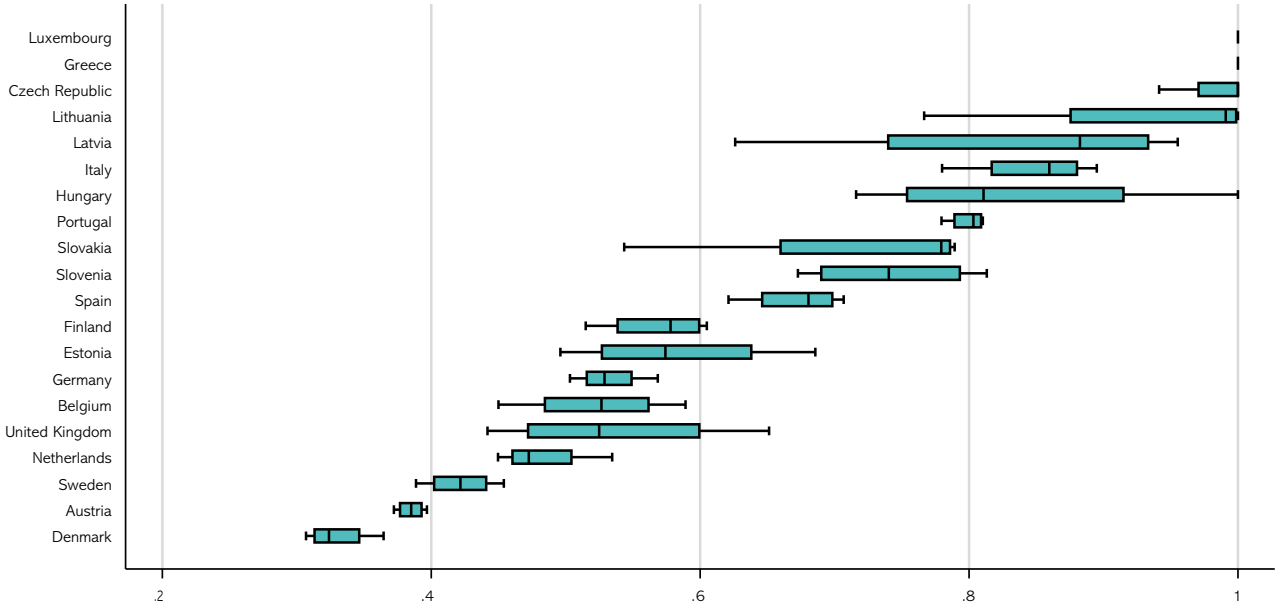
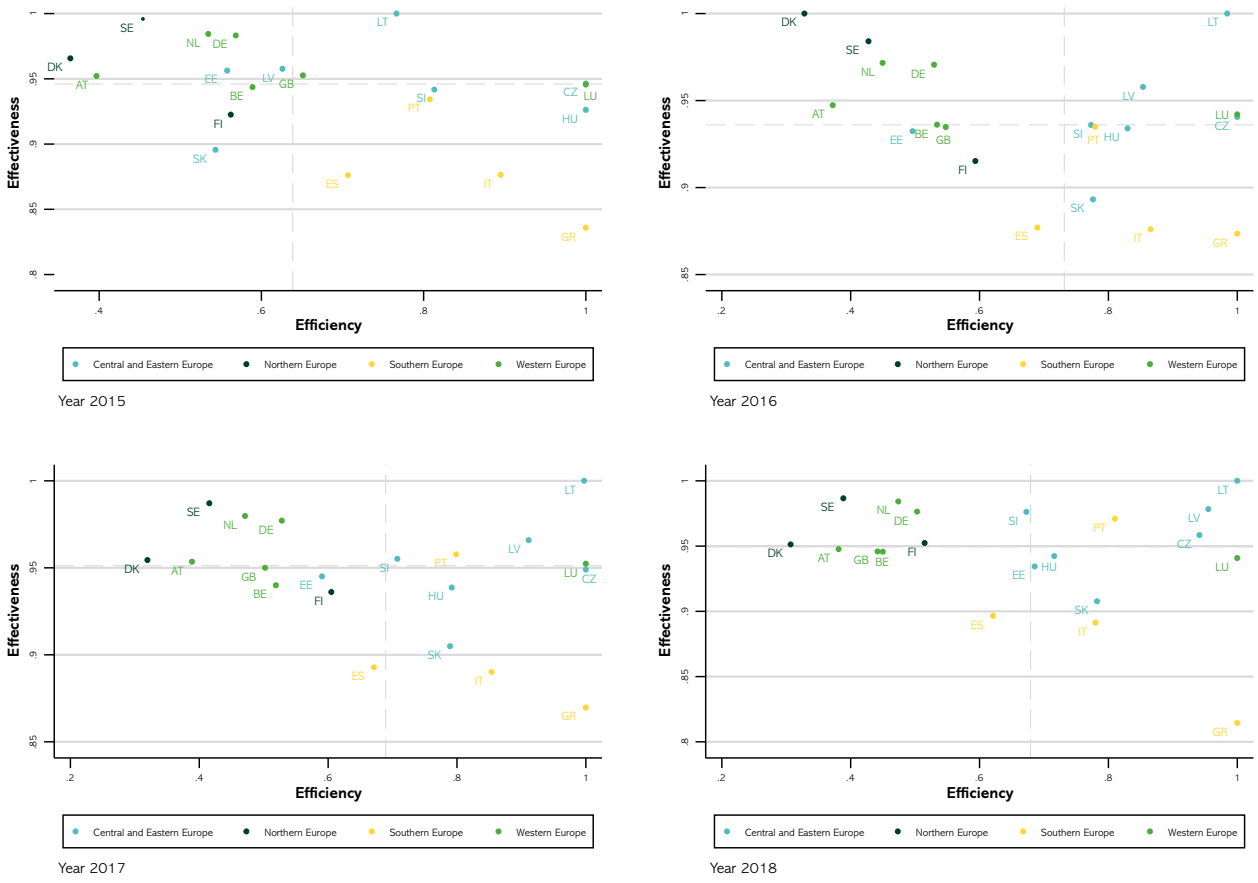


Figure 12c shows the distribution of country educational systems by year and displayed by region. We observe that most of the Western Europe countries are positioned in the quadrant with levels of efficiency below the median, and effectiveness above the median. This points to the presence of remarkable decreasing returns to scale in tertiary education, where countries spend a lot for a higher quality that does not lead to proportional increase in the overall level of outputs. On similar reasoning, we find the group of Southern Europe countries mostly concentrated on the right hand side of the graph, where there is less investment (hence a higher level of estimated efficiency) and less effective educational systems.

Figure 12c: EU countries' effectiveness vs efficiency (2015–2018) – ISCED 5–8



CONCLUSION

This chapter presented a benchmarking analysis on the main components of the educational systems. It gave an overview of education systems' performance with respect to educational inputs, outcomes and outputs. Moreover, using an efficiency analysis, it analysed by composite indicators how these dimensions interact with each other. This chapter illustrated that countries can learn from best practices in terms of organisation of education, instruction time, professional development of teachers, use of ICT to differentiate among students, etc. By constructing composite indicators, the inputs can be compared to outputs such that input-inefficiencies are also revealed.

The picture emerging from the analysis corroborates the idea that investment in education represents an investment for the society. For instance, increasing the funding per student is driven primarily by demographic factors (reduction of the number of students) more than by political choices, at least in the short run. In any case, the countries that end up spending more resources per student are those that start with a relatively low amount in previous years. Such evidence must pose serious questions to high-spending countries about the feasible ways for intensifying their investments in the field, given the political difficulty of doing so and given the decreasing marginal returns on the investments. The results from the efficiency analysis suggest that adding more resources to the education system does not necessarily result in higher test scores. More than monetary resources, the organisation of education systems matters.

Also, the role of tertiary education is particularly relevant in building and describing a country. The differences that emerged in the entry and graduation rates from type A education illustrate the potential differences in human capital trained at its highest level – and this can have effects on the long-run economic and social development of countries.

A cautionary tale is necessary here, along with a clarification about the policy implications that can be derived from this chapter. On the one hand, this chapter does not aim to derive causal links between educational systems' specific characteristics and their efficiency scores. Such a policy evaluation would require more detailed data and quasi-experimental settings that are not common in the comparison between educational systems – for an interesting discussion of this aspect, please refer to Hanushek and Woessmann (2011b). Although recent methodological developments allow researchers to make causal inference in efficiency analysis (e.g. D'Inverno et al., 2021; Mergoni & De Witte, 2021) a systematic literature review by Mergoni and De Witte (2022) indicates that policy evaluation and efficiency are still rarely combined. In fact, similar approaches require exogenous changes arising from oversubscription, policy changes, random assignment to experimental groups or discontinuities in policy implementations. Already in the design phase of new policy, civil servants should collaborate closely with researchers such that, ex ante, the evaluation allows for causal impact evaluation on both outcomes and efficiency.

On the other hand, the presentation of available data – and their critical reading – might suggest some areas of specific interest that can guide the policy reflection and action within countries. Providing a list of these areas of interest is a valuable contribution that this chapter can offer to members of national governments, which have the possibility to influence decisions about the institutional features of the educational systems.

Adopting a synthetic but comprehensive view, it is possible to list some policy levers that might be at the centre of discussions and reforms, in the light of their ability to influence the quality and quantity of available resources, together with the results that can obtained (in terms of efficiency, effectiveness, satisfaction and equity). These factors are mentioned in the list below; this is not indicating a desirable direction for policy, but it serves merely to present the highly debated topics that constitute major differences between educational systems of different countries. In this chapter, data and information do not refer to such differences; however, analysts and policymakers might read the quantitative information presented here in the light of these differences in policy. An important reference here is the publication by OECD (2021b) and the European Commission (2022).

- **Quality of teaching:** This involves teacher selection, preparatory studies and experiences, incentive systems on meritocratic bases, opportunities for online professional development, class size, teachers' pedagogical (including digital) competences (Hanushek & Rivkin, 2006).
- **Tracking:** Selection of students in different educational pathways (academic vs technical vs vocational). The age at which such tracking happens makes a strong difference in opportunities provided to students, and to the overall equity of the system (Brunello & Checchi, 2007).

- **School infrastructure:** The learning environment matters. Beyond socio-economic contexts and cultures where students learn, physical locations and school facilities play a crucial role in explaining students' performance variation. Starting from the 'broken windows theory', students learn better and teachers are easier to retain and attract in a well-equipped school infrastructure (Belmonte et al., 2020). Also, well-maintained schools better handle state-of-the art education technologies and provide adaptive learning.
- **Digital learning:** The use of digital technologies provides ways for improved differentiation, adaptive learning, scale economies and cost savings (Iterbeke et al., 2020).
- **School ownership:** Education can be delivered by public or private schools, and the sources of educational funding can be different – publicly or privately sourced funds (OECD, 2019). This influences the internal organisation, the managerial practices and ultimately, the production process used to provide education. Privately or privately funded schools might be forced by market competition to use resources more efficiently . However, the existing studies provide mixed evidence that can be explained by country-specific heterogeneity, for example in admission policies or level of competition (Aparicio et al., 2017).
- **Schools' autonomy:** This is the possibility for schools to benefit from organisational freedom, differentiation of educational missions and programmes, heterogeneity of governance rules, etc. This can make the schools more able to target the specific needs of the local student population. This point goes hand in hand with the freedom of choice for families: this can be realised by guaranteeing educational pluralism (see also the point on schools' autonomy, above) and by removing economic and information obstacles for more disadvantaged families (Woessmann, 2007). Similarly, accountability of schools and standardised exams play a role in efficient and effective education systems.
- **Parental involvement:** If schools engage with parents, and consider parents as an input in the education production function, it provides a cost-effective measure to improve non-cognitive outcomes of students (European Commission, 2022).
- **Access to preschool:** The possibility to attend preschool activities at an early age (under 6 years) is often conceived as an instrument for improving the equity of educational systems as well as for increasing the achievement and skills of the population later in life (Esping-Andersen, 2015).

The evidence provided by the international literature, in addition to these system-level architectures, indicates a specific role of single schools' policies, practices and initiatives for influencing academic results. A specific attention has been paid to those features that help disadvantaged students to succeed academically, also in a cross-country comparison (Agasisti et al., 2021).

A final point is worth mentioning here. The European Commission has activated a systematic reflection about the policy factors that can contribute to better performance of educational systems, by means of the Expert Group on Quality Investment in Education and Training. The interim report of the Expert Group was released in January 2022, and it deals with different policies that can affect the efficiency, effectiveness and quality of educational systems. The final report was published in October 2022 and is articulated in four main themes: (i) teachers and trainers, (ii) digital learning, (iii) management, infrastructures and learning environments and (iv) equity and inclusion. The aspects covered in this report have many points of contact with those debated in the chapter. In fact, while the focus of the report by the Expert Group is a causal inference and specific policy interventions (e.g. class size reduction, parental involvement, online professional development, teachers' pay) it works well with the present report (which relates inputs, outputs and outcomes) and the reports by the Eurydice network (which overviews information on education systems and education policy in Europe). Combining insights from these three sources, it becomes clear that there is not a single indicator or policy measure that allows education systems to work more efficiently and effectively. It is a broader set of policy actions that allow countries to outperform others. Thanks to the report at hand, researchers can study the set of differentiating policy actions, while policymakers can reach out to other countries to learn and exchange best practices. The elements presented in this report can be interpreted and used for stimulating a more systematic data collection about aspects that are not usually included in the standard procedures of national statistical offices, such as the costs of interventions and perceived benefits and results by the users (families and students). These elements represent additional suggestions and indications for performing broader and more profound performance assessments of educational systems, following the framework and results already discussed in this chapter.

REFERENCES

Agasisti, T., Munda, G., & Hippe, R. (2019). Measuring the efficiency of European education systems by combining Data Envelopment Analysis and Multiple-Criteria Evaluation. ***Journal of Productivity Analysis, 51***(2), 105-124.

Agasisti, T., Avvisati, F., Borgonovi, F., & Longobardi, S. (2021). What school factors are associated with the success of socio-economically disadvantaged students? An empirical investigation using PISA data. ***Social Indicators Research, 157***(2), 749-781.

Aigner, D., Knox Lovell, C. A., & Schmidt, P. (1977). Formulation and estimation of stochastic frontier production function models. ***Journal of Econometrics, 6***(1), 21-37.

Aparicio, J., Crespo-Cebada, E., Pedraja-Chaparro, F., & Santín, D. (2017). Comparing school ownership performance using a pseudo-panel database: A Malmquist-type index approach. ***European Journal of Operational Research, 256***(2), 533-542.

Belmonte, A., Bove, V., D'Inverno, G., & Modica, M. (2020). School infrastructure spending and educational outcomes: Evidence from the 2012 earthquake in Northern Italy. ***Economics of Education Review, 75***, 101951.

Bogetoft, P., Heinesen, E., & Tranæs, T. (2015). The efficiency of educational production: A comparison of the Nordic countries with other OECD countries. ***Economic Modelling, 50***, 310-321.

Brunello, G., & Checchi, D. (2007). Does school tracking affect equality of opportunity? New international evidence. ***Economic Policy, 22***(52), 782-861

Charnes, A., Cooper, W. W., & Rhodes, E. (1978). Measuring the efficiency of decision-making units. ***European Journal of Operational Research, 2***(6), 429-444.

Cherchye, L., Moesen, W., Rogge, N., & Puyenbroeck, T. V. (2007). An introduction to 'benefit of the doubt' composite indicators. ***Social Indicators Research, 82***(1), 111-145.

De Witte, K., & López-Torres, L. (2017). Efficiency in education: a review of literature and a way forward. ***Journal of the Operational Research Society, 68***(4), 339-363.

Deprins, D., Simar, L. L., & Tulkens, H. (1984). ***Measuring labor-efficiency in post offices. The performance of public enterprises***. Elsevier Science Publishers.

D'Inverno, G., & De Witte, K. (2020). Service level provision in municipalities: A flexible directional distance composite indicator. ***European Journal of Operational Research, 286***(3), 1129-1141.

D'Inverno, G., Moesen, W., & De Witte, K. (2020). Local government size and service level provision. Evidence from conditional non-parametric analysis. ***Socio-Economic Planning Sciences, 81***(3), 100917.

D'Inverno, G., Smet, M., & De Witte, K. (2021). Impact evaluation in a multi-input multi-output setting: Evidence on the effect of additional resources for schools. ***European Journal of Operational Research, 290***(3), 1111-1124.

Dominguez-Gil, C., Segovia-Gonzalez, M. M., & Contreras, I. (2021). A multiplicative composite indicator to evaluate educational systems in OECD countries. ***Compare: A Journal of Comparative and International Education***, 1-18.

Esping-Andersen, G. (2015). Welfare regimes and social stratification. ***Journal of European Social Policy, 25***(1), 124-134.

European Commission, (2021). Education and training monitor. (2021). Luxembourg: Publications Office of the European Union.

European Commission Directorate-General for Education, Youth, Sport and Culture, Fack, G., Agasisti, T., Bonal, X., et al. (2022). Cost-effective pathways to quality education and training. Interim report of the Commission expert group on quality investment in education and training. Luxembourg: Publications Office of the European Union. https://data.europa.eu/doi/10.2766/37858

Hanushek, E. A. (1986). The economics of schooling: Production and efficiency in public schools. ***Journal of Economic Literature, 24***(3), 1141-1177.

Hanushek, E. A., & Rivkin, S. G. (2006). Teacher quality. In E. Hanushek & F. Welch, (Eds.), ***Handbook of the economics of education vol. 2*** (pp. 1051-1078). Elsevier.

Hanushek, E. A., & Woessmann, L. (2011a). How much do educational outcomes matter in OECD countries? ***Economic Policy, 26***(67), 427-491.

Hanushek, E. A., & Woessmann, L. (2011b). The economics of international differences in educational achievement. In E. A. Hanushek, S. Machin & L. Woessmann, (Eds.). ***Handbook of the economics of education, vol. 3*** (pp. 89-200) Elsevier.

Iterbeke, K., De Witte, K., Declercq, K., & Schelfhout, W. (2020). The effect of ability matching and differentiated instruction in financial literacy education. Evidence from two randomised control trials. ***Economics of Education Review, 78***, 101949.

Johnes, G., Johnes, J., Agasisti, T., & López-Torres, L. (Eds.). (2017). ***Handbook of contemporary education economics***. Edward Elgar Publishing.

Melyn, W., & Moesen, W. (1991). Towards a synthetic indicator of macroeconomic performance: unequal weighting when limited information is available. ***Public Economics Research Papers***, 1-24.

Mergoni, A., & De Witte, K. (2021). Estimating the causal impact of an intervention on efficiency in a dynamic setting. ***Journal of the Operational Research Society, 73***(2),1-19.

Mergoni, A., & De Witte, K. (2022). Policy evaluation and efficiency: a systematic literature review. ***International Transactions in Operational Research, 29***(3), 1337-1359.

Organisation for Economic Co-operation and Development (OECD). (2015). Effective public investment across levels of government: Principles for action. OECD Publishing.

Organisation for Economic Co-operation and Development (OECD). (2017). Educational opportunity for all: Overcoming inequality throughout the life course. Educational research and innovation. OECD Publishing.

Organisation for Economic Co-operation and Development (OECD). (2019). Education policy outlook 2019: Working together to help students achieve their potential, OECD Publishing.

Organisation for Economic Co-operation and Development (OECD). (2021a). Education at a glance 2021. OECD Publishing.

Organisation for Economic Co-operation and Development (OECD). (2021b). Education policy outlook 2021. OECD Publishing.

Peter, T., Edgerton, J. D., & Roberts, L. W. (2010). Welfare regimes and educational inequality: a cross-national exploration. ***International Studies in Sociology of Education, 20***(3), 241-264.

Stevens, P., & Weale, M. (2004). Education and economic growth. ***International Handbook on the Economics of Education, 27***, 205-311.

Stumbrienė, D., Camanho, A. S., & Jakaitiene, A. (2020). The performance of education systems in the light of Europe 2020 strategy. ***Annals of Operations Research, 288***(2), 577-608.

Stumbrienė, D., Želvys, R., Žilinskas, J., Dukynaitė, R., & Jakaitienė, A. (2022). Efficiency and effectiveness analysis based on educational inclusion and fairness of European countries. ***Socio-Economic Planning Sciences, 82*** (Part B),101293.

Thanassoulis, E., De Witte, K., Johnes, J., Johnes, G., Karagiannis, G., & Portela, C.S. (2016). Applications of data envelopment analysis in education. In J. Zhu (Ed.), ***Data envelopment analysis – A handbook of empirical studies and applications*** (pp. 367-438). Springer. doi:10.1007/978-1-4899-7684-0_12

Thieme, C., Giménez, V., & Prior, D. (2012). A comparative analysis of the efficiency of national education systems. ***Asia Pacific Education Review, 13***(1), 1-15.

Titl, V., & De Witte, K. (2022). How politics influence public good provision. ***Socio-Economic Planning Sciences, 81***, 101000.

UNESCO. (2016). Education 2030: Incheon declaration and framework for action for the implementation of Sustainable Development Goal 4. https://iite.unesco.org/publications/education-2030-incheon-declaration-framework-action-towards-inclusive-equitable-quality-education-lifelong-learning/

West, A., & Nikolai, R. (2013). Welfare regimes and education regimes: Equality of opportunity and expenditure in the EU (and US). ***Journal of Social Policy, 42***(3), 469-493.

Woessmann, L. (2007). International evidence on school competition, autonomy, and accountability: A review. ***Peabody Journal of Education, 82***(2-3), 473-497.

Wolff, G. B., & Roth, A. (2018, June 19). Understanding (the lack of) German public investment. Bruegel. https://www.bruegel.org/blog-post/understanding-lack-german-public-investment

APPENDIX

Methodology to measure performance

In this chapter, efficiency and effectiveness scores have been computed to measure the performance of country educational systems.

The concept of efficiency refers to the ability to transform inputs into outputs without waste. It is measured by comparing the evaluated observation to the best observations in the class, i.e. the best practice observations, in their way of using inputs to produce outputs. The latter observations are those observations for which it is impossible to achieve more outputs given the inputs used, or to use fewer inputs given the produced outputs. The inefficiency measure can be interpreted in two ways: as input or output inefficiency. Input inefficiency assesses how much the resources could be reduced to achieve the given level of outputs, if the evaluated observation worked in a similar way to the best practice observation. Output inefficiency measures how much the outputs could be increased for a given level of inputs, if the evaluated observation works as efficiently as the best practice observation.

The data envelopment analysis (DEA) model is a linear programming technique that handles multiple inputs and outputs by endogenously weighting the different inputs and outputs. To do so, each benchmarked observation is allowed to set the weights v_j and μ_r assigned to its inputs (x) and outputs (y) in such a way that the resulting total aggregate score is the best possible. For an evaluated observation I, it is not possible to assign more favourable weights to the input and output dimensions. As such, if an observation attaches more weight to one dimension over another dimension (e.g. priority on childcare for disadvantaged families rather than universal childcare for all), it will be reflected in the endogenous weights. DEA compares the aggregated outputs of an observation to the aggregated inputs, and the resulting value is a measure of efficiency. For each observation found to be inefficient, the performance improvement can be driven by looking at the relevant peers. Optimal input and output targets are identified and suggest the potential amount of input that can be reduced and the potential amount of outputs that can be increased such that the observation becomes more efficient.

More formally, the DEA model maximises the efficiency score θ by optimising both the weights μ_r assigned to the outputs y, and the weights v_j assigned to the inputs x. All weights should be greater than or equal to zero (i.e. non-negative), and the overall efficiency score is set to be a maximum of 1. A score of 1 denotes that the evaluated observation is a best practice, while the complement of 1 denotes the measure of inefficiency.

$$\theta = \max_{\mu,\nu} \frac{\sum_{r=1}^{s} \mu_r y_{ry_0}}{\sum_{j=1}^{m} \nu_j x_{jy_0}}$$

Under the condition that:

$$\frac{\sum_{r=1}^{s} \mu_r y_{ry_i}}{\sum_{j=1}^{m} \nu_j x_{jy_i}} \leq 1 \qquad i = 1,2,\dots,n$$

$$\mu_r \geq 0, \nu_j \geq 0 \qquad \text{for every } r, j$$

This DEA model is the most popular model for efficiency analysis (De Witte & López-Torres, 2017). It has been developed by Charnes et al. (1978), and nowadays has multiple extensions such as accounting for outlying observations, including non-convex models (Deprins et al., 1984), environmental variables and returns to scale (e.g. Thanassoulis et al., 2016). Alternative approaches are the stochastic frontier analysis (SFA) model, which is an econometric approach that decomposes the error term of a classical regression into a noise term and an inefficiency term (Aigner et al., 1977). Given the limited number of observations in the present analysis, we limit the analysis to the traditional DEA model. This model is a fully non-parametric model (i.e. it does not assume any functional form on the data) that works under the assumption of constant returns to scale (CRS).

The concept of effectiveness refers to the ability to produce satisfactory output levels. To measure effectiveness, outputs are aggregated into a composite indicator, which can represent the education produced by a specific system in a synthetic way, while considering the complexity of various output indicators at the same time.

Following the same rationale of the DEA model, the benefit-of-the-doubt approach is a commonly used weighting technique to construct composite indicators, labelled as such after Melyn and Moesen (1991). Similarly to DEA, it aggregates multiple outputs with endogenously determined optimal weights, to give more emphasis on the indicators where the evaluated observation performs relatively better compared to the other units (Cherchye et al., 2007).

Formally, it can be seen as a DEA input-oriented CRS model with a unitary input. The score CI ranges between 0 and 1, where 1 denotes that the evaluated observation is a best practice. A score lower than 1 suggests that, even with the most favourable weighting system, the unit under analysis is underperforming compared to the other units and there is room for improvement in the performance indicators by looking at the detected best practices.

$$CI_{y_0} = \max_{\mu} \sum_{r=1}^{s} \mu_r y_{ry_0}$$

Under the condition that:

$$\sum_{r=1}^{s} \mu_r y_{ry_0} \leq 1 \qquad i = 1,2,\dots,n$$

$$\mu_r \geq 0 \qquad \text{for every } r, j$$

In the present analysis, we construct the efficiency and the effectiveness score by comparing the evaluated observations year by year. An advantage of this approach is that it is intuitive, but also allows us to see how evaluated observations compare to the best practices, so providing quantitative information that can be useful for supporting decision-making. The analyses are proposed year by year; in other words, they account for year-specific variation that might affect the outputs (e.g. economic cycle, inflation). Alternative approaches, which we do not use in the present analysis, assume that an input–output combination that was possible to reach in the past is also possible to reach in the future (i.e. a window DEA analysis) or try to divide the efficiency term into catch-up and frontier shifts (i.e. a Malmquist index). Only a few studies provide cross-country comparisons and fewer include all educational stages (Stumbrienė et al., 2020; Dominguez-Gil et al., 2021; Stumbrienė et al., 2022).

6. HOUSING

6.1. INTRODUCTION

This chapter aims to assess the way in which public sectors contribute to housing outcomes in several OECD and EU countries. It does so by analysing inputs, outputs and outcomes of housing policies. Housing policies are usually arranged along three dimensions:

- **quality**
- **availability**
- **affordability**

Each country has varying degrees of government support in these dimensions, from hardly any to quite generous. It is also relevant that the three dimensions are often interlinked: for example, little housing availability (shortage) can lead to a deterioration of housing affordability. High legal housing quality standards are another example, which can affect housing affordability and subsequently require government construction subsidies or housing allowances for those with lower incomes.

However, there are several difficulties in assessing public sector performance in housing. This is because, first of all, the government is not the sole actor of importance. House building and services are often provided by private market actors, while the public sector provides housing for those with the lowest incomes. Also, affordable rental dwellings are often provided by financially independent social housing providers (housing associations). Furthermore, individual households and families have been instrumental in housing production, for instance in several southern European countries and Belgium, where self-building was an important pillar in the housing provision system (see Dol et al., 2012). Currently, these systems have become more marketised as many tasks are performed by professional contractors, but dwellings are still often self-built rather than bought turnkey from large property development companies.

The present performance of the housing system is often influenced by past public sector policies. For example, since much of the current housing stock was built decades earlier, present housing quality may be an outcome of government support in housing construction and renovation in the past. Hence, path dependency is important when studying outcomes of the three dimensions of housing policy. A simple correlation of current government inputs with housing outcomes and housing satisfaction levels often fails to give the complete picture.

It is worth mentioning that housing outcomes can be affected by other policy fields. The most noteworthy is social security, which determines whether owner-occupiers and tenants can still pay their housing costs after adverse events such as unemployment or long-term illness (see e.g. van Hemerijck, 2012 for international variations in social security). Especially with regard to unemployment, macro-economic cycles also play a role. Yet another policy field that relates to housing is pensions. In countries where pension benefits are small, an owned-outright, unmortgaged home can become an important pillar in households' pension provision (see e.g. Doling & Elsinga, 2013).

Labour market relations can also determine tenure choices. For instance, a country with a significant share of insecure flexible labour may have more households that decide against buying a dwelling because of the associated credit risk. Furthermore, mortgage lenders usually favour permanent, secure contracts (see e.g. Dol, 2020; Elsinga et al., 2007).

We also recognise that demographic developments can stimulate government action. For example, commercial housing development companies may not always be able or even willing to keep up with rapid population growth, leading to housing shortages and speculation. Under such conditions a government may decide to intervene to alleviate problems. The same goes for an overhang of housing in regions with population decline, where governments may decide to intervene to restructure the housing stock and avoid oversupply (vacancies) of housing.

Finally, the depth in which a government intervenes in a housing system differs per country. In the past decades, many housing researchers have investigated how national housing policies match Esping-Andersen's groupings of liberal, corporatist and social-democrat welfare regimes. Indeed there appear to be overlaps, but some countries within a specific welfare regime may still differ quite strongly from one another (e.g. Van der Heijden, 2013; Hoekstra, 2010).

With these considerations in mind, this chapter aims to provide a matter-of-fact analysis of current inputs and outcomes, but it will keep in mind institutional and path-dependent factors. Among these are mortgage market indicators, house

prices and typical housing provision practices. Similar to housing tenure (owner-occupied, social rental, private rental and cooperatives) such indicators have a multidimensional background and are often part of historical legacies.

Additionally, this chapter aims to present some more concrete information for policymakers in a couple of case studies. An exploration of several recent comparative overviews by the OECD, UNECE, Housing Europe and the European Mortgage Federation show that housing accessibility (affordability) has become a pressing problem throughout western Europe, so in the final section of this chapter we focus on this topic.

In addition to an exploration of inputs and outcomes for the three housing policy fields, the chapter will commence with a broader introduction where we provide some background to the mortgage markets and fiscal treatment of home ownership, as it is important in explaining international differences in the tenure distribution. We explore briefly how policies have shaped tenure outcomes or household mortgage indebtedness.

The chapter will also provide a couple of case studies on housing policy matters that are relevant in today's context. In recent years, some countries have experienced both a growth of the private rental sector and a steep rise in rents. Therefore, the first case studies give some background to the regulation of the private rental sector in three countries. Germany and Switzerland are countries with a longstanding tradition of private rental regulation, while the Irish government felt compelled to undertake measures relatively recently to regulate steep rent increases in its private rental sector. Such was also the case in Germany, where existing legislation was insufficient to curb steep rent rises.

The second case study shows how two systems developed from the post-World War II era and onwards to support access to home ownership. The first one relies on mortgage guarantees, while the other relies much more on home savings schemes to provide a down payment. It shows the examples of Germany and Austria versus the Netherlands, the UK and the US.

6.2. THE 2022 HOUSING CHAPTER

6.2.1. Where the 2015 housing chapter ended

An important observation in the 2015 chapter was that housing outcomes are influenced by an entire housing system. It is therefore hard to pinpoint one single financial input as the determinant of a single housing outcome. As we indicated in the introduction, many actors are involved in housing provision and housing services, while some outcomes are a heritage of the past, for instance the publicly supported house building programmes that were in place in various countries until the 1980s. Because of such a complicated context, the 2015 housing chapter could not establish a sound statistical relation between the available data on government expenditure (inputs) and a composite indicator that combines the three housing outcome dimensions: quality, availability and affordability. Interestingly, the authors did establish a correlation between international variations in household incomes and housing outcomes. This also applied to the lowest income groups per country, with correlation coefficients around 55%. The research results reveal that the more affluent countries within northern and western Europe score relatively well.

6.2.2. Where we continue in 2022

For the present study, we abandon the composite indicator for all housing outcomes and focus more on the three pillars of housing (quality, affordability, availability) in relation to government inputs. Some remarks are relevant.

Quality can be a problematic concept to relate to government inputs. A structurally high level of financial inputs will lead to high quality, but quality may also be affected by past inputs. Our approach is more to explore whether income difference between and within countries give an indication of poor or insufficient housing quality.

Affordability is explored further by tapping into new data on government expenditure, such as housing allowances and fiscal incentives for owner-occupiers, while we also explore the role of legislation (rent regulation). Also, international comparative data on housing costs are more detailed than before. Overall, we have more opportunities to explore public sector performance on affordability.

Availability has a quantitative and a qualitative dimension. A qualitative dimension is overcrowding, which pertains to insufficient size of dwellings to decently accommodate all members of the households. However, overcrowding can also be considered as a quantitative shortage of dwellings where, for instance, households involuntary share one dwelling. This includes adult children who would rather live in their own dwelling but cannot find suitable (and affordable) accommodation. While data on overcrowding are collected for many countries, few countries compile data on quantitative housing shortages because it requires detailed information of people within a household who would rather prefer to live in their own dwelling. An alternative is a statistic of young adults in the parental home, although in several countries this housing situation is voluntary. A rapid increase of the number of young adults living in the parental home might say more about a housing shortage. Furthermore, homelessness or the ratio of dwellings per household are alternative measures for housing availability.

6.3. METHOD DIFFERENCES IN COMPARISON TO THE 2015 HOUSING CHAPTER

The 2015 study only used the Eurostat Survey of Income and Living Condition (EU-SILC) micro database to measure outcomes on housing. It identified several outcomes on availability, affordability and quality and then constructed one single composite indicator for housing. In the present chapter, we will not repeat an analysis with the SILC database. We have two motivations for this:

- **Housing outcome indicators based on EU-SILC are readily available on the website of Eurostat, often subdivided by income groups or household type. Eurostat's statisticians have even constructed a composite indicator on housing quality.**
- **We also intend to draw on other relevant outcome indicators than EU-SILC, such as the OECD, the IMF and Eurofound.**

As indicated above, another difference is the abandonment of one single composite indicator that covers the outcome for all three dimensions of housing policy: quality, availability and affordability. With hindsight, one single composite indicator raised questions about the weight of each of the three dimensions that underlie the composite indicator. Thus, we now focus on each individual dimension of availability, affordability and quality.

However, with the available data from openly accessible sources, such as Eurostat or the OECD, it is not possible to pinpoint exactly how government inputs affect the target groups. For instance, we cannot, on a household basis, determine exactly how much a housing allowance affects affordability for those who are entitled to it. This requires much more detailed country-by-country analysis with the micro databases. Still, the overall level of housing-related expenditure should be reflected in better affordability outcomes in general, even though not the entire population is a recipient of, for instance, a housing allowance.

6.4. CONTEXTUAL FACTORS: TENURE DISTRIBUTION, THE MORTGAGE MARKET AND HOUSE PRICE DEVELOPMENTS

To set the scene, we commence with overviews of the tenure distribution and mortgage markets. Tenure distributions and mortgage markets have been shaped over time and under changing policies, so we do not expect present government inputs to entirely explain the international patterns.

6.4.1. Tenure distribution

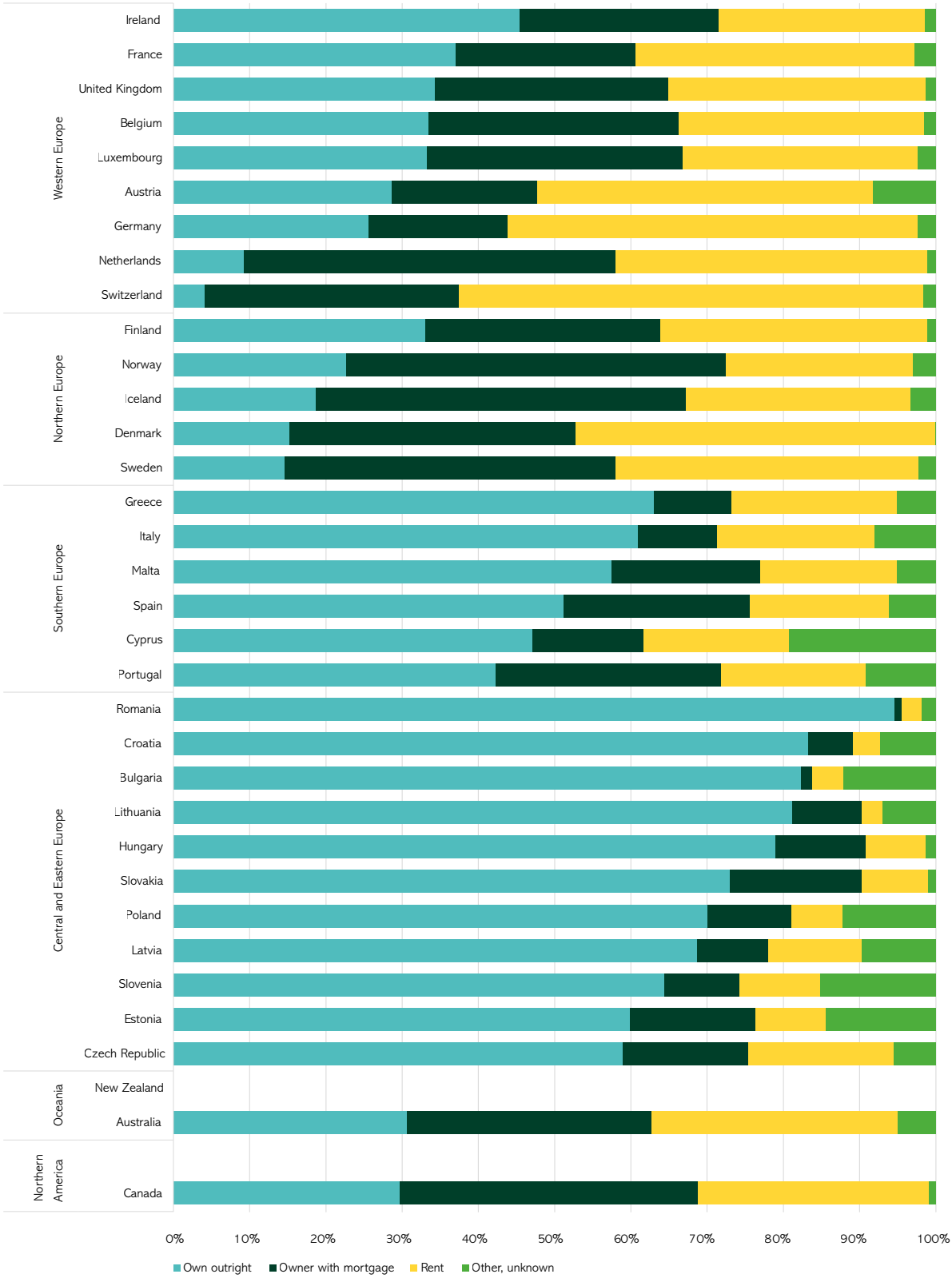
Figure 1 shows the distribution of households over tenure types in 2019. It presents owner-occupiers with a mortgage, without a mortgage and tenants (rent). The Eurostat data do not allow for a sound division between social-public and private rent. For those countries with a comparatively large social-public sector we give an overview from various national sources in Appendix 1. We first turn to differences between home ownership and rent, and then discuss differences between mortgaged and unmortgaged homeowners.

Germany and Switzerland are the only countries in the study where the rental sector is the dominant tenure form, with more than 50% of the housing stock. The majority of rental housing in these two countries is owned by private landlords. Within western Europe, the Netherlands and Austria also have sizeable rental sectors, of which much is social-public (see Appendix 1). Such a situation also applies to Denmark and Sweden.

High home ownership rates within western Europe are only found in Ireland, Belgium and the UK. Similar home ownership rates are also found in southern Europe. The rental sector in most of these countries is private, around 20%–25% of the entire housing stock. The exception is the UK, which still has a substantial social rental sector. In North America and Australia, home ownership is also the dominant tenure. Most of the rental sector consists of private rent.

In central and eastern Europe the rate of home ownership is even higher, with particularly high rates of outright ownership. Most countries in this region have very small rental sectors, with the exception of the Czech Republic.

Figure 1: Tenure structure, households, 2019 or latest year available



Source: OECD

6.4.2. Tenure outcomes and government policies

The international variations in home ownership largely stem from government policies and institutional factors in the post-WWII period. Anglo-American and southern European policy makers had strong preferences for home ownership, which was regarded as a bulwark against communism-socialism (see e.g. Ronald, 2008). They declined to support the erection of large social-public rental sectors in the post-WWII period, with the exception of the UK, which has, as mentioned above, a sizeable social rental sector that makes up around 20% of the entire dwelling stock. This is a heritage of the post-WWII reconstruction operation to replace war damage and outdated housing stock from the industrial era. From the 1980s and onwards public support for the social rental sector retrenched in the UK. In fact, Prime Minister Thatcher introduced a right-to-buy law to social tenants in 1980.

However, support of home ownership not only applied to the Anglo-American and southern European world. We will see further on that in many other countries with comparatively large rental sectors, homeowners also received significant tax advantages or other incentives. Still, continental western Europe and Scandinavia provided much more support for social-public rental sectors in the post-WWII period until the 1980s. From around the late 1970s, support for social rental sectors retrenched after vast budgetary problems following the first and second oil crises. The general political context also gravitated more towards home ownership, partly because of more spending power among emerging middle classes. A shift towards a more liberal policies, i.e. neoliberalism, also had its impact (see e.g. Atterhög, 2006). In conclusion, tenure differences in northern, western and southern Europe stem from different ideological and policy contexts, but in all countries home ownership was on the rise until the global financial crisis of 2008 (see Dol, 2020). However, in the past decade there has been a remarkable increase in private rental, reflecting tighter mortgage lending criteria after the global financial crisis as well as more flexible (insecure) labour arrangements for younger households. This led to, for instance, Arundel and Doling (2017) suggesting that there may be an end to mass home ownership.

The very high home ownership rates in central and eastern Europe stem from a critical juncture in government policies. With some exceptions (Hungary, Yugoslavia) the main tenure in eastern Europe under communism was public rental. In the aftermath of the fall of communism in 1989, public rental dwellings in many of these countries were simply transferred to the occupants, or sold for prices well below the market value (see e.g. Hegedus et al., 2013).

The above quite clearly sketches out that government policies shape tenure distributions, but it is complicated to pinpoint exactly which government policy or input is responsible for international variations. The differences have often been linked to welfare regimes or regions, although these often show a few white ravens. For instance, within western continental Europe Belgium is an outlier, with a much higher home ownership rate than neighbouring France, Germany and the Netherlands (see e.g. Dol, 2020). Norway is the exception in the Scandinavian world. The authorities here chose to support 'social' home ownership through land provision and public mortgages, rather than erect large public rental sectors (see e.g. Lujanen, 2004).

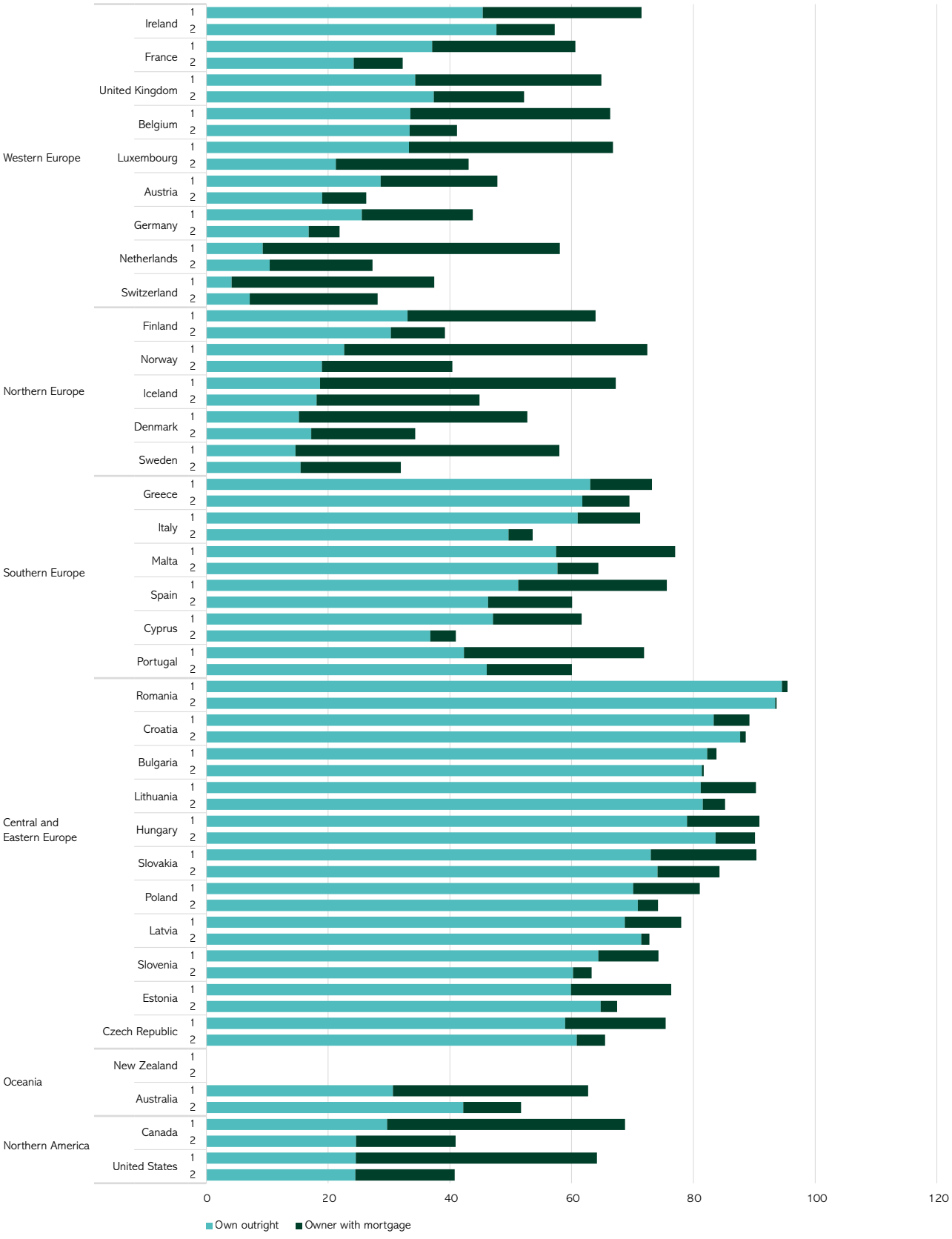
6.4.3. Low-income home ownership

Still, it is quite safe to state that in all countries, there is often a positive relation between income and home ownership or in other words, home ownership is less common among the lower income brackets. Of course, in countries with high proportions of home ownership in general, the proportion of lower incomes in home ownership is comparatively high. Figure 2 presents the difference in home ownership rates between low-income households in the bottom quintile of the income distribution, and the average home ownership rate.

In western and northern Europe, there are marked differences in ownership rates between low-income households and the 'average' household. Norway and the Netherlands have the largest home ownership gaps of the countries in this study, with lower incomes owning 30% under the average rate. In contrast, in Ireland, the UK and Switzerland the gap is much less marked. Also, within southern Europe the gap between low-income home ownership and the average household is much less pronounced. Within southern Europe, the percentage of outright owners among lower incomes and other households is comparable, but the percentage of mortgaged lower-income households is somewhat lower. Still, few lower-income homeowners have a mortgage. In central and eastern Europe, differences in ownership between low-income households and average households are relatively limited. There are still regional variations, with the difference in ownership rates being somewhat higher in Slovenia and the Czech Republic, whereas in Hungary and Croatia the difference in ownership rates between low incomes and the average is nearly zero. In Australia, the difference in ownership rates is below average. In North America, by contrast, the rate of home ownership among lower-income households is relatively high.

In conclusion, the home ownership rate among lower incomes in eastern and southern Europe is much higher than in western and northern Europe. This is a relevant observation because low-income home ownership has been a matter of concern due to the associated credit risk. For low incomes, home ownership can be a burden when they have a mortgage on their property, while an owned-outright home comes with benefits as they do not pay for rent or loans. In many eastern European countries most home ownership is outright, a heritage of the transfers of public housing after the fall of communism. Also in southern Europe, a majority of low-income homeowners are outright owners. Even in northern and western Europe, a significant proportion of low incomes own outright. Quite often, such outright owners are households that are retired and live on a small pension. In such a case, the owned-outright owned home then serves as a pension.

Figure 2: Home ownership all households (1) and lowest income decile (2)

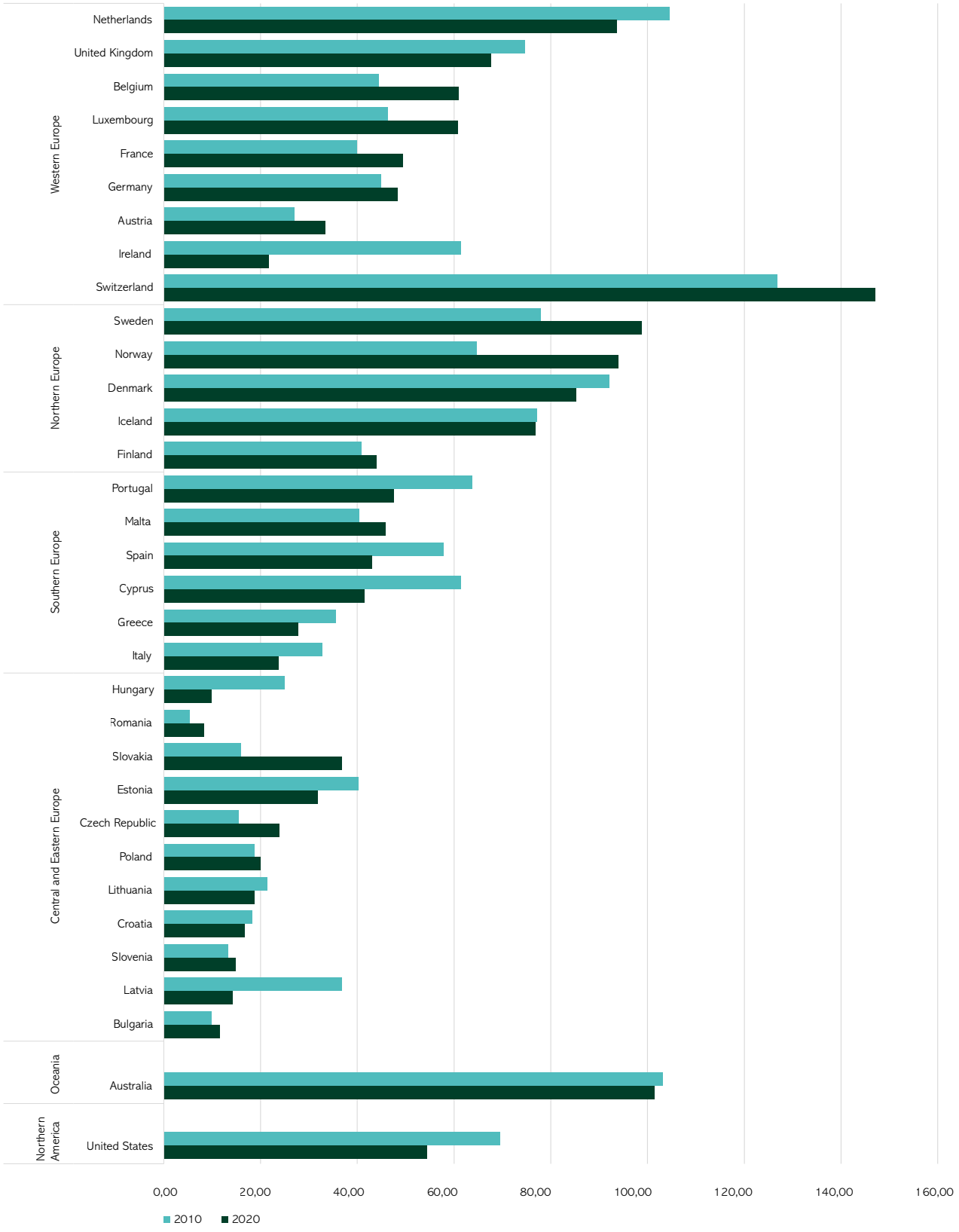


Source OECD

6.4.4. Mortgage markets

As mentioned, the tenure distribution in Figure 1 reveals marked differences in the ratio of homeowners who own outright and those who still have a mortgage. In the eastern European countries, the proportion of outright owners is quite high, which is partly explained by transfers of public housing to tenants after the transition from communism. In southern Europe, outright ownership is high as well. In this region, self-build with small loan-to-value (LTV) ratios was common, with the exception of Spain (see Allen et al., 2004). Furthermore, mortgage markets in southern Europe were poorly developed until the introduction of the euro, due to high inflation. Under those conditions, banking sectors demanded high interest rates and short repayment times. These legacies still resound in today's outcomes.
At the other end of the spectrum are Switzerland, the Netherlands and northern Europe in general, where the share of households with a mortgage is comparatively high. Such variations in outright home ownership translate into mortgage debt as a share of GDP (see Figure 3), where Switzerland and the Netherlands have particularly high mortgage debt. Still, a high rate of mortgage debt does not necessarily imply that the entire society is heavily indebted. For instance, Switzerland and the Netherlands have massive assets in pension funds, which balances out much of the outstanding mortgage debt (see OECD, 2021a). However, high LTVs of households, especially among recent first-time buyers, pose a risk of negative equity during an economic downturn. In case home owners run into payment arrears after income decline, negative equity can become a burden because it complicates the sale of the dwelling.

Figure 3: Outstanding residential loans to GDP ratio (%)



Source: European Mortgage Federation

Variations in mortgaged home ownership outside eastern Europe are explained to a great extent by the mortgage market structures and fiscal policies. Mortgage deductions on income tax and a high loan-to-value when buying the dwelling are important factors in this respect. We will consider these differences in some more detail in one of the case studies, but here we can already give some general insights.

First of all, taxation of owner-occupied dwellings varies among countries. Mortgage interest deductibility exists in several countries, but the generosity of the system varies strongly (see Table 1). Until recently, the Netherlands had full deductibility against income tax of up to 52%, but this was gradually reduced to a flat rate of around 33% after 2013. Scandinavian countries had similar systems, but mostly changed this in an earlier phase towards a system with a flat rate of around 30%. Other countries have much less generous deductibility, for instance only for first-time buyers or with a maximum time frame. The UK had a similar system to the Netherlands, but this was entirely phased out over a timeframe of nearly 20 years and ended in 2000. Yet, other countries levy a property tax for owner-occupiers. Table 1 shows the marginal effective tax rate (METR) on home ownership. A negative sign implies that the owner pays negative tax on the dwelling, or in other words, receives money from the tax authority.

A correlation analysis between the METR and mortgage debt as a percentage of GDP, gives around 45% which is not strong, but is also not entirely negligible. Without outlier Italy, this correlation is 57%. The results give some confirmation of the hypothesis that government inputs (or fiscal incentives) affect mortgage debt as a share of GDP.

Furthermore, the maximum loan-to-value (LTV) when taking out a mortgage is assumed to play a role in the total amount of outstanding housing loans. Several countries have a maximum limit of around 80% LTV, but this is not always a government's legal limit. It is more of a de facto limit than a de jure maximisation (Van Hoenselaar et al., 2021). In fact some national banking systems allow 100%, but de facto, as a means of risk mitigation, they use 80% as the rule of thumb and only allow 100% in special cases. In the case studies, we will elaborate on the backgrounds to these international variations.

Table 1: Mortgage interest tax deductibility, marginal effective tax rate and loan-to-value

Country	Mortgage interest deductibility owner occupiers	Marginal Effective Tax Rate of home ownership	Max LTV
Switzerland	X	-7,5	80
Netherlands	X	-69,75	105
France		18,75	100
Belgium	X	-10,62	100
Germany		16	80
Austria		12,8	80
United Kingdom		21,88	100
Ireland		6,25	100
Norway	X	-19,38	85
Denmark	X	-52,25	80
Sweden	X	-49,38	95
Finland	X	-10,38	80
Spain	X	17,5	100
Italy	X	-34,38	80

Note: These data were collected between 2012 and 2016. In the meantime, changes have been made in the Netherlands, but it stands that there are significant varieties between countries. In other words: Denmark, Sweden and the Netherlands still have advantageous taxation for owner occupiers.

Max LTV, situation around 2012, in UK, most mortgage lenders have decreased the maximum LTV for about a decade after 2010. In Norway and Sweden the max LTV's were reduced in order to curtail price hikes of 2010-2011: the Scandinavian region experienced little impact of the 2009 'Global' Financial Crisis. The Netherlands reforms of mortgage interest deductibility are underway, so currently the number under METR is lower. However, the main patterns remain intact.

Source: OECD, Cerruti et al, 2015

6.4.5. House prices in the owner-occupied sector

Table 2 shows the development of housing prices between 2015 and 2020. Across western Europe, the house price increase has been quite strong, although the increase has been below average in Belgium and France. Northern Europe experienced lower price increases compared to western Europe and in southern Europe, price development since 2015 varies between countries. Prices have increased relatively strongly in Portugal, whereas in Italy average prices in 2020 remain at the 2015 level. In fact, Italy is the only country in the study where housing prices have barely risen compared to 2015. In central and eastern Europe, housing price development has been relatively strong all around; Hungary has seen the strongest housing price increase of all countries in the study. The upward house price increases across Europe are related to a decline in interest rates, in combination with a context of relative housing shortages. Such shortages can arise because of unresponsive land supply. Yet the backgrounds to house price change and house price levels are complex. They include the interest rate, income development and general demand pressure. Demand pressure is impacted by, among others, population growth and the responsiveness of the construction sector to population change. It is beyond the scope of this study to provide a detailed analysis of these factors, but there is ample research available, among them a recent paper by the IMF (Geng, 2018). This paper stresses that government tax incentives and mortgage market non-regulation can play a role in strong house price fluctuations.

Table 2: House price annual index 2015 (=100) to 2020 and house price volatility.

Region	Country	Index 2020		Country	House price volatility (OECD)
Western Europe	Luxembourg	151		Ireland	10,95
	Netherlands	143		United Kingdom	6,32
	Germany	139		Netherlands	4,95
	Austria	136		France	4,79
	Ireland	135		Luxembourg	3,65
	Belgium	119		Austria	3,43
	France	117		Switzerland	3,1
	Switzerland			Belgium	2,69
	United Kingdom			Germany	2,04
Northern Europe	Denmark	123		Denmark	9,84
	Sweden	122		Finland	7,89
	Finland	106		Norway	7,22
	Iceland			Sweden	6,59
	Norway				
Southern Europe	Portugal	153		Spain	7,47
	Malta	129		Greece	5,69
	Spain	128		Portugal	5,21
	Greece	110		Italy	4,39
	Cyprus	108			
	Italy	100			
Central and Eastern Europe	Hungary	179		Hungary	8,54
	Czech Republic	154		Czechia	3,23
	Latvia	146		Latvia	19,65
	Slovakia	145		Slovakia	12,23
	Lithuania	141		Lithuania	18,8
	Bulgaria	137			
	Slovenia	136			
	Poland	135		Poland	17,51
	Estonia	133			
	Croatia	130			
	Romania	128		Romania	5,21

Source: OECD

Whereas the left part of Table 2 gives an overview of recent development of house prices, house price volatility, on the right-hand side, is also a meaningful indicator. In the OECD definition, house price volatility is another term for the standard deviation of house prices over the longer run. It is an indicator of the fluctuation of house prices around the average (trend).

Volatility reflects cycles in housing prices. Studies by for instance Cerutti et al. (2015) indicate that the depth of house price cycles, e.g. high volatility, are explained to a great extent by high LTVs, relaxed lending standards and longer maturity of mortgages, next to the normal economic cycle and interest rate developments. In this, the Scandinavian countries need some explanation because according to the data in Table 1 they have relatively low LTVs while they have high house price volatility. Sweden and Norway brought down the LTVs from 100% because they feared overheating of the housing market around 2010. Denmark is a specific case because many people take out an additional private loan to finance the remaining 20%.

At least three countries reveal a relatively low house price volatility. It indicates that these housing markets are less exposed to interest rate hikes and general economic development. For Belgium and Germany, Van der Heijden et al. (2012) have suggested that this relates to typical structures of housing provision. In these countries, self-provided housing is common, where prospective owner-occupiers have a large individual dwelling built (or an existing one entirely refurbished) for a prolonged occupation. In several other countries (UK, the Netherlands, partly Ireland) households access home ownership in a small dwelling in the existing housing stock and subsequently move after income increase or household change. The timing of such moves is determined by the economic cycle: under adverse economic conditions, homeowners often delay their move, because they have trouble selling their home.

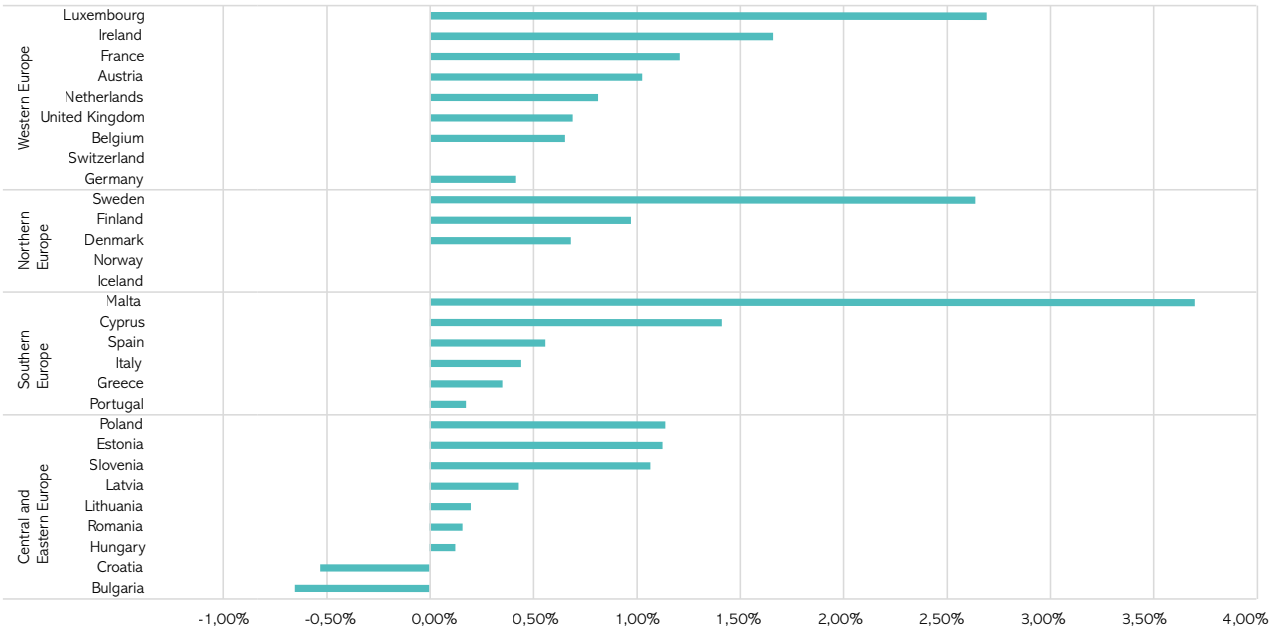
In fact, relaxed lending standards often coincide with upswings in house prices as lenders expect smaller credit risk on their mortgage portfolios. During downswings, they tighten their criteria (see e.g. Geanakoplos, 2010). Regulation of mortgage markets potentially reduces volatility. In the case studies, we show in some more detail the influence of government policies on mortgage markets.

In those countries with high volatility, such as the UK, the housing market is often referred to as one of 'winners and losers' (after the title of Hamnett's classic study of 1999). Homeowners can accumulate much wealth during a house price boom, but they also risk losses during a decline. House price declines do not automatically cause problems for homeowners, but an economic slump often correlates with increasing unemployment. Several countries mitigate this risk through their social security system (high replacement income) as well as a stronger legislation against repossessions by mortgage lenders (see e.g. Cano Fuentes et al., 2013).

6.4.6. Demographic development

Figure 3a presents the demographic development. This has direct relevancy to housing because it predicts future housing demand. There are strong discrepancies between the countries, with some particularly small growth rates in central and eastern Europe. Also, for several southern European countries, the growth rate is relatively small. These data are relevant to the analysis on availability. In principle much more data could be used, such as ageing populations and household to housing stock ratios, but we aim to keep this introductory part somewhat parsimonious. In the availability section we deal with these indicators in some more detail.

Figure 3a: Population growth 2012-2020



Source: Eurostat

6.5. ANALYSIS OF INPUTS, OUTPUTS AND OUTCOME

6.5.1. Inputs and outputs: a first assessment

The 2015 housing chapter had already concluded that little relation could be established between some public financial inputs and housing outcomes. As it makes little sense to repeat this analysis, we first made a rough exploration of whether these findings are still valid.

The 2015 publication used investment in housing and community amenities as a percentage of GDP. These data show very little changes in time, so we do not repeat any analysis with these data.

Furthermore, the OECD has a dataset for spending on housing improvements and regeneration. This dataset is somewhat problematic because it lacks data for many countries under study, while in the other countries the spending levels are very small or just non-existent. Such data do not allow for any meaningful international comparison.

The OECD also provides direct investment in social housing for a selection of countries. However, this dataset also only covers a small number of countries and is therefore not fit for our purposes. Furthermore, social housing is not always an exclusive government enterprise; in some countries it is operated by financially independent housing associations. The Netherlands and (recently) the UK are examples. A high appreciation of social housing in one of these countries, while the government invests little in social housing, might overvalue public sector performance. On the other hand, the example of Austria shows that relatively high government spending on social housing still exists.

This does not alter the fact that those countries with a relatively large social-public rental sector benefit from the past performance of the public sector. Until the 1970s and even in the 1980s, these governments made available large-scale construction subsidies and advantageous government loans (see e.g. Boelhouwer & Van der Heijden, 1992). Also, large-scale urban regeneration programmes of deteriorated inner city housing complexes during the 1980s were largely subsidised by governments.

The approach in this chapter will focus mainly on input and outcome. Output is regarded as a policy or an instrument, for instance a public housing construction programme or a housing allowance programme. Unfortunately, the available data from Eurostat, OECD or other sources often do not have data on the number of recipients, i.e. the output. Such data would allow us to make a sharper assessment of, for instance, affordability outcomes of those households that receive a housing allowance. Such an approach requires a country-by-country investigation of many public documents and datasets. This present study is thus more about exploring variations per country than an exact measurement of international differences in public sector performance.

We do however have very usable outcome indicators for the entire (household) population per country or even for income groups and household types. By correlating the input–output, we can make a general assessment of the impact of government inputs.

6.5.2. Indicators with potential relevance for the analysis

A promising indicator is spending on housing allowances. Although we do not have data for each country, we attempt to correlate it with housing affordability outcomes. Still, we are aware that housing allowances sometimes serve as a social safety rather than 'only' support to alleviate rental burdens. For instance in the UK context, with small cash welfare benefits for the unemployed, the housing allowance is generous as it supports such households to have at least a roof over their head. At the same time we need to be aware that this analysis does not unveil all positive examples. Austria, for example is one of the few countries with a significant spending on social housing construction subsidies while it dedicates a relatively small budget on housing allowances. Yet for a quantitative analysis, the data on social housing construction are unfit.

In the previous paragraph the effect of homeowner's taxation on tenure outcomes has already been assessed in relation to mortgage debt levels of households. Tax relief for home owners is an instrument implemented by governments with the intention to stimulate home ownership. However, it often also stimulates high mortgage take-up and subsequently high house price levels in countries with tight housing markets (see also several OECD and other economic analyses).

For several countries, the OECD has also compiled some data on public spending on grants (subsidies, not taxation) and guarantees for homeowners. These data are highly relevant, but they do not cover all countries and as such, they do not serve our research purposes. However, the case study on housing finance will address this topic to some extent.

As indicated, we will also explore regulation indicators. The OECD has a rental regulation indicator that will be scored against housing affordability outcomes. Also, an indicator on planning restrictions is considered useful for an analysis with availability outcomes.

6.6. HOUSING QUALITY

6.6.1. Quality outcomes

The main indicator we use here is, similar to the 2015 housing chapter, 'severe housing deprivation'. This indicator combines those living in an overcrowded dwelling with at least one quality problem (see Eurostat or OECD for the definition of overcrowding). Figure 4 presents the data for all households as well as for the lowest incomes. In northern and western Europe, the incidence of housing deprivation is small for all households and somewhat higher among the lowest incomes. In southern Europe there are more households who experience housing deprivation. Among the lowest incomes it reaches around 10% in the larger countries, while Cyprus and Malta compare (favourably) to western and northern Europe. The incidence of severe housing deprivation is relatively high in several of the larger eastern European countries (Romania, Bulgaria and Hungary), for both the average household and for the lowest incomes. The other countries in this region compare more or less to the situation in southern Europe.

Two other datasets on housing quality are provided in Appendix 2. They present relevant data, but we do not deem them reliable enough as outcome indicators. One of them is insufficient housing quality: a leaking roof, damp walls, floors or foundation, or rot in window frames or floors. It gives an indication of quality issues, but not the intensity at which they exist. As such, it potentially allocates similar scores to a country with generally minor quality problems, while in the other country the quality issues are much more intense.

The other dataset in Appendix 2 is the proportion of housing that lacks basic amenities: a toilet or shower. It shows relatively high proportions in some eastern European countries, while in other counties these problems are negligible. For any analysis with public sector inputs, we do not expect significant relations with present government spending on housing because these problems are of a more structural, historic nature.

Table 5: Severe housing deprivation as a percentage of the total population and 60% below median income, 2020 or latest year available

Region	Country	Spending on housing allowances	Rent regulation indicator
Western Europe	United Kingdom	1,38%	0,1
	Luxembourg	0,02%	
	Ireland	0,12%	0,38
	France	0,69%	0,53
	Germany	0,73%	0,75
	Netherlands	0,53%	0,47
	Austria	0,09%	0,5
	Switzerland		0,57
	Belgium		0,5
Northern Europe	Finland	0,88%	0,3
	Sweden	0,32%	0,94
	Iceland	0,21%	
	Denmark	0,72%	0,43
	Norway	0,10%	0,5
Southern Europe	Italy		
	Greece	0,21%	
	Portugal	0,01%	0,38
	Spain		0,57
	Malta		
	Cyprus	0,03%	
Central and Eastern Europe	Romania		
	Hungary		
	Czech Republic	0,15%	0,32
	Slovenia	0,04%	
	Poland	0,04%	0,4
	Slovakia		0
	Latvia	0,05%	0,41
	Lithuania	0,03%	
	Estonia	0,06%	0,22
	Croatia		
	Bulgaria		
Oceania	Australia	0,24%	
	New Zealand	0,43%	
Northern America	United States	0,13%	

Source: OECD

6.6.2. Analysis of quality and (indirect) government inputs

The housing chapter of the Public Sector Performance Study of 2015 did not find a significant relation between government's financial inputs and housing quality. For the present study, we tested public spending on housing and community amenities on severe housing deprivation, but we found no significant correlation. Also, no correlation was found between housing deprivation and spending on housing improvements and regeneration. These findings concur with a more extensive study on the EU-SILC housing quality indicators (Spirkova et al., 2017), which found no correlations between government's financial inputs and housing quality indicators.

Still, it is quite clear that severe housing deprivation and the lack of basic amenities is remarkably high in some eastern European countries, especially those with the lowest incomes. Policies to improve the housing stock and address overcrowding could alleviate such problems.

The alternative hypothesis we follow here is that cross-national differences in housing quality are more a result of variations in income levels. As we indicated, housing quality is not solely a government policy, but market actors and third-sector housing associations also maintain their dwellings without any government intervention. Furthermore,

the general policy towards owner-occupiers is that they are self-reliant in the maintenance of their dwelling, although there may be subsidy programmes for renovation. The expectation is that households in a country with a higher income level are better able to maintain their dwelling. In this section we follow the 2015 housing chapter, which also found correlations between equivalised housing income and the composite housing indicator. In addition, we also expect that housing quality is related to within-country income differences. This hypothesis thus assumes that government's policies to reduce income differences may positively affect housing quality for lower incomes. The measure for within-country income differences is the often-used Gini index (see appendix for the data overview).

Our analysis reveals a medium correlation of housing quality issues and the Gini index, showing that income differences within a nation can lead to poor housing quality (Table 3). A correlation of equivalised incomes and housing quality issues is not significant. Again, we need to mention that the data on housing quality may not be perfectly suitable so the outcomes of this small correlation should be interpreted with caution.

The composite indicator of housing deprivation correlates strongly with the Gini index. A similar strong correlation coefficient was found for the relation between severe housing deprivation and equivalised income.

Table 3: Analysis of relation between housing quality and household income variations

	Correlation coefficient	R2
Quality issue X GINI	40,40%	16,30%
Quality issue X Eq income	-19,40%	3,80%
Housing deprivation X GINI	64,10%	41,10%
Housing deprivation X Eq income	-68,10%	46,30%

Source: OECD data, RIGO calculations

6.7. HOUSING AVAILABILITY

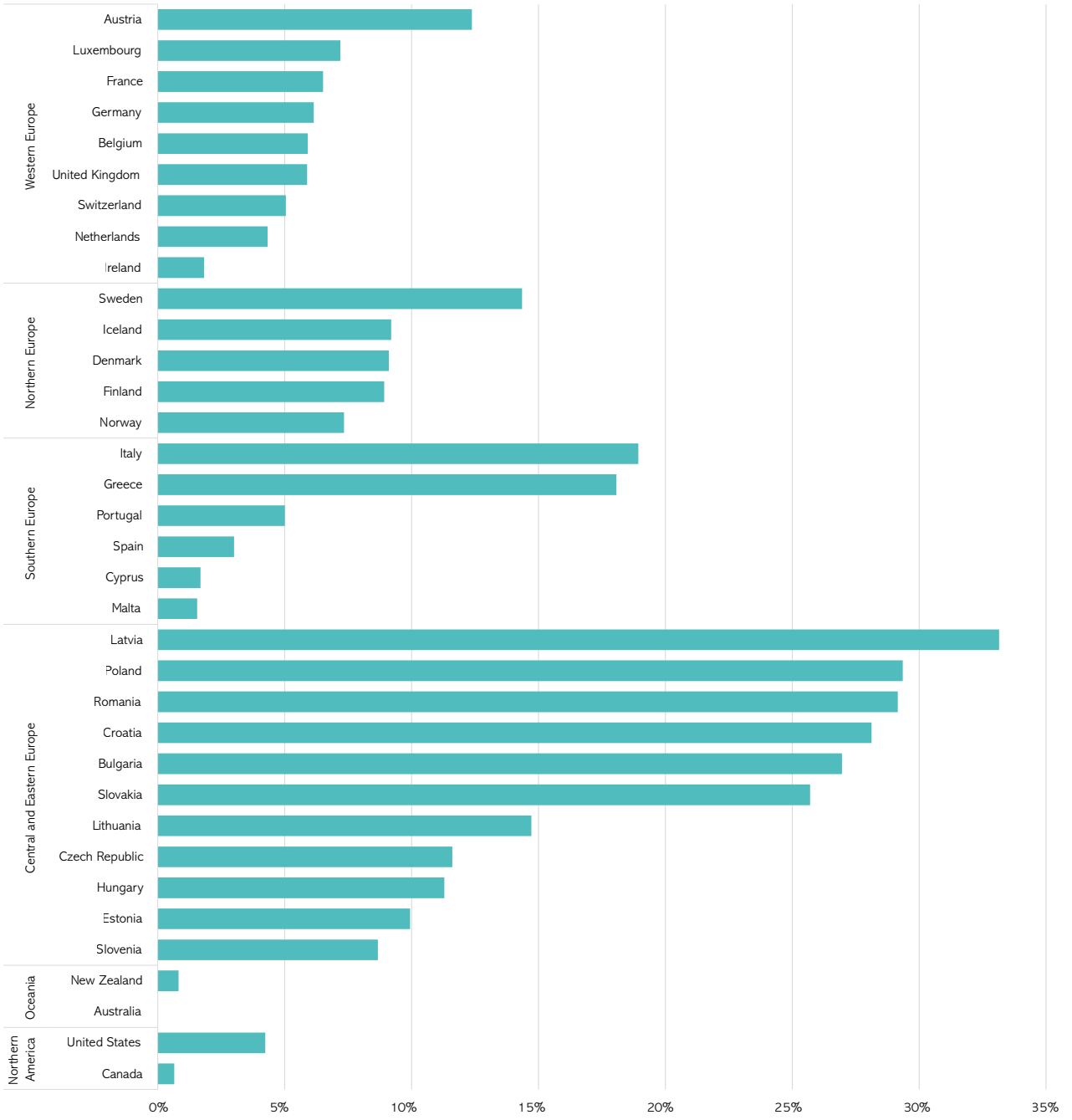
6.7.1. Availability outcomes

There are few countries that thoroughly investigate the size of a quantitative housing shortage, making it hard to genuinely assess outcomes on housing availability. Of course, on a general level, there is strong variation in demographic growth which can be an indicator of oncoming housing shortages or oversupply. In several southern European countries and in eastern Europe, population decline is visible, either from population ageing (southern Europe), migration of young people in search of better prospects (eastern Europe) or both. Whereas population growth poses a housing provision challenge for the authorities, it does not imply that population decline alleviates all problems. In fact, an overhang of dwellings, often in a poor state of maintenance, can become a burden in terms of liveability. We decided against constructing an indicator that could give some impression of housing shortages by comparing household growth and housing construction. The problem is that it often poses a chicken and egg relation: household growth is not possible without new dwellings, unless households share dwellings. There are no data available on such arrangements, but several other indicators can serve as a proxy for housing shortages: overcrowding, young adults living with parents, homelessness rates and the number of vacant dwellings. Definitions of the concept of overcrowding are derived from Eurostat and the OECD.

The average share of overcrowded households is 10% in the OECD (Figure 5). Overcrowding is most prevalent in a number of central and eastern European countries, with shares above 25%. In Italy and Greece overcrowding rates are relatively high as well, exceeding 15%, although other southern European countries such as Portugal and Spain show below-average rates (less than 5%).

In western Europe as well as in the non-European countries, overcrowding rates are generally below average (Austria being the exception). In northern Europe, overcrowding exists somewhat more than in western Europe, but it is still quite uncommon. This information is relevant, but it does not give a concrete number for housing shortages. Rather, it gives an indication of an insufficient size of dwellings while it is more complicated to grasp how many people within the dwelling would live in a separate (their own) dwelling.

Figure 5: Overcrowded households around 2020

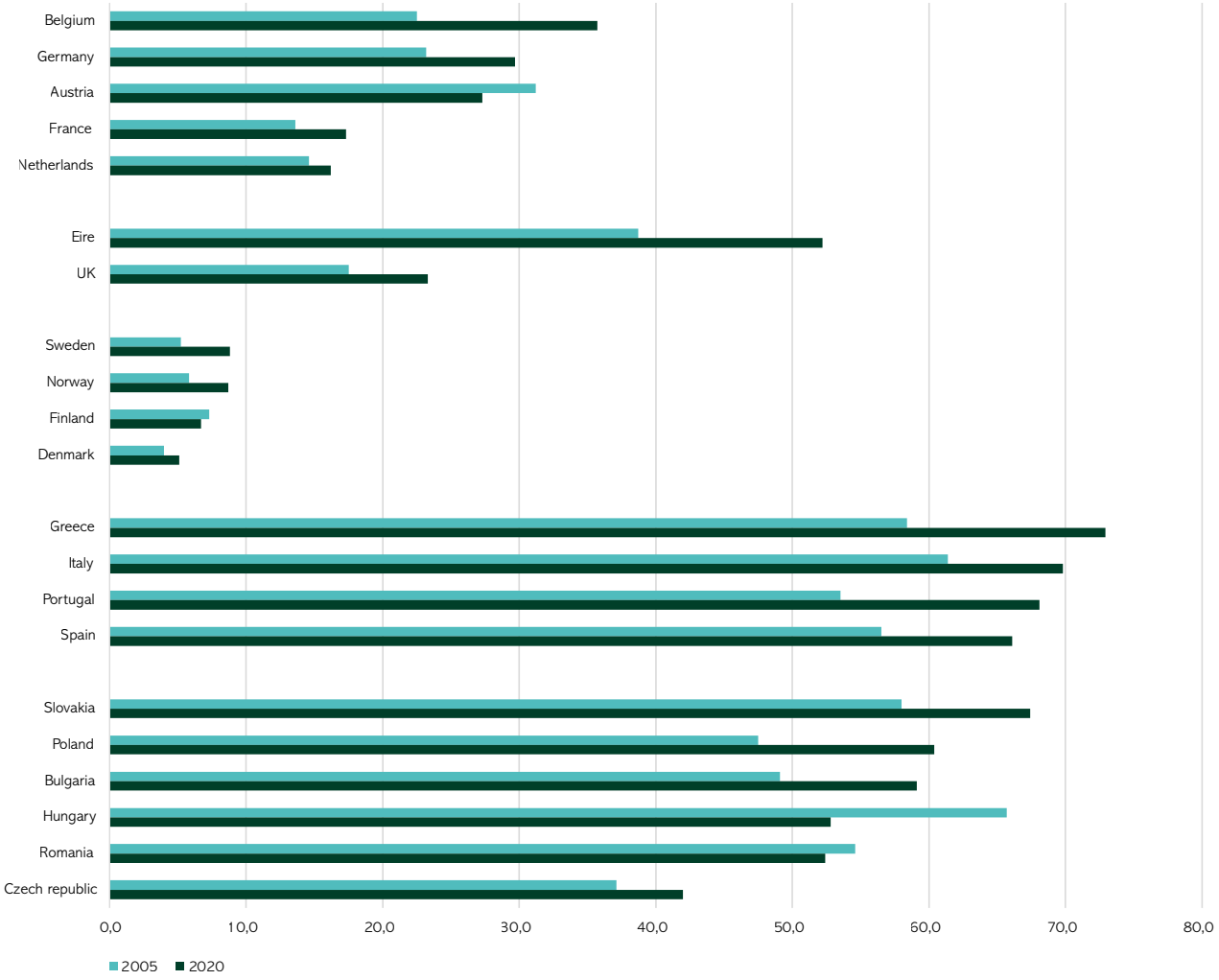


Source: OECD

In this vein, the proportion of young adults living in the parental home may be a better indicator. A comparatively high share of younger people (between ages 25 and 29) living with parents can be an indicator of a housing shortage, although other contextual variables such as culture and job security for young households are deemed relevant as well (see e.g. Angelini et al., 2011; Holdsworth, 2000). However, an increase can be an indicator of mounting housing shortages. Traditionally, the number has been high in southern Europe, with over 65% of young adults living with parents in 2020 (Figure 6). Within western Europe, Ireland and Luxembourg have above-average rates, whereas in the Netherlands and France the number is relatively low. The lowest rates are found in northern Europe, where in most countries less than 10% of young adults live with their parents. Central and eastern Europe shows a mixed picture, with rates over 60% in the Slovakia, Slovenia and Hungary, and lower rates in Latvia and Estonia, among others. In the United States the rate of young people living with parents is slightly above average, whereas in Canada it is below average. Still, in many countries there is a remarkable increase in the proportion of young adults living in the parental

home. This is one motivation to further investigate this indicator. Increasing housing shortages might be an underlying factor, possibly in combination with other, labour- market related factors. We will investigate this further, but we first present two other relevant outcome indicators that proxy housing shortages.

Figure 6: Proportion of young adults (25–29 years) living in the parental home



Source: Eurostat

6.7.2. Other outcome indicators

The share of homeless people and vacant dwellings is relevant as well when analysing housing availability, but these indicators often face measurement issues, because definitions vary between countries and data are simply unavailable for some countries. We refer to Appendix 3 for the statistical overviews per country of these indicators but we describe them shortly in this paragraph.

The proportion of vacant dwellings is often regarded as an indicator of a sufficient availability of dwellings, but this can be quite misguided. Many vacant dwellings are often located in peripheral areas or otherwise less accessible localities, while housing markets can be very tight in urban areas. Spain and Italy are often cited as examples. In fact, the academic literature mentions a housing paradox in some Mediterranean countries, with large vacancy rates while many households experience significant housing shortages (see e.g. Hoekstra, 2011; Gentili & Hoekstra, 2020). See also the data in Figure 12, which do not show a particularly high satisfaction with the availability of affordable housing in southern Europe. Location of housing is very important as these countries experience migration from rural to urban areas. Regions that suffer from population decline often have many poorly maintained vacant dwellings. Furthermore, a speculative housing construction boom (after lax planning restrictions) led to an unprecedented overhang of newly constructed dwellings in Spain, often in less favoured locations within or just outside urban areas.

6.7.3. Availability outcomes in relation to inputs

First of all, the available financial inputs of governments' spending on housing and community amenities show very little correlation with indicators such as overcrowding and young adults living in the parental home. Of course this is a very general input indicator, which may not catch all targeted measures to address housing shortages. The analysis of public sector inputs is further complicated by the fact that only a few countries publish data on investment in affordable social housing. In fact, quite often investment in social housing is the domain of financially independent social housing providers and not the government.

Yet the increase in young adults aged between 25 and 29 living with their parents is quite remarkable and this might be related to underlying housing market factors of the last decades. It suggests mounting housing shortages. In this paragraph we consider, first of all, as a possible explanatory factor 'planning restrictions' in relation to the unresponsiveness of new housing construction following the global financial crisis. So, we do not argue that planning restrictions are a structural source of housing shortages, but after a hike in housing demand, it can make housing production somewhat slow to respond because of complicated planning procedures.

A gradual shift of policy preferences in western Europe and Scandinavia may also play a role. There has been a slow process of the decline of affordable social rental sectors and one explanation may be that young people are increasingly forced to stay in the parental house rather than making a move into an affordable social-public rental dwelling at a comparatively young age.

6.7.4. Young households and affordable co-ops, social and public housing

First, we tested the hypothesis that comparatively large affordable rental sectors are related to a lower incidence of young adults living at home (see Appendix 4 for statistical data). The analysis confirms this. There is a high and negative correlation of 0.71, indicating that the more young adults live in the parental house, the smaller the social-public rental sector. This finding concurs with an earlier study by Angelini et al. (2011) who found that social housing provision policies play a key role. Still, specific institutional factors are also expected to play a role. For instance, there is the chicken and egg question: have large social rental sectors been established with the goal of granting young adults an easy first step on the housing market? Or did some countries refrain from establishing those sectors because they regarded it more appropriate for young adults to move into home ownership immediately, which coincides with marriage and fewer unmarried young adults living independently? Such cultural questions have been addressed by Holdsworth (2000), among others.
In more recent years, it has also been suggested that fewer young adults are able to enter the housing market after labour market deregulation (see e.g. Arundel and Doling, 2017). For some time already, an increasing number of young households have lived on insecure short contracts, often with variable incomes, while wage disparities also grow (see OECD, 2011). Such an analysis goes beyond the scope of our study, but it is a topic that opens avenues for interesting research.

6.7.5. Unresponsiveness of housing supply in relation to planning restrictions

Another, more concrete factor that has been mentioned in relation to housing shortages and rapid house price increases is the unresponsiveness of housing supply (see e.g. Geng, 2018). Planning restrictions usually do not create housing shortages when demand is stable because planners can oversee oncoming demand. Rather, a large slump in housing construction after falling demand may lead to problems in boosting housing supply when demand increases again.
We tested this hypothesis by correlating the years for housing production to reach pre-global financial crisis levels with the planning restriction indicator constructed by the OECD. The value of this indicator ranges from 2 to 30, with a higher value reflecting stronger planning restrictiveness. We measure from the lowest point in housing construction after 2008 until construction reaches the 2008–2009 levels. The correlation stands at around 47%, not overly high but surely a statistical indication that planning restrictions have a role to play.

Such a situation can be avoided by government's anti-cyclical investment in affordable housing. Even though demand for owner occupation can slump during a crisis, usually there is enough demand for affordable, less risky rental housing. Such was, for instance, the experience in the Netherlands in the early 1980s, when the government supported social housing construction programmes after a fall in demand for newly constructed owner-occupied dwellings (see e.g. Van der Schaar, 1989).

Table 4: Recovery time of housing construction levels and land use restriction indicator

Country	Time to reach pre 2009 crisis construction levels	Land use restriction indicator OECD
Austria	5	17
Belgium	5	18
Czech republic	5	12
Demark	8	15
Finland	8	17
France	7	20
Germany	5	17
Greece		2
Hungary	7	27
Ierland	7	10
Italy		10
Latvia	9	26
Lithuania	4	12
Luxemburg	5	12
Netherlands	10	11
Poland	5	13
Portugal		12
Romania	6	12
Slovakia	7	17
Spain	15	23
Sweden	5	13
Norway	6	13
United Kingdom	9	24

Source: Hypostat and OECD, Rigo calculations

6.8. HOUSING AFFORDABILITY

Housing affordability is multidimensional and cannot always be measured by comparing rent or mortgage costs against disposable household income. Especially for lower incomes, a rent burden of 'only' 20% may still leave little budget for other expenses. For the higher incomes, a rent (or mortgage) burden of around 40% will usually leave their household with ample resources for other expenses.

Factors that also play a role are:
- Housing allowances, usually for tenants under a certain income threshold
- Tax relief for owner-occupiers, often deduction of interest paid against gross income

These public benefits reduce the interest or rent payments of households.
However, there are also other costs that are directly related to the dwelling:
- property taxation
- local duties related to dwellings
- maintenance for owner-occupiers
- energy expenses

In the introduction of this chapter, it became clear that many European households live in owned-outright dwellings, especially the older owner-occupiers; also, eastern European owner-occupiers are often outright owners. By no means does this always imply that their housing costs are small. Older households who live in an owned-outright dwelling that is relatively large may face high expenses in energy. Property taxes and local duties also need to be paid. Furthermore, the generosity of pension systems is relevant as older people receiving low pension benefits while living in a large, energy inefficient house might struggle to make ends meet.

In the past decade, energy efficiency has become more prominent in policy discussions and governments are looking at ways to enhance the energy efficiency of dwellings. For lower incomes, an energy efficient dwelling can greatly reduce housing costs, leaving a higher residual income after paying for all housing-related expenses.

With all these caveats in mind, we explore the role of government in housing costs. First, we present the general housing affordability outcomes. Then we explore the impact of financial inputs targeted at increasing affordability. Finally, we explore the impact of government regulation of the rental sector.

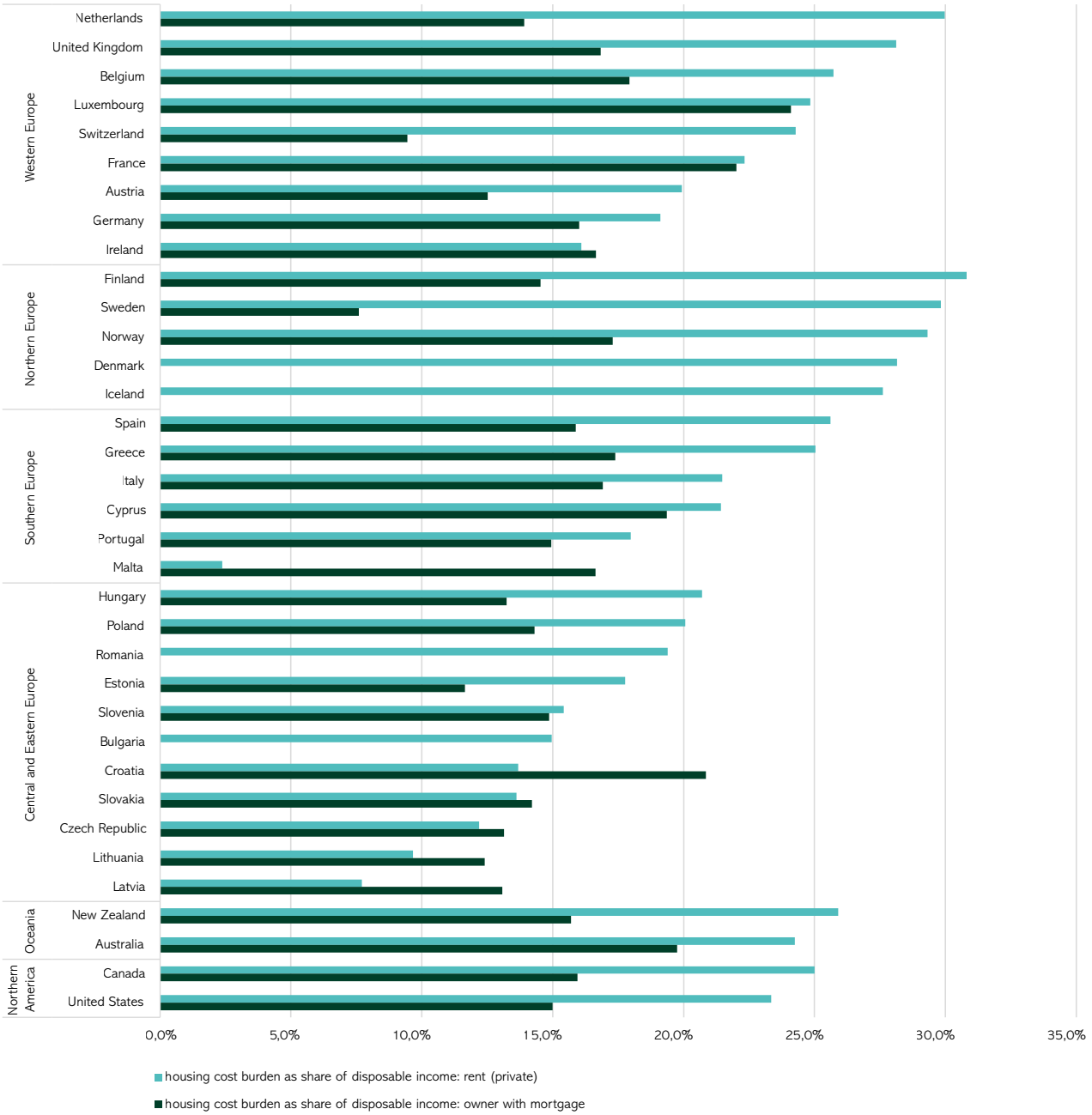
In addition, we present a short summary of measures taken by governments during the Covid crisis (see box, page 293). In anticipation of income loss of households, several governments stepped in to avoid evictions by introducing, for instance, temporary eviction moratoria or more generous housing allowances.

6.8.1. Housing affordability outcomes

In this section we look at outcome indicators of housing affordability: housing cost burden, overburden among lower incomes, and rent or mortgage arrears. Housing cost burden is defined as the rent or mortgage interest payments over the disposable income. Disposable income includes housing allowances or the fiscal effects of home ownership. The latter also includes tax refunds of interest payments, i.e. the aforementioned interest deductibility schemes.

Figure 7 presents the housing cost burden as a percentage of the disposable income. The most notable pattern in Figure 7 is the difference between owners and renters. Renters have higher housing cost burdens in general, which can be explained by the fact that long-time homeowners often have relatively small mortgage cost as they bought their dwelling at a time when house prices were lower. Also, some countries show high income disparities between homeowners (with mortgages) and tenants. For recent home buyers, i.e. first-time buyers, the housing cost burden is usually larger. We should also reiterate that in many southern and eastern European countries the proportion of outright (unmortgaged) owners is relatively high; these households are not depicted in Figure 7. We cannot distil strong regional patterns from the overview in Figure 7. However, the rent-to-income ratio is highest in northern Europe and several western European countries.

Figure 7: Housing cost burden, tenants and homeowners with a mortgage



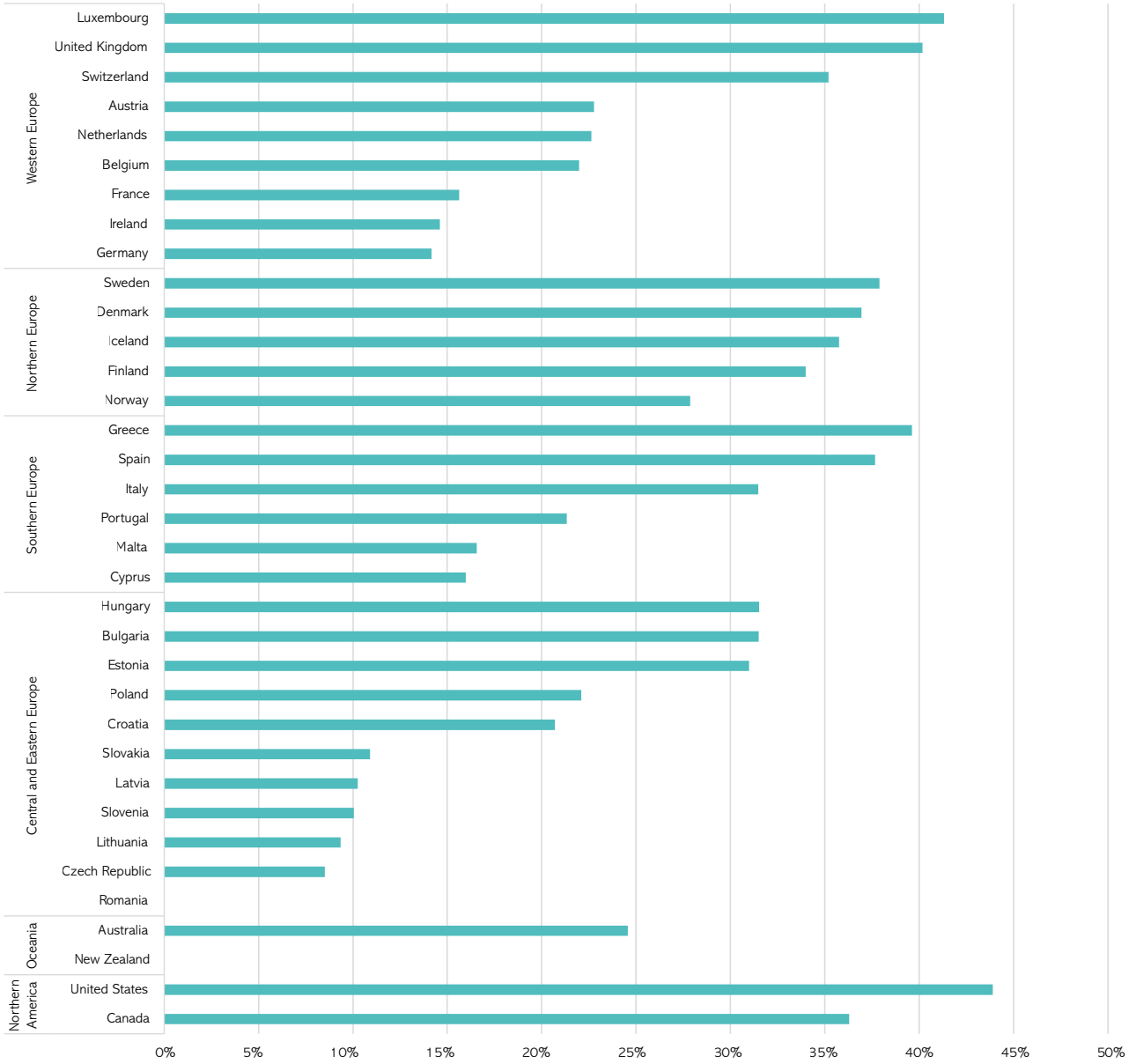
Source: OECD

The share of households that have a housing cost overburden is defined as households that spend more than 40% of their disposable income on rent or mortgage interest (Figure 8). In this definition, 'overburden' is a relative concept. We only look at the lower incomes with overburden as it has the highest impact and payment risk among those households.

Next, we look at the share of the low-income population in the bottom quintile of the income distribution experiencing housing cost overburden (Figure 8). A number of countries in western Europe have relatively high rates of housing cost overburden among low incomes, with percentages of 35% to 41% in Switzerland, the United Kingdom and Luxembourg. In contrast, other western European countries show relatively low rates of overburden: in France, Ireland and Germany the overburden rate is around 15%. Austria, the Netherlands and Belgium take a middle position with overburden rates of around 23%. In northern Europe, overburden rates are relatively high, hovering around 36%. Norway is the exception with a 28% overburden rate (which is still higher than most western European countries).

In southern, central and eastern Europe, we see countries with relatively high rates of overburden (Greece and Spain around 39%; Hungary, Bulgaria and Estonia around 31%) and countries where the rate of overburden among low incomes is relatively low. These are, for example, Malta and Cyprus in southern Europe (around 16%) and Lithuania and the Czech Republic in central and eastern Europe (both 9%). Finally, the overburden rate is relatively high in Canada (36%) and especially in the US, where 44% of the low-income population experiences housing cost overburden. In Australia, the overburden rate is 25%.

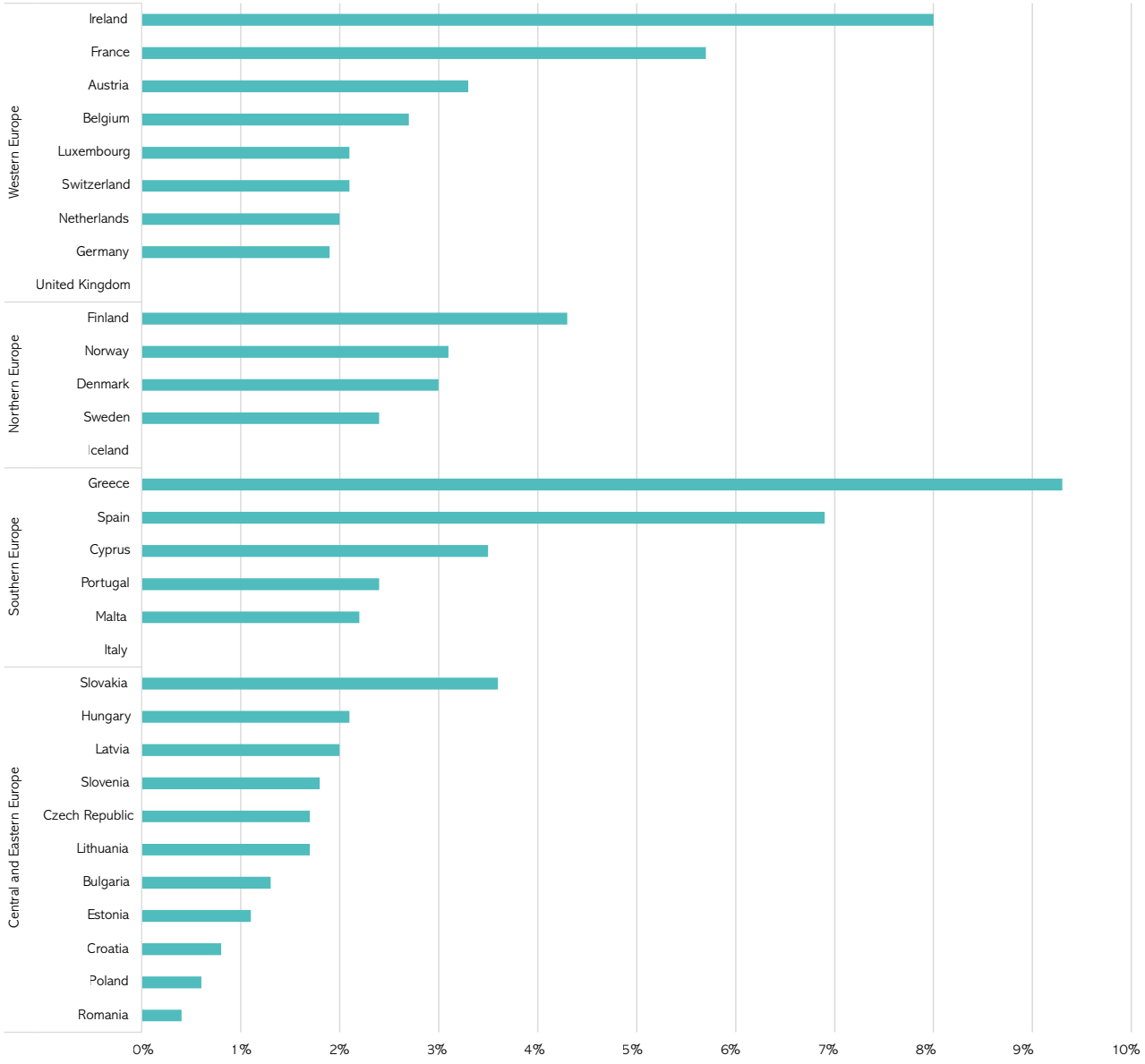
Figure 8: Housing cost overburden among lower incomes



Source: OECD

The share of households with rent or mortgage arrears (Figure 9) is relatively high in a few countries in western Europe (Ireland and France) and southern Europe (Greece and Spain). In most other western, northern and southern European countries the rate ranges between 2% and 3%. The lowest prevalence of arrears is found in central and eastern Europe, where the share is below 2% in most countries. This is likely related to the high number of outright homeowners in the region.

Figure 9: share of households with rent or mortgage arrears



Source: Eurostat

Covid-19 and looming affordability problems

The global financial crisis revealed some systemic flaws of welfare systems to protect homeowners against repossessions after crisis-related unemployment. The most poignant example was Spain and to some lesser extent Ireland. Home ownership had been strongly supported in these countries, but no social safety nets were in place to support homeowners who lost income after unemployment: general unemployment benefits or special housing allowances for low-income homeowners (see Cano Fuentes et al., 2013). It is estimated that over half a million Spanish homeowners experienced mortgage arrears and even the loss of their property. When Covid-19 led to lockdowns, the Spanish Ministry of housing scrambled for measures to avoid another home ownership crisis. This box gives an overview of measures in Spain and other countries to avoid home evictions, for both owner-occupiers and tenants.

A scan of the European Mortgage Federation reveals that mortgage moratoria had been implemented, some voluntary by mortgage providers. These moratoria consist of prolonging the repayment period or payment holidays. The latter often refers to paying later, but it can also imply a 'waiver' of payments. Sometimes the mortgage is renewed at a lower interest rate, as the rates were still falling in the EU. Hypostat (EMF-ECBC) comes to the following insights. Germany and the Netherlands had the least moratoria and were also less impacted than other countries in terms of arrears and GDP. Portugal and Italy were strongly affected in terms of distressed homeowners and GDP. They also had a high rate of moratoria. The UK, with the highest cumulative moratoria and a high number of casualties, was impacted by the crisis less than other countries, such as Belgium and Italy where casualties were higher and moratoria lower.

6.8.2. Affordability outcomes in relation to public sector inputs

The most important government inputs aimed at enhancing affordability is spending on housing allowances in the rental sector. Furthermore, rent regulation plays a role as it can protect tenants against rent hikes. One important remark applies especially to the UK, where housing allowances are not solely a housing policy tool, but a social safety net. As unemployment benefits and social welfare benefits are relatively small, the UK housing allowance is aimed at providing at least affordable accommodation to those with very limited means. Furthermore, it is evident that not all countries have housing allowances, while some dedicate only a very small part of their budget to housing allowances. The second indicator to be tested is the OECD rent regulation measure. It is an indicator with a value between 0 and 1 that measures the number of regulations that control rent levels or rent increases (Table 5). Variations in rent controls are high, with the UK an example of a relatively unregulated rental market, and Germany and Sweden with high levels of regulation. In the case studies we will present some backgrounds to private rent regulation systems.

Table 5: Spending on housing allowances and rental regulation indicator

Region	Country	Spending on housing allowances	Rent regualtion indicator
Western Europe	United Kingdom	1,38%	0,1
	Luxembourg	0,02%	
	Ireland	0,12%	0,38
	France	0,69%	0,53
	Germany	0,73%	0,75
	Netherlands	0,53%	0,47
	Austria	0,09%	0,5
	Switzerland		0,57
	Belgium		0,5
Northern Europe	Finland	0,88%	0,3
	Sweden	0,32%	0,94
	Iceland	0,21%	
	Denmark	0,72%	0,43
	Norway	0,10%	0,5
Southern Europe	Italy		
	Greece	0,21%	
	Portugal	0,01%	0,38
	Spain		0,57
	Malta		
	Cyprus	0,03%	
Central and Eastern Europe	Romania		
	Hungary		
	Czech Republic	0,15%	0,32
	Slovenia	0,04%	
	Poland	0,04%	0,4
	Slovakia		0
	Latvia	0,05%	0,41
	Lithuania	0,03%	
	Estonia	0,06%	0,22
	Croatia		
	Bulgaria		
Oceania	Australia	0,24%	
	New Zealand	0,43%	
Northern America	United States	0,13%	

Source: OECD

Any analysis of affordability in an international context is complicated because many subsidies or allowances, and taxation needs to be taken into account. The available data from the OECD on housing cost burdens are, as we understand it, gross housing costs against disposable income. Disposable income is defined as the income plus housing allowances or fiscal effects. Therefore, we are cautious in correlating the housing costs burden with spending on housing allowances as a percentage of GDP. It is even more complicated to correlate housing costs with fiscal policies for homeowners.

Here, we remark that those countries with a high budget on housing allowances often also have relatively high gross net rental costs (see Figure 7). It seems that in practice, many tenants in, for instance northern Europe, the Netherlands and the UK, often have much lower net rents, given significant government spending on housing allowances. Still, we did find a weak correlation of about 55% between government spending on housing allowances and rent-to-income levels. This also poses the question of whether housing allowances inflate rents. That is a topic of more research. One hypothesis may be that some countries have set relatively high housing quality standards: for dwellings to remain affordable, housing allowances are then required.

Similar measurement difficulties were found with the analysis of the relation of housing cost overburden and rent regulation. We found a weak, but positive correlation between these two indicators, while we would expect a negative relation: the more regulation, the lower the housing cost burden. One possible explanation is that rent regulation may have been introduced in countries which already had quite a high housing cost burden. This assumption also requires more investigation on a country-by-country basis. In fact, there may be a much more complex interplay between housing standards, regulation and subsidies.

6.8.3. Affordability and housing-related energy consumption

Heating of dwellings can come at significant financial costs. Several national housing cost studies now include an estimation of the energy bill related to heating, as well as other energy uses (cooking, electricity for appliances). Also, poor housing quality in terms of insulation translates into relatively high energy bills. Furthermore, those households under the poverty level in owner-occupied dwellings have fewer financial means to improve the energy efficiency of their dwellings. From this perspective, a well-maintained social housing sector could be a good alternative for the lower incomes.

More recently, the upward swing in fossil fuel prices, as a result of the Ukraine–Russia conflict, has repercussions for the energy bills for households across the world.

We are aware that many government and market sector programmes are underway to reduce reliance on carbon fuels. Also, programmes to assist lower-income homeowners in upgrading their dwellings have been introduced in several countries. Yet all these programmes are hard to catch in meaningful international comparative statistics. For instance, how many dwellings are properly insulated to accommodate carbon-neutral heating systems? How many dwellings have solar panels to stimulate cost neutrality in electricity? How much has been spent on this in the past years by government, landlords and owner-occupiers? Again, the mix of government, market, third-sector and households complicates an analysis of input, output and outcome.

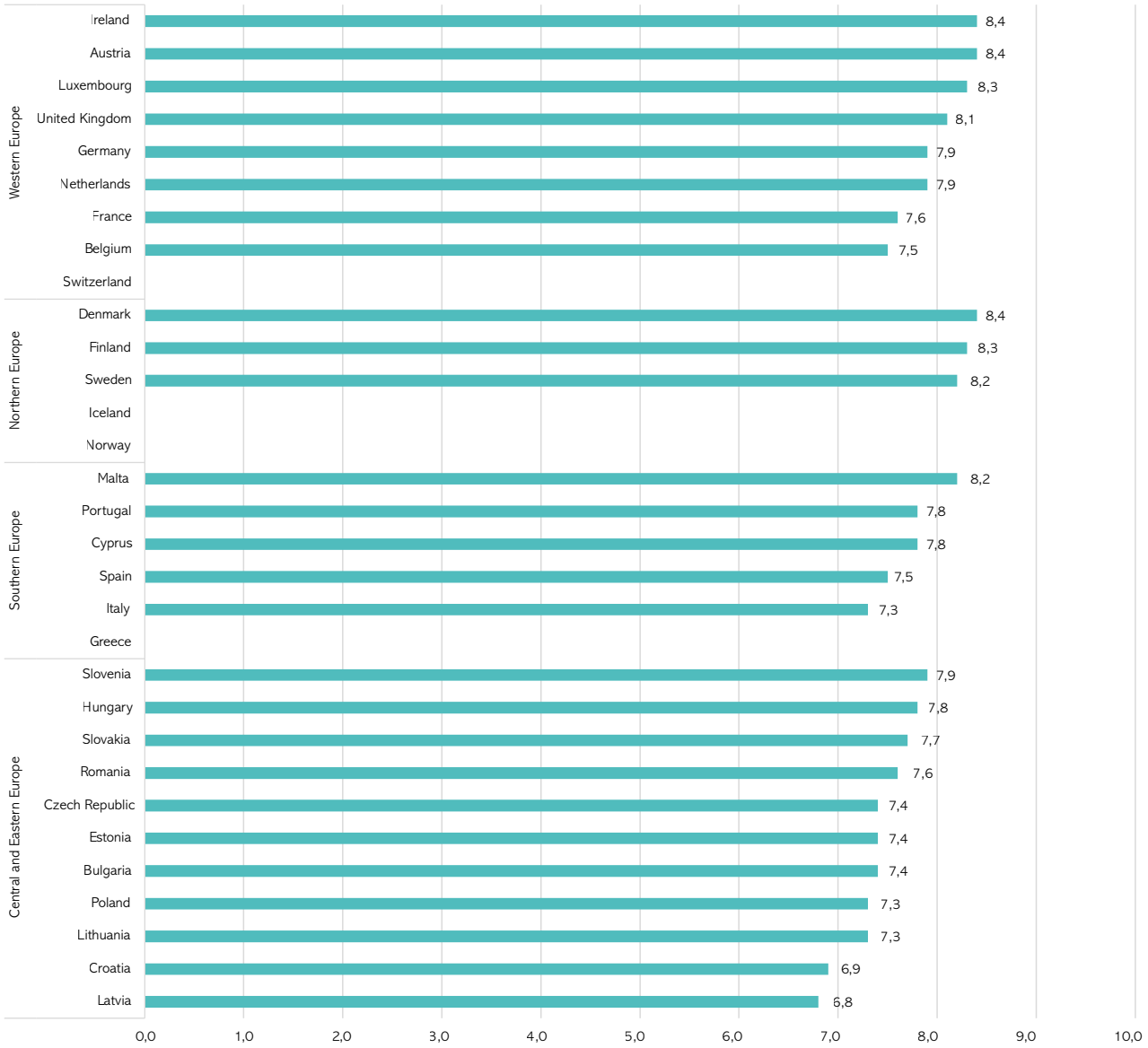
As of yet, we have few indicators that give any good international comparative measure of the relation between housing energy efficiency and energy consumption (heating, cooling etc). Eurostat is working on this so in time, these data should become available.

Still, some general insights may be drawn from the conclusions on housing quality in this chapter. Housing quality seems to be related to international income variations as well as to income differences within countries. In the foreseeable future, the higher-income countries may have fewer financial limitations in upgrading their housing stock towards more energy efficiency and carbon neutrality. In those countries, private individuals, housing associations, private landlords and the government simply have more financial means to do so. Furthermore, in countries with a strong tendency towards more income redistribution and government provision in housing and housing renovation, energy efficiency upgrading may take place in a swifter fashion than elsewhere, especially for the accommodations of lower incomes. To be more concrete, large-scale upgrading is to be expected more quickly in northern and western Europe, where the financial means are available and lower incomes are expected to receive more support.

6.9. TRUST, APPRECIATION

Eurofound, a European foundation aimed at improving living conditions, conducts several surveys among European residents that include trust indicators on housing-related topics. The first indicator we present here is general satisfaction with housing on a scale of 0 to 10. Most countries score between 7 and 8, suggesting wide satisfaction with their accommodation. The three Nordic countries score above 8, together with Ireland, Austria and Luxembourg. In southern Europe scores are somewhat lower, with only Malta scoring above 8. In eastern and central Europe the scores are between 7 and 8, with the exceptions of Croatia and Latvia. On average, the scores are highest in Scandinavia and lowest in central and eastern Europe. These high scores in Scandinavia seem to coincide with high average income levels and low income disparity (measured in Gini coefficients).

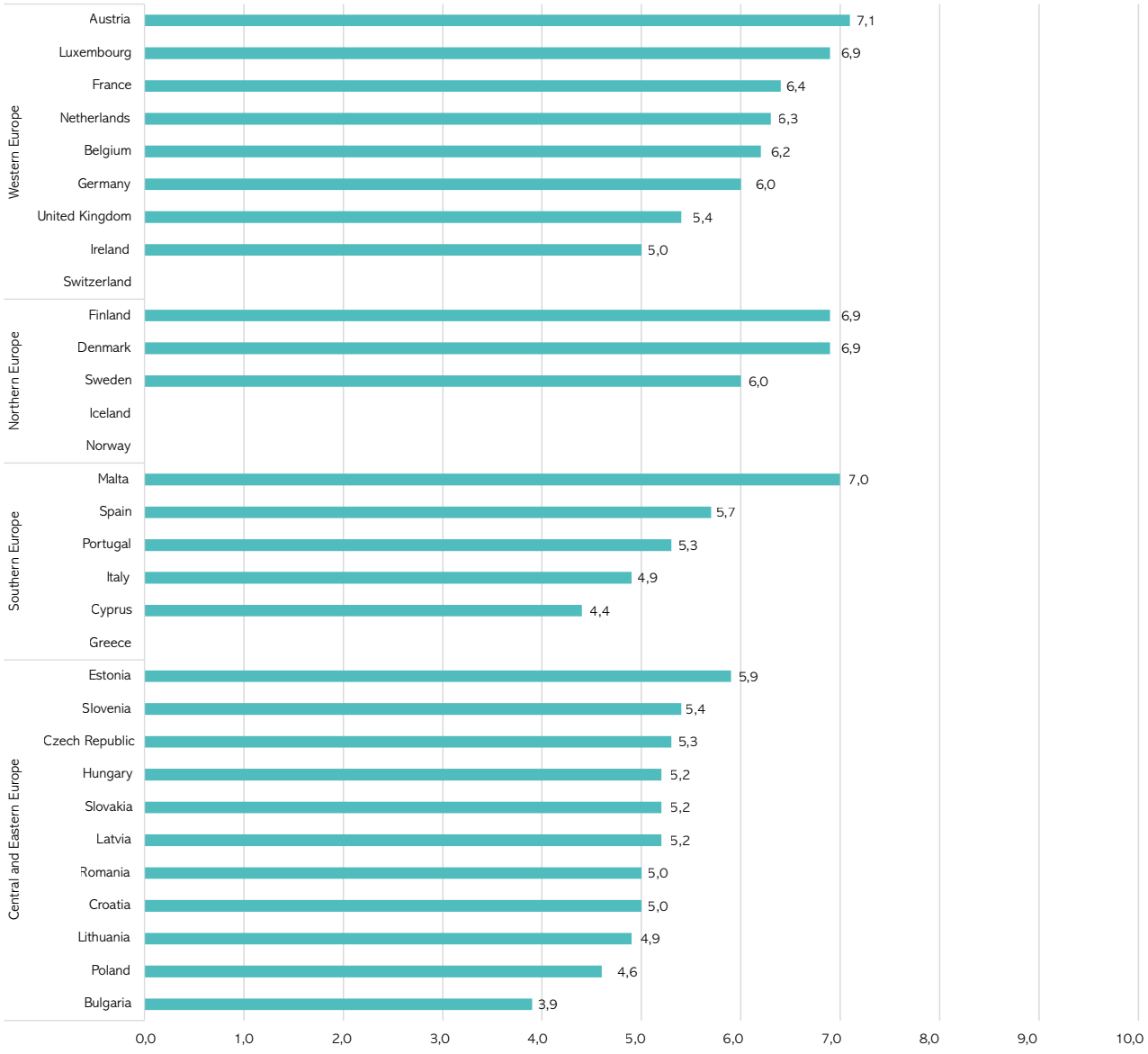
Figure 10 satisfaction with accommodation, 2016



Source: Eurofound

As mentioned in the introductory section, tenure patterns vary greatly within Europe. Many northern and western European countries have comparatively high proportions of social rental housing. With the exceptions of Ireland, Belgium and Germany, at least 18%–19% of the housing stock consists of social dwellings (see Appendix 1). The size of the social housing sector in southern Europe is small with not more than 5% of the entire stock, while in central and eastern Europe it is even smaller. Satisfaction with the quality of social housing reflects such patterns. Northern European countries score above satisfactory (6.0), followed by western Europe. Satisfaction with the availability by southern, central and eastern Europeans often remains below 6.0. Some of scores do not quite follow the size of the social rental stock. For instance, in Belgium the satisfaction with social housing quality is quite high, while it only has a small social housing stock. Also, several central and eastern European countries score relatively high, while availability of social housing is very small. So, it appears that these outcomes do not always reflect a small size of the social rented sector in these countries. In theory, a small social sector can be of relatively high quality.

Figure 11: Satisfaction with quality of social housing, 2016

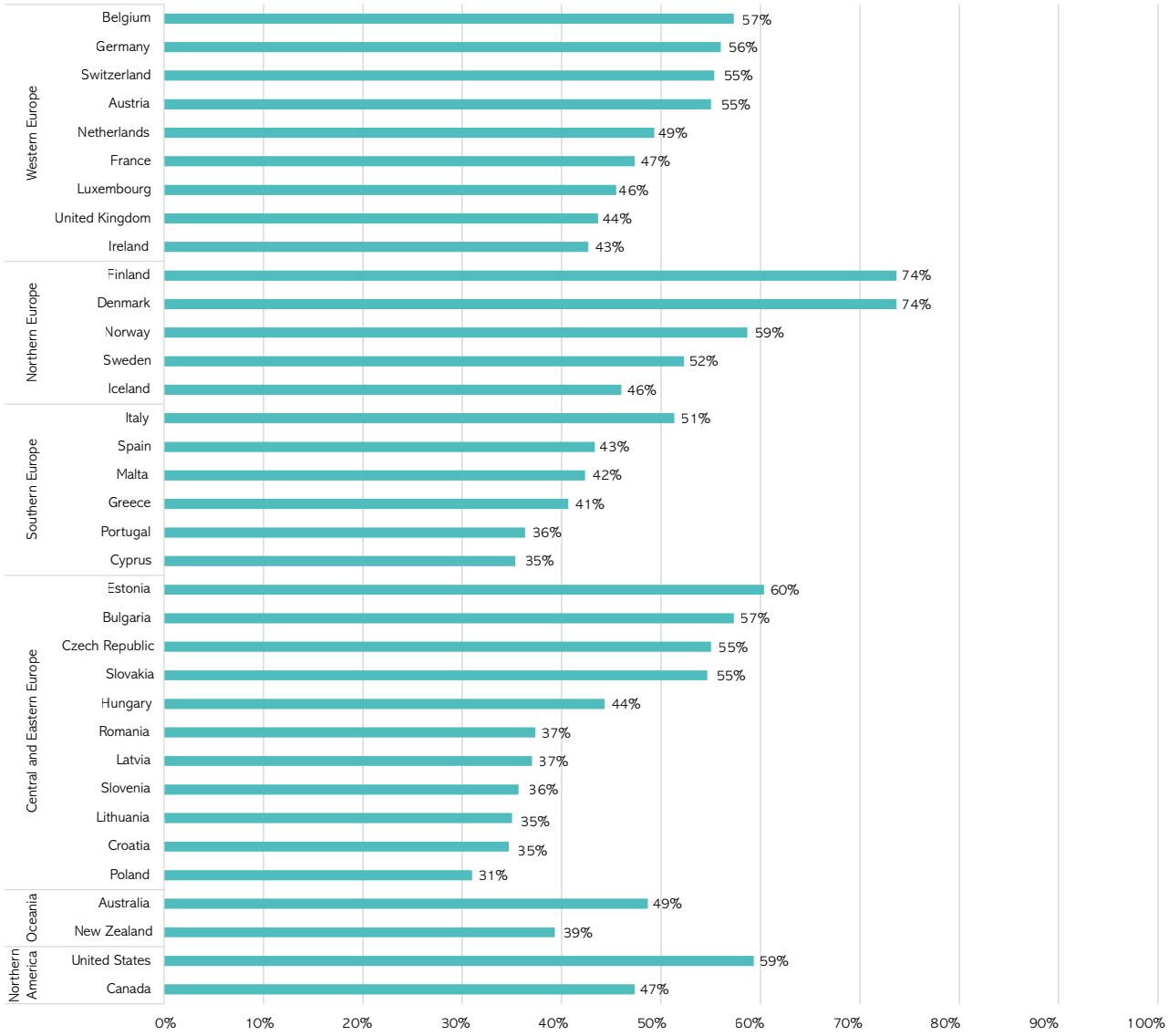


Source: Eurofound

The third indicator we present here is satisfaction with the availability of affordable housing. A clear regional cluster with high satisfaction is visible, again, in Scandinavia. For the other countries, clear regional clusters are absent.

For further analysis into the backgrounds, we correlated satisfaction with affordable housing with the OECD rent regulation index, but this outcome shows hardly any effect. We also expected that house price volatility may have an impact, especially the upswings, but this also shows very little correlation. However, volatility is related to slumps and upswings. During a housing prices slump, first-time buyers may find the housing market more accessible.
However, the exact time in which these data are collected plays a role. For instance, the contemporary debates about housing affordability in the Netherlands and the UK are very negative and related to housing shortages. In this, we are also reminded of the results from the section on availability, which show that increasing numbers of young adults (25–29 years) live with their parents, suggesting lack of affordable housing.

Figure 12: Satisfaction with the availability of quality affordable housing, 2016



Source: Eurofound

CONCLUSION

In short, with the available data on government inputs from openly accessible databases, it is complicated to assess the impact on housing outcomes. We see little direct correlation between inputs such as spending on housing and community infrastructure, or renovation activities on the one hand and outcome indicators such as housing quality, housing availability and affordability on the other hand. We do find some proof for a relation between a more equal income distribution and housing quality, giving an indirect effect of government policies on housing quality outcomes. However, countries with relatively high incomes also have higher housing quality. With regard to availability, it appears that land use restrictions play a role in the recovery of housing construction after a slump. This may also be an underlying factor in the growth of the proportion of young adults (25–29 years) who live in the parental home. With regard to housing affordability, there is a weak relation between gross rental cost burdens and spending on housing allowances. The comparative data sets include little data on net rents, but it seems that those countries with high gross rent burdens intervene through housing allowances. It is difficult to acertain whether housing allowances then inflate rents or whether they grant a minimum of housing quality for the lower incomes. Affordability in the home ownership sector is strongly affected by households that own their dwelling outright, without a mortgage. Especially in eastern and southern Europe, many homeowners own outright. However, access to home ownership can be problematic as prospective homeowners usually require a mortgaged loan. We have little comparative data on the financial outlays of recent first-time buyers, however. Yet several governments do intervene indirectly in the home ownership market by mortgage interest deduction schemes for homeowners. It appears that these incentives lead to a relatively high mortgage debt-to-GDP ratio and inflated house prices rather than to more affordable homes. It only helps in more relaxed housing markets, and not in tightly controlled ones.

CASE STUDIES

1. Contemporary problems in housing today and case studies on policy strategies

1.1. Sharp increases in private rental prices

Many western countries have experienced a prolonged increase of home ownership from 1945 up until the global financial crisis (GFC) of 2008–2009. In the aftermath of the GFC, home ownership rates levelled off or even declined. The most notable examples of home ownership declines are the UK, Spain and the US, nations that share a strong home ownership ideal (see e.g. Ronald, 2008; Dol, 2020). After the GFC, the private rental sector grew in those countries.

At the same time several countries reported sharp price increases in the private rental sector. Whereas the prices in the social-public rental sector are regulated, private rental sectors can be exposed to price hikes of the general real estate market. A backlog in housing production after the GFC as well as historically low interest rates are the main cause of these price increases. This also applies to the home ownership sector, but existing home owners in many countries have quite stable mortgage costs as they can fix the interest rate for several years. In the more unregulated private rental sectors, the rents can often be adjusted annually.
Our question is: ***How are private rental sectors regulated in countries where the size of this sector has been (historically) important? Are they also exposed to these price hikes? Furthermore, can we give an example of a country with a rapid expansion of the private rental sector which has recently introduced private rental regulation in response to price hikes?*** Such information can be relevant for other countries that currently experience significant rent increases in the private rental sector.

We selected three countries. Germany and Switzerland are countries that have traditionally had a comparatively large and affordable private rental sector. Both nations are often cited as having a well-functioning private rental market: regulation avoids overly high rent settings and price adjustments, while investors are able to make an acceptable return on investment (see e.g. Whitehead et al., 2016; Haffner et al., 2009). For many lower middle incomes, the Swiss and German private rental sector has a function similar to the large and affordable public-social rental sectors in the Netherlands, the UK and Scandinavia. The third country under investigation is Ireland, a nation with a relatively small but growing liberalised private rental sector (see Dol, 2020; Whitehead & Williams, 2018). Irish rents increased significantly after the economic recovery of 2014, urging the authorities to introduce measures to curtail the increases. Furthermore, the size of Irish private rental sector increased significantly after the global financial crisis (see e.g. Dol, 2020).

Table 7: Tenure distribution of the housing stock, around 2020

	Switzerland	Germany	Ireland
Private rental	53%	46%	11%
Social and non-profit	10%	11%	9%
Owner occupied	37%	43%	75%
Total	**100%**	**100%**	**100%**

Ireland owner occupation includes vacant dwellings

Source: Housing Europe, 2021

Context: rent regulation systems
Before we present the three case studies, we provide a framework on the evolution and typology of private rental systems. It helps in determining the position of the rent regulation system of our case studies within the international context. Arnott (1995, 2003) proposed a typology of rent controls which also mentions an evolution of rental systems over time. He identified three typologies.

The first generation of rent controls regulates the rent levels for all dwellings. This system often applies strong restrictions to price increases or even rent freezes. Such measures often form a disincentive for private landlords to invest in dwellings or to maintain them properly.

The second generation of rent controls regulates rent increases between new contracts and within an existing contract. This system is less rigid in setting rent levels than the first generation of rent controls. Rent levels are regulated at the start of a new contract while rent increases during the tenancy are also restricted.
The third generation of rent controls only regulates rent increases within an existing contract. This system sets no limits to rent levels for new contracts, but it regulates rent increases during the contract (tenancy).
We also need to stress that there are systems without any rent regulation in the private sector. Furthermore, particular segments of a countries' rental sector may be unregulated. Such is the case in, for instance, the Netherlands, where the 'high end' of the private rental sector is unregulated, but where cheaper (smaller) dwellings are regulated according to the third-generation rent controls.

The *first generation* only existed in the post-World War II era. It aimed to protect the population against usury during a time of vast housing shortages. At the time, governments were also heavily involved in housing production through direct activities and/or subsidisation. However, it became clear that strict rent controls were disincentives for private investment in rental dwellings.

During the 1970s the *second generation* of rent control was introduced with the objective to draw in more private investors. It allows private investors to generate a reasonable return on investment, while also protecting tenants against significant price increases.

Several countries moved towards the *third generation* of rent controls in which rents at the start of the tenancy are unregulated, while there are some restrictions on rent increases during the tenancy. The move towards the third generation corresponds with more market-based policies that emerged from the 1980s.
The aforementioned 'evolution' does not imply that all western countries now fall within a third generation or an entirely unregulated system. Table 8 shows a selection of northern and western European countries and their classification within Arnott's typology (see Kettunen & Ruonavaara, 2021).

Table 8: private rent regulation systems

Country	Classification
Germany	Third generation
Switzerland	Third generation
Austria	Second generation
Belgium	Third generation
Netherlands	Second generation
Ireland	Mild second generation
England (not UK)	Unregulated
Scotland	Mild third generation
Sweden	Second generation
Finland	Unregulated
Denmark	Second generation

Note: Mild third generation refers to a system between second and third generation

Source: see Whitehead and Williams, 2018

We now consider our three cases studies: Switzerland, Germany and Ireland. For each case, we first look at evidence of private rent price evolution, after which we discuss the rent regulation policies of the country in question.

Tenure security in the three countries
While the focus is on rent controls, we set off with a short description of *tenure security* in the three countries. Tenure security is quite strong in Germany and Switzerland, where standard rental contracts are indefinite and cannot be terminated on short notice (e.g. Haffner et al., 2009; Schmid & Dinse, 2014). In Ireland tenure security was fixed to 4 years in a 2004 law, after a system of very little tenure security. Presently the Irish legislation is evolving towards indefinite contracts. This is a move away from a more liberal government approach that puts the investor-landlord at the core of the system. However, in the first 6 months the tenure can be terminated within 7 days, but after this period the contract will be indefinite (see citizensinformation.ie). In contrast to Ireland, the UK government liberalised tenure security in the private rental sector from 1997 as a means to attract more private investors. Under loose tenure security landlords have more possibilities to raise rents or sell off their properties (Haffner et al., 2009).

1.2. Switzerland: Reference Rent Index and Consumer Price Index

Data on private rent price evolution
Official statistics and research reports do not give evidence for strong house price increases throughout Switzerland. From 2015 until 2020 the square metre price of the average dwelling rose from SFr15.6 to SFr16.5, not more than 6%. Statistics for the larger cities also show little evidence for price hikes. It appears that this is the main reason why there is little mention of significant rent increases in the Swiss media. However, as we will see further on, UBS Bank expects rents to increase more strongly as they are pegged to mortgage interest rates, which are currently on the rise.

Rent controls
Swiss tenants usually sign an indefinite contract, but fixed term contracts are not uncommon. Switzerland operates a third-generation rent control system. Rent regulation has quite a longstanding history, going back to the era of the Great Depression of the 1930s. Rent controls were gradually reduced until 1970, reflecting an evolution from first-generation to third-generation rent control. However, rents increased steeply after this deregulation and government reintroduced new measures (see Hilber & Schöni, 2016). Ever since, there has been some political and societal debate on the most efficient system of rent controls (see Hilber & Schöni, 2016; Werdmuller, 2014).

Today, there is freedom in rent setting for new contracts, but a tenant has the right to ask for a revision in case they suspect an unfair rent level (or usury). This applies to cases when the new rent is 10% above the former contract. A new tenant can also challenge the rent level if they, at the time of signing the contract, felt compelled to accept the contract due to urgent personal or family hardship (Werdmuller, 2014, p. 85).

Switzerland has two methods of adjusting existing rents, accounting for both the interests of the tenant and the landlord. The main principle is that any rent adjustment needs to be justified. Rents are pegged to a Reference Rents Index, which follows the average mortgage interest rates. This gives the landlord a reasonable return on investment. A decline in the mortgage interest rate results in a decline of the rent and vice versa. In fact, a Swiss tenant may ask for a rent adjustment when the mortgage rate has declined. Usually, landlords will not adjust the rent downwards on their own initiative (see e.g. Werdmuller, 2016).

In the case of a fixed term rental contract or a contract with a minimum of 5 years, the law obliges tenants and landlords to contractually agree on rent increases. There are two sub-methods. The first one is a stepped rent increase at an annually fixed amount. The other sub-method is an index-linked rent increase. This is linked to the Swiss Consumer Price Index (CPI) and rents can only be increased at 40% of the CPI (see Werdmuller, 2016).

As the mortgage interest rate has continuously declined to a low point of around 1.3% (EMF, 2022), there has been little room in the last decade for private landlords to raise their prices. At the same time, a matter of concern was the large number of private tenants who did not claim a lower rent after mortgage interest rate declines. Currently, there have been increases of the mortgage interest rates, after the ECB and the Federal Reserve raised their rates. The general expectation, for instance the UBS Bank, is that this can lead to a couple of significant rent price adjustments of more than 5%.

1.3. Germany: controlled rent increases through the Mietspiegel

A large and affordable private rent sector?
Compared to many other European countries, Germany has a relatively large private rental sector. Private rental is considered a good alternative to owner occupation. Although home ownership is regarded as the ideal, many delay this step until they can afford a high-quality dwelling that accommodates the family (Tegeder & Helbrecht, 2007). There are several public housing providers, often owned by municipalities, but they have never played a major role. In fact, during the post-WWII reconstruction era, private landlords could draw on construction subsidies if they rented out their properties at 'social housing prices' for a specified number of years (see e.g. Haffner et al., 2009). This system has been abolished, but it helped in erecting a large private rental sector.

The situation in the past years shows that rents are becoming less affordable. Research and statistics on rent prices show increases in the larger cities and many are well above the level of the low CPI of the latest years (see Table 9).

Table 9: rent prices in selected German urban areas

Urban areas	Rent increase 2016-2020	Annual price increase	Rent per sq metre
Munchen	12,40%	3,00%	18,48
Frankfurt	14,50%	3,40%	15,75
Stuttgart	14,70%	3,50%	14,74
Berlin	8,60%	2,10%	13,68
Hamburg	10,80%	2,60%	13,50
Freiburg	17,50%	4,10%	13,46
Dusseldorf	11,60%	2,80%	13,20
Mainz	15,40%	3,60%	13,03
Darmstadt	16,10%	3,80%	13,01
Wiesbaden	11,40%	2,70%	12,95

Source Handelsblatt/Empirica , 28 april 2021

Rent controls
In Germany, rent regulation provides tenants with secure tenancy contracts, while eviction laws are in favour of the tenants. With regard to rent controls, the system belongs to the third generation. The rents in new contracts are based on the market price, while regulation moderates rent increases.

New rent contracts may not exceed the level of local reference rents too much (ortsübliche Vergleichsmiete). These local reference rents are based on housing quality criteria. In case the new rental price is more than 50% of the former rent, it is considered usury by German law. In areas with high housing market pressure, the rent cannot exceed 20% of the local reference rents.

Additionally, there is the Mietspiegel, a database with local reference rents of recent rental contracts. The Mietspiegel gives guidance to both the landlord and the tenant in negotiating rental price adjustments of existing contracts. Meanwhile, price adjustments are restricted to no more than 20% over three years (Kappungsgrenze). Yet, the possibility of additional rent controls became a political issue during the 2013 elections, reflecting high housing demand and associated high rental levels. As a result, in 2015 the Kappungsgrenze was lowered to 15% in high-demand areas. Regional state governments[1] need to assign these areas by law.

More importantly, a rent brake (Mietpreisbremse) was introduced for new contracts in high-demand areas. It stipulates that the rent cannot exceed more than 10% of the local reference rent. Regional state governments need to assign the areas where the rent brake is active.

A notable development took place in Berlin in 2020, where the regional government issued a rent freeze of 5 years. However, this measure was nullified before the Federal Constitutional Court in 2021, citing interference with the Federal Kappungsgrenze and the Mietpreisbremse.

[1] Germany is a federation of states (Bundersländer) which have a high degree of autonomy. As well as regional states, there are two city states: Berlin and Hamburg.

The experience of Germany shows that its system of rent controls for existing contracts does not make it immune to the influence of high demand. In the past years there has been a tendency to regulate more, both for new contracts and existing contracts. The Kappungsgrenze and Mietspiegel can delay some of the effects of high demand as existing contracts fall under restrictions. However, when new contracts are freely negotiable, high demand still translates into higher prices in the longer term. The rent brake was introduced to reduce this effect in high-demand areas. There were, however, some statistical hurdles with the implementation of this instrument. The rent brake caps rental prices of re-lettings at 110% of the local Mietspiegel. Kauermann and Windmann (2016) studied the Mietspiegel databases of the cities of Berlin, Hamburg, Freiburg and Munich, and found statistical errors in the Mietspiegel of Berlin and Freiburg leading to increased rents, due to improper processing of the data.

Many economists feared that the rent brake would do more harm than good, due to inefficient distribution of housing, and would hardly relieve the burden on tenants. Empirical findings on this topic are however hard to find, due to methodological challenges. Thomschke (2016) as well as Deschermeier et al. (2017) found that the rent brake reduced the average rent of new contracts in Berlin by 3%. Thomschke (2019) also studied the effects in München, Hamburg, Cologne and Düsseldorf. The effects were the biggest in München and Hamburg, but still smaller than in Berlin. The effects could not be found in Cologne and Düsseldorf, but this is probably due to the poor quality of the Mietspiegel in those cities.

1.4. Ireland

Ireland has had a liberal approach to rent regulation in the private sector (see Whitehead & Williams, 2018). After the global financial crisis, the private rental sector grew at the expense of owner occupation. A range of factors played a role, such as tighter mortgage lending criteria, low housing supply and lower incomes among young households (see e.g. McQuinn et al., 2021; Slaymaker et al., 2022). With more demand for private rent in specific geographical areas, rents increased rapidly after 2014, at 8%–12% on an annual basis (see Residential Tenancies Board, 2022). Such high increases became subject to political and societal concern. By the beginning of 2014, annual standardised rents for new tenancies amounted to around €800, rising to around €1000 by mid-2016. By this time, the Irish government had taken measures.

Rent Pressure Zones

To curtail strong price increases in the private rental sector, the Irish authorities delineated several Rent Pressure Zones (RPZ) in 2016. RPZs are geographical areas where rents are at a comparatively high level as well as increasing rapidly. The cap applies to both new and existing tenancies. Initially, the annual rent increases were capped at 4%, but as of mid-July 2021, annual rent increases are capped at the Harmonised Index of Consumer Prices (HICP). In case the annual HICP exceeds 2%, the maximum rental increase is capped at 2%. Whereas the first Rent Pressure Zones in 2016 only covered five major urban areas (Cork, Fingal and three areas in Dublin city), today there are many more RPZs. It is also relevant to mention that the RPZ applies to rent adjustments, but the initial rent at the commencement of the contract should reflect comparable rental dwellings in the surrounding area.

The initial implementation did not have the desired effect of rent moderation, due to some flaws in the legislation. Properties could have a rent increase above the 2% after a renovation while new properties had a free rent setting. These exemptions aim to avoid developers and investors having to provide dwellings at below cost price. However, such exemptions can motivate landlords of new properties to ask relatively high prices as a means to circumvent future rent increase caps. Another flaw in the legislation is that the Residential Tenancies Board has limited means to actively monitor illegal price hikes. Instead, it is up to the tenants to report illegal practices, which can be hard for tenants, because they are not aware of the previous rent. Even if they are aware of the unlawful rises they could also choose to ignore it, because they are happy to have somewhere to live in the tight housing market and do not want to ruin their relationship with the landlord. With a regulator who is unable to sanction offending landlords, rents still rose significantly in the first quarter of 2018, for instance by 7% in Dublin.

A couple of years later and after some fixes, a degree of rent stabilisation is visible in RPZs (see Coffey et al., 2022). Still, around 50% of the tenancies in the RPZs had an above-average rent increase, due to exemptions. Many exemptions involved new-build properties and major upgrades in energy efficiency. The latter type of exemptions has a positive secondary effect of energy efficiency. It can, in principle, moderate energy costs for tenants, unless this benefit is offset in a higher rent.

Cost Rental Housing

The Affordable Housing Act 2021 introduced a new measure for households just above the income threshold for social housing, which is presently €25 000, but it will be raised to €30 000 in October 2022. It is a means to alleviate some of the problems among below-average incomes. This group suffers most from high and rising rents in the private sector.

The policy aims, as the name indicates, to provide dwellings to middle incomes at a rent that is based on the construction cost of the dwelling, not the market value. The dwellings are provided by a collaboration of social housing providers (Approved Housing Bodies), local authorities and the Land Development Agency (LDA).

The rents will be at least 25% below market rents in the surrounding area. Tenants have security of residence, which is usually less strong in the Irish private rental sector. The current income threshold is below €53 000 net annually. Several other criteria apply, such as not being eligible for any other housing benefit, not owning a property, a suitable match between the size of the dwelling and the household size and a reasonable rent-to-income level. Allocation will be organised via a lottery, open to households that fit the income criteria. In case the tenant's income increases to a level over the threshold, they can stay in the property. As such, Cost Rental Housing is also targeted at tenure security.

The Irish government aims to provide 13 000 dwellings by 2030. It is far too early to assess the impact of the scheme because the first projects have only just been delivered. (Dept. of Housing, 2022). The LDA is the primary provider of Cost Rental Housing; it is a commercially operated state body that manages and coordinates supply of state land, and its main objective is supply of land for housing. Local authorities and social housing providers can collaborate with the LDA, and local authorities can also draw on the Affordable Housing Fund to build Cost Rent Housing.

An increase of the interest rates could have an impact on the cost of building those dwellings. The recent increase of 1.5 to 2.5% in the interest rate would result in an increase of €200 per month in rent per unit, according to the Housing Finance Agency (HFA). Another factor that could have a major impact on the costs is a high inflation on building materials.

1.5. Tentative conclusions

It appears that Swiss private rental regulation has had some effect on stabilising rents. It pegs the rents to the mortgage interest rate, which has declined continuously over the last decade. However, the recent sharp increase of mortgage interest rates can translate into significant rent increases. It remains to be seen how the Swiss authorities cope with this when the rents inflate, for instance over 5% annually over the course of several years.

Such high rent increase existed in the mid-2010s in Germany and Ireland, where the authorities felt compelled to introduce measures. Although Germany already had some rent caps in place, it introduced the rent brake. Ireland introduced RPZ where the rents are capped to 2% per year. Both measures seem to have some effect. It is, however, relevant that the authorities also actively monitor illegal rent increases and motivate tenants to report such practices. For the new Cost Rental Housing scheme in Ireland, it is too early to draw any meaningful conclusions.

2. Access to home ownership: overcoming the down payment hurdle

2.1. Taking the down payment hurdle: the evolution of two main systems

Mortgage lending institutions seek to minimise their risk when extending a mortgaged loan to home buyers. First of all, there is a payment risk, which is reduced by a steady income stream from, preferably, a permanent employment contract. Secondly, there is a credit risk, when home buyer may not be able to fully repay the mortgaged loan. Such a situation can occur when the homeowner needs to sell the property after house price declines. A high mortgaged loan in relation to the value of the property (loan-to-value: LTV) increases the credit risk. Even in the case of a house price decline, a down payment of around 20% usually covers the credit risk. For this reason, a maximum LTV of around 80% was the rule of thumb among mortgage lenders. However, the down payment requirement can pose a significant hurdle for prospective home buyers. In this paragraph we present two historical policy trajectories to assist first-time buyers in taking this down payment hurdle: home savings schemes and mortgage guarantee systems.

2.2. Evolution of home savings schemes

During the transition towards the industrial, urban society in England and Scotland, new middle classes and skilled workers had little access to credit. Commercial banks were entirely focused on business loans and merchant banking. Retail banking for households was simply non-existent. However, collective initiatives set their first steps to fill this gap. In England a first collective building society was established by Ketley in Birmingham in 1775. Building societies became savings institutions where not only prospective home buyers could save money but also others could deposit savings (see Boddy, 1980). In this, the latter group raised additional funding for providing mortgaged loans. The US followed suit with savings and loans institutions. With Bausparkassen, Germany and Austria saw the rise of similar initiatives from the 1920s (see e.g. Dol & Van der Heijden, 2013).

Governments in Germany, France and several smaller European countries regarded such home savings schemes as a positive initiative for prospective homeowners to overcome the down payment hurdle. Further on, we discuss how they support home savings schemes, but first we present the two main methods of home savings:

- **Type 1:** A home savings scheme where the customer saves for a targeted savings amount. This is used a down payment for a home acquisition. A financial institution then provides a mortgaged loan with the home savings as a down payment.

- **Type 2:** A home savings scheme at a special home savings institution (Bausparkasse) where the customer saves for a targeted amount. Upon reaching this savings target the customer has a right to take out a loan at Bausparkasse (Bauspar loan), normally 1.5 times the amount of the savings.[2] Usually this is insufficient to buy an entire house, so additional required finance is borrowed from another financial institution.

The reason why Bausparkassen do not provide the full loan to acquire the dwelling was because they operate in their own, closed financial system. They only manage savings from their customers and extend Bausparloans. Bausparkassen have a long history in Germany and Austria, but the system was also exported to several eastern European countries after the fall of communism. In France, several consumer banks operate a similar way to the Bausparkassen. Norway and Finland have a type 1 system.

Noteworthy is that the original Bauspar system was closed off from the general financial market and set its own interest rate, which used to be well below the normal mortgage rate on the free capital market. It meant that households saved at a relatively low interest rate, but the loan at the Bausparkasse was set at a low interest rate compared to normal mortgage rates. In contemporary financial markets with a very low interest rate, the interest rate of the Bauspar loan simply cannot be very competitive anymore. Funding for the loans extended by Bausparkassen often comes from other savers who engage in savings schemes. Apart from performing as housing finance institutions, Bausparkassen are also savings banks for the general public.

[2] For example, when the savings amount is €20 000, the customer has the right to a loan at the Bausparkasse of €30 000

Scheme of housing finance with a home savings scheme (Bauspar)

20%	Savings from Home Savings Scheme
30%	Loan from Home Savings Institution
50%	Loan from Mortgage Lending Institution

For the present study, the role of the government is relevant. Without presenting an exhaustive list, the main means to support home savings schemes are:

- a subsidy on the savings interest rate;
- a subsidy on the savings, usually a bonus on the saved amount;
- tax exemptions from asset tax;
- income tax deductions of savings deposits.

This sets Bausparkassen at an advantage compared to normal deposit banks. Therefore, saving at a Bausparkasse is still considered attractive. However, a savings scheme at a Bausparkasse does not oblige the saver to take out a loan at a Bausparkasse. As indicated, under a low-interest environment, other lenders also offer competitive mortgage interest rates.

2.3. Evolution of mortgage guarantee systems

In the US, the 1930s financial crisis became the starting point of a system of mortgage guarantees from the Federal Housing Authority (FHA). Before the crisis, many American home buyers saved for a down payment at the savings and loans associations and took out a mortgage at a financial institution. However, these mortgaged loans had very short maturities and were rolled over into a next loan contract after a few years. During the financial crisis of the 1930s, financial institutions became quite reluctant to accept new mortgage contracts and many homeowners had trouble rolling over their mortgage into a new loan. The FHA intervened by providing guarantees to these loans. Today the FHA guarantee is available for lower-income households.

The general principle of any guarantee on a loan is that the provider of the guarantee (guarantor) promises to repay the outstanding loan or part of it, in case the borrower runs into financial trouble. A mortgage guarantee does not necessarily cover repayment of all the required credit. In some systems the guarantee only covers 95% LTV or even 90% LTV, but this still helps prospective home buyers because often they are only eligible for a loan at 80% LTV.[3] Mortgage guarantees above 100%, where additional transaction costs are covered (such as notary fees, estate agents' fees and stamp duties) are quite rare.

After World War II, several European nations decided to pursue a system with mortgage guarantees rather than a home savings scheme. They aimed to overcome a down payment hurdle for prospective home buyers but some have quite a broad scope in terms of target groups. However, most use one or more of the three criteria below:

- maximum income
- maximum house price
- housing market segment (new construction)

A strong argument for choosing for a mortgage guarantee is that it enables households to access the owner-occupied market at a younger age because they do not need to save up for the down payment. For example, the American system is especially targeted at young, low-income households who have limited means to save up for a down payment. The Swedish system provides guarantees for newly built or renovated dwellings. As such, it has an indirect objective of supporting demand for new dwellings. The Dutch system is quite broad and does not have formal requirements such as first-time buyers or income levels, but it uses a maximum house price.

[3] Further on, we explain why

Table 10: Presence of government backed mortgage guarantees or home savings schemes

Country	Mortgage guarantee schemes	Home savings schemes
Switzerland		
Netherlands	X	
France		X
Belgium	X	
Germany		X
Austria		X
United Kingdom		
Ireland		
Norway		X
Denmark		
Sweden	X	
Finland	X	X
Spain		
Italy	X	

Source: OECD, European Federation of Building Societies

Indeed, providing a mortgage guarantee to a significant number of first-time buyers also poses a risk to a government. The amounts of money involved are significant and credit losses for several tens of thousands of households can run into billions of euros of losses, not to mention when over a million of households are covered. Therefore, governments have used a number of risk-mitigating measures. The first one is a stable income stream, although it is sometimes possible to receive a guarantee on fluctuating income. Other measures are:

- a small down payment (savings) of about 5%, which reduces the risk for the mortgage guarantor;
- small payment on the guarantee, which in practice serves as an insurance premium.

Premiums can be deposited in a special guarantee fund. In such a situation, the government will only act as a final backstop when the guarantee funds also run out of resources.

2.4. The UK: no guarantees or special support to home savings schemes until the GFC

After the introduction of the building societies in the late 1700s, these institutions became the first and foremost players in British housing finance. The British government at the time did not support any home savings schemes nor mortgage guarantees. They regulated by means of a Building Societies Act and building societies were considered the primary housing finance institutions. So contrary to the German Bausparkassen, a British resident could save at a building society (BS) and then apply for a full mortgage at the same BS. As such, the BSs not only relied on a closed circuit of savings, but they also raised capital by different means, such as performing a role as a 'normal' savings institution. In fact, BSs were among the very first to accept deposits from private households (individuals) at a time when commercial banks solely focused on merchant banking (see e.g. Boddy, 1980).

So historically, the British/UK government took no special role in overcoming down payment hurdles for residents. However, during a context of upward house prices, mortgage lenders tend to allow higher LTVs as the risk of credit loss is relatively small and this loosening of credit standards went largely unregulated in the UK. During downward house prices, mortgage lenders tend to tighten maximum LTVs. One problem is that this enhances cyclicality of mortgage markets (see e.g. Geanakoplos, 2010). Also, high LTVs followed by house price declines can lead to negative equity, restricting further moves on the housing market. The UK stands as a typical example of a country where high LTVs can be taken out during house price upswings, but lenders self-impose stricter criteria during an economic downturn. In the aftermath of the global financial crisis the shock for mortgage lenders was fundamental and few returned to providing above 80% LTVs for a prolonged time. To grant access to first-time buyers without the means to provide a down payment, the UK government introduced measures such as 'Help to Buy' in 2013. This is an additional loan by the government, which serves as a form of collateral. A Help to Buy mortgage guarantee was also introduced but this measure only lasted until 2017.

2.5. Discussions on the benefits of each system

It is complicated to assess all the benefits for a government choosing between either a guarantee system or a home savings system. Two main arguments pertain to the financial aspects:

A home savings scheme is usually supported through subsidies or fiscal measures. It implies government expenditure and sometimes also forgone tax income.

A guarantee system usually implies no direct cost for governments, except possibly operational costs for managing the system.[4] There is, however a risk that the government pays for incurred mortgage credit losses under the guarantee. Some of this risk can be covered by asking premiums from the mortgagor. This allows the establishment of a risk fund as a first hedge against mortgage credit risk.

Since the onset of the global financial crisis, there has been discussion on the level of maximum LTVs in several countries. Especially in the UK, Ireland and Spain the maximum LTVs were raised before the GFC, while many banks lowered the maximum LTV at the onset of the crisis. These are perfect examples of mortgage markets that behave quite cyclically and can damage the entire housing system. New, international banking regulation has curtailed some of this behaviour by setting reserve requirements for all banking (Basel III requirements). Yet this still leads to the problem for many young households in accessing home ownership. In tight housing markets, private rents are often high and take out a high portion of the monthly income. As such it reduces the savings capacity of young households living in this sector. Together with reduced availability of social housing, it can lead to a situation of more young households deciding to remain in the parental home (see also previous chapter).

Even in the Netherlands, where young households can take out a 100% LTV loan under the National Mortgage Guarantee, it is still necessary to save for additional costs such as stamp duty, estate agents and legal fees. In the Netherlands, there has been some interest in home savings schemes since the GFC, because many households were locked up in negative equity. However, in the Dutch context young households had few alternatives in the private rental market. It was also argued that such households could not save up enough within a short period of time – one of the main arguments for introducing the mortgage guarantee rather than home savings schemes (see Elsinga & Dol, 2003). Finally, the Dutch authorities did agree with the mortgage lenders that the maximum LTV should be reduced to 100%. Also, home buyers could only deduct interest when they used a repayment mortgage, to curb the increasing popularity of interest-only mortgages.

[4] The Netherlands serves as an example where the mortgage guarantee is organised through an arms-length institute that finances its own operational costs through premiums from guaranteed mortgagors.

SUMMARY AND CONCLUSIONS

The 2015 housing chapter on public sector performance concluded that a cross-country analysis of the relation between government inputs and housing outcomes is complicated. The main reason is lack of detailed and comparable data on government inputs. The 2015 chapter explored the value of a composite indicator for housing policies. For the present chapter we disentangled housing policy into its three main pillars: availability, affordability and housing quality. Working from these three pillars, the first aim was to find relations with some newly available statistics on financial inputs as well as some indicators on housing policy regulation. The second aim of this chapter was to take a somewhat broader view than the 2015 report and introduce some additional information on housing and mortgage markets. Furthermore, we present a couple of national case studies on private rental regulation and the possibilities for first-time buyers, as these are pressing problems on the contemporary housing market.

We need to stress that we present some insights based on the analysis of publicly available statistics of the OECD, Eurostat and other sources. We did not investigate on a country-by-country basis all relevant housing policy inputs and outcomes. Compilation alone of all relevant housing policies is a monumental task, such as the one by, for instance Christian Donner in 2000 on 15 EU Member States (see Donner, 2000). Donner's work was 'only' an inventory of policies, and it did not even analyse the relation between public sector inputs and outputs. Another example was the EU-funded project TENLAW, which delivered comprehensive reports on all possible legal dimensions of housing tenure in Europe (see Schmid & Dinse, 2014). The compilation report of this project alone encompasses 850 pages, but it did not venture very much into the relations with housing outcomes. A more recent example of a less detailed, but still extensive report is the OECD Brick by Brick study of 2020, which presents many data on housing outcomes and provides some general explanations by drawing from other OECD research reports. Our own investigations are not as encompassing as the aforementioned. It rather serves as a stepping stone and much more detailed data and time are required to make a more comprehensive comparative analysis.

Furthermore, housing outcomes are not solely a function of government inputs, because the market, third sectors (non-profits) and private individuals are heavily involved in the provision of housing. This complicates an analysis of the effects of public sector inputs. Finally, there is path dependency in housing. For instance, generous government spending on housing quality in previous decades can translate into good quality housing stock, while presently the budgets have been phased out. In other words, small inputs of the present day may tell little about present housing quality.

Outcomes in general

It is quite evident that all northern European countries score well in terms of outcomes and general satisfaction with housing. Western European countries have somewhat lower scores than the Nordic countries. Eastern and southern Europe score lower when it comes housing quality and housing satisfaction. Regarding housing affordability, there is a contrast between northern and western Europe on the one hand, and central and eastern Europe on the other. A vast majority of central and eastern European households involve an outright homeowner, which sets the average household in these regions at an advantage. However, there is a much higher incidence of overcrowding and poor housing quality in these regions.

What determines international variations in housing outcomes?

Housing quality varies greatly between countries. Statistics on government spending did not show any correlation with housing quality outcomes. The biggest single factor we found that determines housing quality outcomes is related to international income variation. We also found a relation between housing quality and the within-country income distribution (Gini index). The main conclusion here is that countries with a comparatively high income level or with a more equal income distribution tend to have better housing quality. Such a conclusion also resounds with welfare regimes: more affluent countries with policies towards an even income distribution tend to have better housing quality for lower incomes. However, direct government investment in social housing in for instance, Scandinavia and the Netherlands, used to be significant in the 'golden age of welfare', which lasted until the early 1980s. Today, social housing providers in these countries have become 'mature' and financially independent. As such, they invest in housing quality themselves, not the government.

Housing affordability outcomes hardly show any statistical relation with housing allowances and rent regulation. First of all, the small correlation between housing allowances and gross rent burdens is positive but very small. It seems that high gross rent burden in several western and northern European countries need to be alleviated through housing allowances. More research is needed into this matter as the explanation might go two ways, one of them being that housing allowances inflate prices. The other explanation is that government legislation sets quite high construction quality standards, leading to high prices that need to be reduced by housing allowances to remain affordable for lower incomes.

Similar measurement difficulties were found with the analysis of the relation of housing cost overburden and rent regulation. We found a weak, but positive correlations between these two indicators, while we would expect a negative relation: the more regulation, the lower the housing cost burden. A possible explanation is that rent regulation may have been introduced in countries that already had quite a high housing cost burden. This assumption also requires more investigation on a country-by-country basis.

Finally, we found that there are several countries that give quite strong fiscal incentives to homeowners. We have little proof that this alleviates housing cost overburdens. In fact, there is increasing proof that it rather inflates house prices, especially in countries with a tight housing market (see e.g. Van Geel et al., 2022). Our own analysis suggests that tax incentives lead to a higher mortgage take-up. Strong examples of these countries are the Netherlands and Switzerland.

Housing availability is a complicated concept to define and analyse. Few countries calculate a concrete number for housing shortages, based on large-scale surveys among residents about their intentions to move and their housing preferences. In the international comparative statistics, overcrowding is a much-used indicator, but this may say more about housing quality – that is, the size of the dwelling, rather than the absolute shortage of dwellings. Another measure for housing unavailability is, for instance, homeless people, but these statistics are not always available per country. Another complication is the variety of definitions of homelessness per country. Furthermore, statistics on empty dwellings may be considered as a useful indicator, but it often does not reveal the whole story, with for instance Spain and Italy having a statistical housing overhang on a general level, while there are pressing shortages in urban areas (see, e.g. Gentili & Hoekstra, 2020).

Nonetheless, we used two approaches that draw on publicly available statistics. The first approach compares the proportion of young adults aged 25–29 years, living in the parental home, to the size of the social-affordable rental sector. Although we only have data for a small set of countries, we found a statistical relation. It gives proof that the proportion of young adults living in the parental home is significantly smaller in countries with a large social rental sector, e.g the Netherlands, Scandinavia and the UK, than elsewhere in Europe. The findings suggest that the deeper context per country, including societal norms on leaving the parental home, play a role in these differences per country. Furthermore, there has been a remarkable increase in the proportion of young adults living in the parental home since the start of the global financial crisis and the economic recovery. It suggests a relation with a post-crisis backlog in housing production, but other structural factors, such as flexibilisation of the labour market may also play a role.

The second approach explored how housing construction dynamics are related to housing shortages. The assumption here is that restrictive land use policies do not necessarily cause housing shortages, but they may actually impede a swift recovery of housing construction after a crisis. We found some statistical proof that such is the case. Furthermore, we stress that an economic slump often translates into a slump in the production of owner-occupied housing or private rent. Under economic recovery, demand increases again but developers need to start up new plans for the commercial housing sector (home ownership and private rent), which can be complicated under a restrictive planning system. It leads to backlogs in housing production. These first findings require some additional investigation. This should include a broader investigation of the findings of Van der Heijden et al. (2011) who also saw a relation between typical systems of housing production and their sensitivity to an economic crisis. One way to avoid housing shortages during a crisis is anti-cyclical support for the construction of affordable (social) rental housing. Demand for such housing is usually less sensitive to the economic circumstances. It may even be agreed that such dwellings are put up for sale after economic recovery. And finally, anti-cyclical measures in housing production also avoid loss of employment in the labour intense construction sector.

The case studies

Case study 1: Rent regulation in response to price increases

In several European countries, prices in the private rental sector have risen steeply during the last years. Some governments felt compelled to take measures to curtail these price increases. We explored a couple of policy practices that regulate prices in private rental. First, by looking at countries that are known for having a relatively large and affordable rental sector and second, by documenting the response in a country where the private rental sector went largely unregulated.

The two countries that are commonly known for having a relatively large and affordable private rental sector are Germany and Switzerland. In both countries new rental contracts are, in principle, free to negotiate. There are a couple of exemptions to this freedom. The most important is when the rents are far beyond local reference rents for similar dwellings. Rent adjustments during a tenancy are in principle negotiable in both countries, but it should not exceed a certain threshold. In Germany this threshold is 20%, over a period of three years. In Switzerland, the rent is actually pegged to the mortgage interest rate. The main motive for such a policy is that it gives landlords a return that is comparable to a mortgage interest rate. Swiss tenants can even ask for a lower rent when interest rates decline. Rent regulation policies, as well as security of tenure, are the two main pillars of the German and the Swiss private rental sector. Still, German rents increased quite rapidly around 2013 after an upswing in demand and in 2015, the government capped price increases to a maximum of 15% over three years. In high-demand regions a rent brake of 10% was introduced. Such measures have not been taken in Switzerland, where private rent prices remained quite stable after mortgage interest rate continuously declined over a period of about a decade. Swiss experts have expressed some concern that the rents may rise steeply in the coming year after the mortgage interest rate rose significantly.

Ireland serves as an example of a more liberal approach to private rent, with free rent setting at new contracts, free adjustments of rents and little tenure security. However, after sharp price increases from around 2012 and onwards, the Irish government introduced Rent Pressure Zones in 2016, where rent increases were capped to a maximum of 4% per year. From mid-2021 this cap was even lowered to 2% per year. A major problem was little active enforcement of the regulation. Tenants themselves need to report increases that are too high. Furthermore, some landlords try to use exemptions in the regulation, such as renovations, which allow higher rent adjustments. However, research shows that rents have levelled off in the Rent Pressure Zones. Furthermore, the Irish government introduced Cost Rental housing for the new construction of affordable houses. It is targeted at lower-middle incomes that are not eligible for social housing. The programme aims to provide around 13 000 dwellings by 2030 with the assistance of the state-owned Land Development Agency and the local authorities.

Case study 2: Policies to overcome down payment hurdles for first-time buyers (FTB)

Historically, mortgage lenders used a rule of thumb not to lend more than 80% of the value of property. In other words, they allowed a maximum loan-to-value (LTV) of 80%. This maximum gave security to lenders that the credit would be returned, even after a significant house price decline. So, prospective FTBs needed to save up 20% of the value of the property as a down payment. The first institutions that assisted households to save up for down payments were building societies in eighteenth-century Britain. These were collective initiatives. In fact, the banking industry at this time was hardly involved in extending loans to the general public.

In time, governments in Germany, Austria and France implemented policies to support home savings schemes through subsidies or fiscal exemptions on home savings. As such, they supported the idea of saving up for a down payment. In the UK, where building societies were first established, the government provided no such incentives.

However, saving up for a down payment takes time and some governments were willing to provide government-backed mortgage guarantees. Under such schemes, prospective FTBs require no – or only a small – down payment. Mortgage guarantees have been in place for decades in Scandinavia and the Netherlands. In the US, the Federal Housing Authority provides such guarantees. Furthermore, has not been uncommon elsewhere, outside the typical home savings countries, for relatives to provide a guarantee with their own housing asset as collateral. This practice has been reported, especially in Spain.

After the global financial crisis, there was renewed interest in home savings schemes in several countries. The main reason was that mortgage guarantees stimulate high mortgage take-up. The risk of high mortgage indebtedness is that after house prices decline, many homeowners that intend to move face negative equity and are 'stranded' in their dwelling. The Netherlands was an extreme example of high LTV under the mortgage guarantee. It allowed 120% LTV, while it also guaranteed interest-only loans. After the onset of the global financial crisis, there was some interest in home savings schemes in the Netherlands, but many argued that such would require long saving times and it delayed access to the home ownership market. At the same time, few affordable options were available in the private rental market for younger households with an above-average income. As an alternative, the mortgage guarantee and other lending criteria were changed. In short, the LTV has been capped to 100%, while homeowners are urged to take out repayment mortgages. The latter has been stimulated by only allowing tax relief on mortgage interest on repayment mortgages. At the same time, in Scandinavia high LTVs were regarded as a cause for upswings in the housing market. Around 2010, when prices in Norway and Sweden actually rose rapidly, the authorities banned 100% LTV. Norway has had a government-supported home savings scheme for some time. There is, however, some proof that many Scandinavian households aim to circumvent the LTV maximum by taking out separate consumer loans. In the Netherlands, this route is banned via a central credit registration, which allows little room for additional loans, when there is a high mortgage-to-income ratio.

REFERENCES

Allen, J., Barlow, J., Leal, J., Maloutas, T., & Padovani, A. (2004). Housing and welfare in southern Europe. Blackwell.

Angelini, V., Laferrère, A., & Pasini, G. (2011). Nest leaving in Europe. In: Börsch-Supan, A., Brandt, M., Hank, K., & Schröder, M. (Eds.), ***The individual and the welfare state. Life histories in Europe*** (pp. 67-80). Springer.

Arnott, R. (1995). Time for revisionism on rent control? ***Journal of Economic Perspectives, 9***(1), 99-120.

Arnott, R. (2003). Tenancy rent control. ***Swedish Economic Policy Review, 10***(1), 89-121.

Arundel, A., & Doling, J. (2017). The end of mass homeownership? Changes in labour markets and housing tenure opportunities across Europe. ***Journal of Housing and the Built Environment, 32***(4), pp. 649-672.

Atterhög, M. (2006). The effect of government policies on homeownership rates: an international survey and analysis. In: Doling, J., & Elsinga, M. (Eds.), ***Homeownership: Getting in getting from, getting out part II*** (pp. 7-34). IOS Press.

Boddy, M. (1980). The building societies. Macmillan.

Boelhouwer, P., & van der Heijden, H. (1992). Housing policies in Europe Part I: a comparative study of housing policy. Delft University Press.

Coffey, C., Hogan, P., McQuinn, K., O'Toole, O., & Slaymaker, R. (2022). ***Rental inflation and stabilisation policies: International evidence and the Irish experience***. Research Series No 136, ESRI.

Department of Housing, Local Government and Heritage. (2022). ***Completion of further cost rental housing shows affordable housing becoming a reality, says Minister O'Brien.*** Press Release, 13 April 2022.

Deschermeier P., Seipelt B., & Voigtländer, M. (2017). ***Evaluation der Mietpreisbremse.*** IW Policy Pap 5/2017. Institut der deutschen Wirtschaft (IW), Köln.

Dol, K. (2020). ***West European home ownership sectors and the Global Financial Crisis***. PhD thesis, Delft University of Technology. https://doi.org/10.4233/uuid:a04fe58f-85b2-4592-9a1e-42080b6863d1

Dol, K., & van der Heijden, H. (2013). ***Bouwsparen bij de buren. Ervaringen met bouwsparen in enkele West-Europese landen***. Onderzoeksinstituut OTB, Technische Universiteit Delft.

Dol, K., Lennartz, C., & De Decker, P. (2012). Self-provided housing in developed societies. In: Smith, S. J., (Ed.), ***International Encyclopedia of Housing and Home***, Vol. 2, pp. 310-315.

Doling, J., & Elsinga, M. (2013). Demographic change and housing wealth: Home-owners, pensions and asset-based welfare in Europe. Springer.

Donner, C. (2000). Housing policies in the European Union. Donner.

Elsinga, M, De Decker, P., Teller, N., & Toussaint, J. (2007). Home ownership beyond asset and security: Perceptions of housing related security and insecurity in eight European countries. IOS Press.

Elsinga, M., & Dol, K. (2003). De geschiedenis van de Nationale Hypotheek Garantie. Stichting WEW.

European Mortgage Federation (EMF). (2022). ***Hypostat 2021***. EMF.

Geanakoplos, J. (2010). The leverage cycle. In: Eichenbaum, E., Hurst, E., & Parker, J. A. ***National Bureau of Economic Research Annual***. Vol 24, pp. 1-66.

Geng, N. (2018). Fundamental drivers of house prices in advanced economies. IMF Working Paper 18/164.

Gentili, M,. & Hoekstra, J. (2019). Houses without people and people without houses: a cultural and institutional exploration of an Italian paradox. ***Housing Studies, 34***(3), pp. 425-447.

Haffner, M., Hoekstra, J., Oxley, M. & van der Heijden, H. (2009). Bridging the gap between social and market rented housing in six European countries? IOS Press.

Hamnett, C. (1999). Winners and losers. Home ownership in modern Britain. Taylor & Francis.

Hegedus, J., Lux, M., & Teller, N. (2013). Social housing in transition countries. Routledge.

Hemerijck, A. (2012). Changing welfare states. Oxford University Press.

Hilber, C., & Schöni, O. (2016). Housing policies in Switzerland, the United Kingdom, and the United States. In: Helble, M. & Yoshino, N. (Eds.), ***The Housing Challenge in Emerging Asia: Options and Solutions***. Asian Development Bank Institute, pp. 210-259.

Hoekstra, J. (2010). Divergence in European housing and welfare systems. IOS Press.

Hoekstra, J., & Vakili-Zad C. (2011). High vacancy rates and rising house prices: the Spanish paradox. ***Tijdschrift voor de Economische en Sociale Geografie, 102***(1), pp. 55-71.

Holdsworth, C. (2000). Leaving home in Britain and Spain. ***European Sociological Review, 16***(2), pp. 201-222.

Kauermann, G., & Windmann, M. (2016). Mietspiegel heute: Zwischen Realität und statistischen Möglichkeiten. ***AStA Wirtschafts- und Sozialstatistisches Archiv. 10***. 1-19. 10.1007/s11943-016-0197-x.

Kettunen, H., & Ruonavaara, H. (2021). Rent regulation in 21st century Europe. Comparative perspectives. ***Housing Studies 36***(9), 1446-1468.

Løyning, T. (2022). Re-politicizing financial regulation: a sociological analysis of the debate on loan-to-value regulation in Norway. ***Housing Studies, 37***(4), 624-643.

Lujanen, M. (Ed.). (2004). ***Housing and housing policies in the Nordic countries***. Nordic Council of Ministers, Copenhagen, Denmark.

McQuinn, K., O'Toole, C., & Slaymaker, R. (2021). Credit access, macroprudential rules and policy interventions: Lessons for potential first-time buyers. ***Journal of Policy Modeling, 43***(5), 944-963. https://doi.org/10.1016/j.jpolmod.2021.03.013

OECD. (2011). Divided we stand: Why inequality keeps rising. OECD Publishing.

OECD. (2017a)The governance of land use in OECD countries. OECD Publishing.

OECD. (2017b). Land-use planning systems in the OECD. Country fact sheets (online). OECD Publishing

OECD. (2021a). Pension funds in figures 2021. OECD Publishing.

OECD. (2021b). Brick by brick. Building better housing policies. OECD Publishing.

Residential Tenancies Board. (2022). Rent Index, Q1 2022. RTB and ERSI.

Ronald, R. (2008). The ideology of home ownership. Home owner societies and the role of housing. Palgrave McMillan.

Schmid, C. U., & Dinse J. R., (Eds.). (2014). My right as tenant in Europe. A compilation of the National Tenant's Rights Brochures from the TENLAW Project.

Slaymaker, R., Roantree, B., Nolan, A., & O'Toole, C. (2022). Future trends in housing tenure and the adequacy of retirement income. ESRI Research Series 143.

Špirková, D., Stehlíková, B., & Zúbková, M. (2017). The impact of the housing quality on the socio-economic standard of the EU countries. ***Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, 65***(4), 1425-1433.

Tegeder, G., & Helbrecht,I. (2007). Germany: Home ownership, a Janus-faced advantage in time of welfare restructuring. In: Elsinga, M., De Decker, P., Teller, N., & Toussaint, J. (Eds.). (2007). ***Home ownership beyond asset and security. Perceptions of housing related security and insecurity in eight European countries*** (pp. 101-132). IOS Press.

Thomschke, L. (2016). ***Distributional price effects of rent controls in Berlin: when expectation meets reality***. CAWM discussion paper, Bd. 89. Centrum für Angewandte Wirtschaftsforschung, Münster.

Thomschke, L. (2019). Über die Evaluierung der Mietpreisbremse. ***Zeitschrift Immobilienökonomie 5***, pp. 21-36. https://doi.org/10.1365/s41056-019-00032-1

UNECE. (2010). ***Housing finance systems for countries in transition. Principles and examples***. UNECE publications.

Van der Heijden, H. (2013). West European housing systems in a comparative perspective. IOS Press.

Van der Heijden, H., Dol, K., & Oxley, M. (2011). Western European housing systems and the impact of the international financial crisis. ***Journal of Housing and the Built Environment 26***, 295-313.

Van der Schaar, J. (1987). De groei en bloei van het Nederlandse volkshuisvestingsbeleid. Delftse Universitaire Pers.
Van Hoenselaar, F., Cournède, B., De Pace, F., & Ziemann, V. (2021). Mortgage finance across OECD countries. OECD Economics Department Working Papers No 1693, OECD.

Werdmüller, A. (2014). National report for Switzerland. TENLAW: Tenancy Law and Housing Policy in Multi-level Europe. https://www.uni-bremen.de/jura/tenlaw-tenancy-law-and-housing-policy-in-multi-level-europe/reports/reports

Whitehead, C., & Williams, P. (2018). ***Assessing the evidence on rent control from an international perspective.*** Residential Landlords Association, UK.

Whitehead, C., Scanlon, K., Monk, S., & Tang, C. (2016). ***Understanding the role of private renting. A four-country case study***. University of Cambridge, UK.

APPENDIX

Appendix 1: Tenure in countries with a relatively large public-social sector

	1980	2000	2015	2020
Netherlands				
Owner occupied	42	52	56	57
Private rent	17	12	12	13
Housing associations (social)	39	36	31	29
Total	**100**	**100**	**100**	**100**
United Kingdom				
Owner Occupied	56	69	63	64
Private rent	12	10	20	19
Local authority (public)	31	15	7	7
Housing associations (social)	2	6	10	10
Total	**100**	**100**	**100**	**100**
Sweden				
Owner occupied (including coops)	58	59	62	62
Private rent	18	19	19	--
Public and social	24	23	19	--
Total	**100**	**100**	**100**	**100**
France				
Owner occupied	50	56	58	
Private rent	26	22	23	
Public and social	23	23	20	
Total	**100**	**100**	**100**	
Denmark				
Owner occupied	55	53	50	
Private rent	23	25	27	
Public and social	21	21	22	
Total	**100**	**100**	**100**	
Finland (recalculation DoI)				
Owner occupied	63	63	64	
Private rent	-	18	21	
Public and social		19	15	
Total	**100**	**100**	**100**	

Sources ECB structural housing indicators; UK and the Netherlands national statistics service

Appendix 2: Dwellings with at least one quality issue and dwellings lacking basic amenities (toilet, shower)

Region	Country	Quality issues	Lacking basic amenities
Western Europe	France	18%	0,4%
	Ireland	17%	0,1%
	Belgium	16%	0,1%
	Luxembourg	15%	0,0%
	Netherlands	15%	0,0%
	Germany	12%	0,0%
	Switzerland	11%	0,0%
	Austria	9%	0,5%
	United Kingdom		
Northern Europe	Denmark	17%	0,4%
	Sweden	7%	0,0%
	Norway	6%	0,0%
	Finland	5%	0,2%
	Iceland	0%	
Southern Europe	Cyprus	39%	0,4%
	Portugal	25%	0,4%
	Spain	20%	0,2%
	Greece	13%	0,1%
	Malta	6%	0,0%
	Italy		0,5%
Central and Eastern Europe	Slovenia	21%	0,1%
	Hungary	20%	1,5%
	Latvia	18%	7,0%
	Bulgaria	11%	7,0%
	Lithuania	11%	6,4%
	Estonia	10%	2,9%
	Romania	10%	21,2%
	Croatia	9%	0,7%
	Czech Republic	7%	0,1%
	Poland	6%	1,3%
	Slovakia	5%	0,7%
Oceania	Australia		
	New Zealand		
Northern America	United States		
	Canada		

Appendix 3: Homelesspopulation and vacant dwellings

Continent	Country	% homelessness popuation	Vacant dwellings (% of total stock)
Western Europe	United Kingdom		0,9%
	Luxembourg	0,4%	
	Ireland	0,1%	9,1%
	France	0,2%	7,8%
	Germany	0,4%	8,2%
	Netherlands	0,2%	4,3%
	Austria	0,3%	
	Switzerland		1,6%
	Belgium		
Northern Europe	Finland	0,1%	10,7%
	Sweden	0,3%	
	Iceland	0,1%	1,5%
	Denmark	0,1%	5,9%
	Norway	0,1%	
Southern Europe	Italy	0,1%	
	Greece	0,2%	
	Portugal		
	Spain	0,1%	
	Malta		16,4%
	Cyprus		12,5%
Central and Eastern Europe	Romania		
	Hungary	0,1%	12,3%
	Czech Republic	0,2%	
	Slovenia	0,2%	10,5%
	Poland	0,1%	7,2%
	Slovakia	0,4%	9,9%
	Latvia	0,4%	
	Lithuania	0,0%	
	Estonia	0,1%	
	Croatia	0,0%	
	Bulgaria		
Oceania	Australia	0,5%	9,8%
	New Zealand	0,9%	6,7%
Northern America	United States	0,2%	11,1%
	Canada	0,4%	8,7%

Appendix 4:

Country	% of adults 25-29 in parental home	% of social-public housing
Belgium	35,7	6
Germany	29,7	11
France	17,3	20
Netherlands	16,2	30
Austria	27,3	24
UK	23,3	17
Ireland	52,2	9
Denmark	5,1	22
Sweden	8,8	19
Norway	8,7	5
Finland	6,7	15
Spain	66,1	3
Italy	69,8	3
Portugal	68,1	5
Greece	72,9	2

Appendix 5: Data are rounded

Country	Spending on housing and community amenities as % of GDP	Spending on measures to finance housing improvements and regeneration	Spending on measures to finance housing improvements and regeneration excl. COVID response	Social housing investment as percentage of GDP
United Kingdom	4%	--	--	--
Luxembourg	2%	0,00%	0,00%	--
Ireland	2%	--	--	0,00%
France	1%	0,10%	0,00%	--
Germany	1%	0,20%	0,20%	--
Netherlands	0%	0,00%	0,00%	--
Austria	0%	0,10%	0,10%	0,27%
Switzerland	0%	--	--	--
Belgium	--	0,00%	0,00%	0,01%
Finland	1%	--	--	--
Sweden	1%	--	--	--
Iceland	0%	--	--	--
Denmark	0%	0,00%	0,00%	0,03%
Norway	0%	0,00%	0,00%	--
Italy	1%	0,50%	0,50%	--
Greece	0%	--	--	--
Portugal	0%	--	--	--
Spain	0%	--	--	--
Malta	--	--	--	--
Cyprus	--	--	--	--
Romania	4%	--	--	--
Hungary	2%	--	--	--
Czech Republic	1%	0,00%	0,00%	0,00%
Slovenia	0%	0,00%	0,00%	--
Poland	0%	0,00%	0,00%	0,02%
Slovakia	0%	0,10%	0,10%	0,06%
Latvia	0%	0,20%	0,10%	--
Lithuania	0%	0,10%	0,10%	--
Estonia	0%	0,30%	0,30%	0,08%
Croatia	--	--	--	--
Bulgaria	--	--	--	--
Australia	1%	--	--	0,27%
New Zealand	--	--	--	0,36%
United States	1%	--	--	0,21%
Canada	--	--	--	--

Appendix 6: data inputs for analysis housing quality All data 2020

Country	% of houses with quality issue	Severe housing deprivation	Severe housing deprivation lower incomes		GINI index	Equivalised incomes
Belgium	15,7	2,3	5,6	Belgium	25,4	25639
Bulgaria	11	8,6	20,9	Bulgaria	40	4614
Czech Republic	6,8	2	5,2	Czechia	24,2	10627
Denmark	16,8	2,8	11,8	Denmark	27,3	30681
Germany	12	1,2	2,5	Germany*	30,5	25989
Estonia	10,2	2,1	3,7	Estonia	30,5	12213
Ireland	16,6	1,4	5	Ireland	28,3	26656
Greece	12,5	5,8	13,7	Greece	31,4	8781
Spain	19,7	3,4	9,2	Spain	32,1	16043
France	17,9	3,8	8,2	France	29,3	21739
Croatia	9,4	5,1	7,8	Croatia	28,3	7892
Italy	19,6	6,1	10	Italy	32,5	18067
Cyprus	39,1	1,6	2,9	Cyprus	29,3	16704
Latvia	17,5	11,5	16,5	Latvia	34,5	8809
Lithuania	10,9	5,4	9,2	Lithuania	35,1	8606
Luxembourg	15,4	1,6	4,3	Luxembourg	31,2	37844
Hungary	20,4	7,6	13	Hungary	28	6494
Malta	6,1	1	1,4	Malta	30,3	16240
Netherlands	14,8	1,5	5,6	Netherlands	28,2	25821
Austria	9,1	3	6,3	Austria	27	26555
Poland	6	7,9	13	Poland	27,2	8040
Portugal	25,2	3,9	7,2	Portugal	31,2	10800
Romania	10	14,3	35,7	Romania	33,8	4267
Slovenia	20,8	3,1	6,5	Slovenia	23,5	14774
Slovakia	4,9	3,2	11,5	Slovakia	20,9	8703
Finland	4,5	1	3,2	Finland	26,5	25490
Sweden	7,1	2,5	5,4	Sweden	26,9	24710
Iceland	:	:	:	Iceland	:	:
Norway	6,3	1	5,8	Norway	25,3	40231
Switzerland	11,4	1,8	3,9	Switzerland	31,2	42967
United Kingdom	17,6	1,9	4	United Kingdom	33,5	21464
Montenegro	22,4	18,2	31,9	Montenegro	32,9	3914
North Macedonia	:	9,9	23,2	North Macedonia	31,4	2984
Albania	22	15,3	26,1	Albania	33,2	2523
Serbia	11,4	8,8	18	Serbia	33,3	3733
Turkey	34,7	21,9	42	Turkey	43,4	3128

** until 1990 former territory of the FRG*

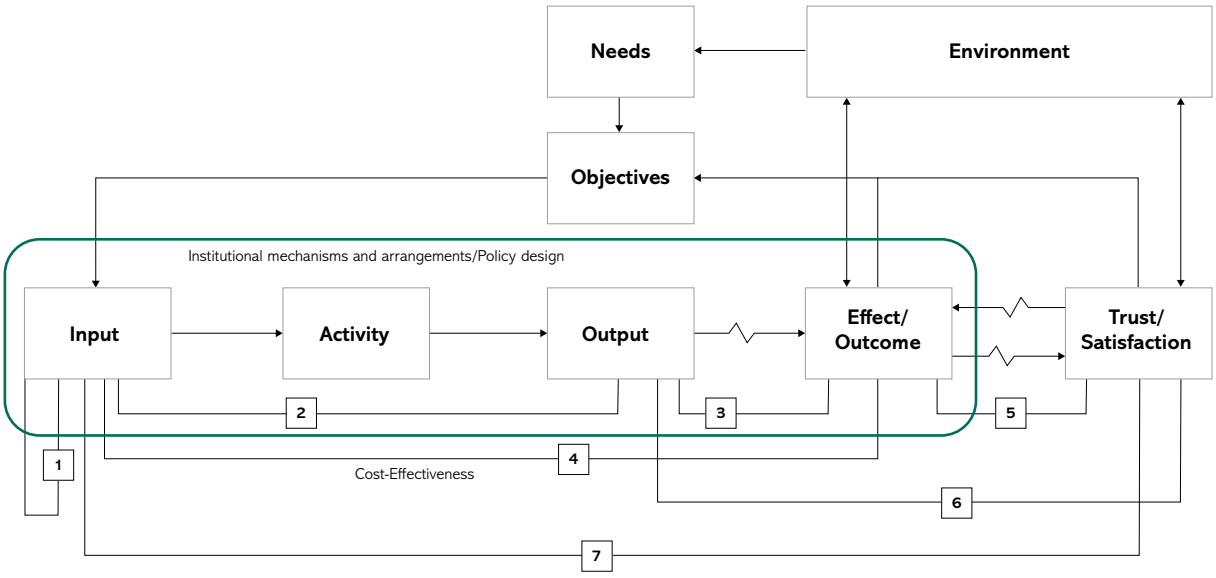
Sources: OECD, Eurostat

7. SYNTHESIS

The EIPA benchmarking study sets out to analyse the performance of public sectors in 35 countries in 10 policy areas. This report is the first of three sub-studies covering the areas of public administration, social safety, education and housing.
In the respective chapters of this report, the results of the analysis in the four domains were reported in detail. In this concluding chapter, we synthesise these results with a view to presenting an overview and to derive general conclusions.

The chapter is organised in line with the **conceptual framework**, which guided the analysis in the four policy areas (see Figure 1). The model distinguishes between output, outcome and impact, and includes the relation between input and output, i.e. throughput and processes, and the efficiency of service delivery, as well as causal mechanisms to explain outcomes and the relation between input and outcome related to cost-effectiveness.

Figure 1: Conceptual framework



Source: Bouckaert & Halligan 2008:16 (modified)

Environment, needs and objectives

In general, the concept of environment can be seen as the social, economic and political context of a specific public service. Hence, each of the policy areas covered in the respective chapters is embedded in very different environments. However, despite these differences, several general observations can be made.

First, policy environments are essential for shaping the delivery of public services, and thus contribute to output and outcomes in the respective policy areas. While these environments therefore partly explain differences in the countries' performances, they are also the factors which are least receptive to policy change and interventions in the context of public sector management. Since policy environments provide political and societal demands, and thus shape the needs and objectives of a specific policy area, they can be seen as the most stable factors of public sector performance.

For instance, system characteristics of public administrations are deeply embedded in the wider context of political systems and as such, shaped by deep-rooted beliefs about the desirability of state structures or electoral representation, to name just two. Likewise, the varying educational systems in the 35 countries are the result of long political processes. As such, these processes reflect cultural beliefs about desirable social structures.

Second, the environments of the respective policy areas cannot be neatly separated. Arguably, public administration can be seen as the underlying foundation of service delivery in all policy areas, including the ones covered in this report. However, specific policy areas also affect each other. For instance, social safety and housing are both closely related to social security and are therefore embedded in variations of welfare regimes.

Input and activities

Inputs consist of monetary and non-monetary resources that are necessary to carry out certain activities, resulting in outcomes related to service delivery. Their availability and allocation are closely related to exogenous factors in which governments have to operate, such as recessions, pandemics and inflationary pressures.

In general, the analysis of inputs in the three respective policy areas indicates that the role of governments in public service delivery is increasing, which supports the assumption of a 'return of the state'. By and large, public expenditure was rising or remained constant in the three policy areas.

In terms of non-monetary input and characteristics of the workforce, the respective indicators in the three policy areas reflect general social and demographic trends. In public administration and social safety, the share of female employees has been rising in recent years. In the field of education, the increasing expenditure per student has to be seen against the backdrop of decreasing numbers in the student populations.

At the same time, however, there is also evidence of a decrease in the public sector workforce and an ageing population of employees. Moreover, the results in the various policy areas are highly contingent on external events as well as regional and national trajectories in public service delivery. This variation highlights that while countries face similar challenges, their starting points, environmental characteristics and thus opportunities for improvement differ significantly.

In view of such diversity, knowledge dissemination, sharing of best practices and mutual learning should be based on deriving lessons from examples with high levels of achievement and excellence. Yet, at the same time such lessons have to be implemented in diverse social, political and economic contexts. Hence, public sector management, i.e. interventions to improve efficiency and effectiveness of government action to produce and deliver services should be tailor-made, fitting the specific needs and objectives of the respective country and policy area.

To facilitate such mutual learning, the respective chapters in this study relied on regional and conceptual categorisation to allow for comparisons between countries with similar system characteristics. While all countries face the twin challenge of green and digital transformation, the conditions in which such challenges are manifested affect choices regarding the type and scope of public sector intervention.

Output and outcome

Whereas outputs are the intermediate product of service delivery, outcomes refer to societal, economic and political results in a longer time frame. In the field of public administration, outputs were defined in this study as systems of good governance, which are essential for delivering high-quality services in a longer time frame, i.e. outcomes. In the field of education, enrolment and graduation rates of students are key output indicators. The number of arrests, prosecutions and convictions are such indicators in the area of social safety. Likewise, the long-term results of input, activity and output are specific to the societal, economic and political needs and objectives of each policy area.

The respective chapters provide in-depth analysis on the development of these indicators including cross-country comparisons. By and large, results are mixed in all policy areas. In public administration, for instance, output indicators related to good governance indicate decreasing performance, whereas social and economic outcome indicators show increasing performance. In the field of education, many countries and education levels register increasing enrolment rates and generally, high levels of performance, but there is also evidence of low or decreasing performance in specific regions and countries over time.

The area of social safety illustrates the methodological challenges of interpreting performance based on output and outcome indicators. For instance, countries with high crime rates (output) can often be characterised as performing well by providing safety (outcome), given that high crime rates are indicative of good practices in terms of detection, recording or reporting of crimes.

Moreover, outcomes are often multidimensional concepts with performance levels varying according to specific dimensions. For instance, in the area of social safety, crime-related indicators show increasing and decreasing performance depending on the type of crime, e.g. online activities. In the field of housing, performances on different dimensions, e.g. affordability of and satisfaction with housing, differ in line with the regional distributions of countries. In this case, the evidence suggests that outcomes are mutually exclusive, i.e. regions in which countries score high on affordability also score low on satisfaction indicators (e.g. overcrowding or poor housing quality).

In general, the causal links between input, activities and output or outcomes are subject to uncertainty due to the complexity of public service delivery in a diverse set of countries and policy areas, with significant variation in terms of system characteristics in which such services are being delivered. Furthermore, the links between input and output or outcomes are essential indicators for the efficiency of service delivery.

In public administration, there is a trend of decreasing efficiency in the majority of countries. Likewise, in the field of education, indicators suggest that there is room for improvement at all levels of education. To allow for a better understanding of these links, the respective chapters employed various methods to correlate specific input and activity factors with performance levels measures as output and outcome. As mentioned above, facilitating mutual learning based on this understanding also relies on regional and conceptual categorisation as part of such analysis.

Satisfaction and trust

An essential element in the analysis of public sector performance is the satisfaction of citizens with the quality-of-service delivery. Satisfaction can be seen as an indicator of service quality, but it is also related to trust in government, which is essential for governance systems which are based on democratic principles.

The analysis in the four policy areas indicates, in general, high levels of satisfaction and trust. In public administration, almost all countries have experienced an increase in trust in government in the time frame of this study. Likewise, the indicators presented in the fields of education, social safety and housing suggest a high level of satisfaction among citizens.

As mentioned above, there is, however, significant variation across regions and countries as well as over time. Moreover, similar to outcome indicators, multidimensional concepts such as trust are contingent on various systemic and individual socio-economic factors. Since most satisfaction and trust indicators are based on citizens' perceptions there is also a methodological challenge of interpreting diverging results between objective and subjective indicators. Hence, in case such perceptions diverge from the actual quality-of-service delivery, results have to be interpreted carefully and public sector interventions should be designed to take into account possible measurement errors.

Nevertheless, by and large, the evidence presented in the four respective chapters suggests robust links between high levels of performance and citizens' satisfaction and trust in the public sector.

8. LIST OF AUTHORS

MINISTRY OF THE INTERIOR AND KINGDOM RELATIONS

Frans van Dongen

Frans van Dongen is a programme manager on public performance at the Ministry of the Interior and Kingdom Relations in the Netherlands. In this position, he is responsible for the development, exploration and dissemination of empirical and practical knowledge about the performance of the public sector including drivers for success, efficiency, effectiveness, and innovation. He acts in close collaboration with various partners, both nationally and internationally. The purpose of these actions is to inspire and support government organizations to improve their performance. In addition, he is the representative of the Ministry of the interior and Kingdom Relations at EIPA's board of governors and the Dutch member of the steering committee for the European Public Sector Awards.

EUROPEAN INSTITUTE OF PUBLIC ADMINISTRATION

Iwona Karwot

Iwona Karwot is the Project leader for the present Benchmarking Study, 2022 – 2025, working in close cooperation with the Ministry of the Interior and Kingdom Relations in the Netherlands. In particular, she oversaw the planning and preparation of the content and budgeting proposal of the project. She has conducted the negotiations of the subjects and the involvement of experts for the full length of the study. Iwona is a Senior Lecturer at EIPA, specialising in cohesion policy programming, implementation, audit anti-fraud measures. She is developing and running of seminars in close cooperation with the European Court of Auditors and the EU Commission. In 2021 she co-authored 'The Gender Gap in the EU's Public Employment and Leadership', for the European Parliament. Before joining EIPA in 2008, she worked as an Associate Senior Lecturer of Postgraduate Studies in European Union Funds at the University of Łódź and the Catholic University of Cardinal Stefan Wyszyński, as a lecturer for the Academy of Human and Economic Science in Zamość and the Centre for European Studies in Strasbourg. She holds an MA in Political Science and European Institutions, and a PhD in Regional Policy and International Relations.

PUBLIC ADMINISTRATION

Christoph Klika

Christoph Klika has coordinated the EIPA team in delivering the public administration chapter and substantially contributed to its drafting. Christoph joined EIPA Maastricht in 2021 as a Senior Lecturer and EU Policy Implementation Expert. Christoph specialises in European integration, EU external relations, EU policymaking, public administration and implementation, as well as comparative politics focusing on Europe. Christoph also lectures at the University of Duisburg-Essen in Germany, focusing on international relations and development policy. Christoph was a visiting fellow at the Centre for European Law and Governance at Cardiff University in the UK; he conducted research and delivered lectures as a part of the Jean Monnet Seminar Series. He has also taught at Maastricht University in the Netherlands and worked at the Institute for European Integration Research at the Austrian Academy of Sciences in Vienna. Christoph holds a Master's degree in Political Science and Communication from the University of Vienna and is a candidate to PhD in Political Science from Maastricht University.

Miranda Lovell-Prescod

Miranda Lovell-Prescod worked on data analysis for the public administration chapter, contributed to its drafting and supported the authors of other chapters in the use of data. Miranda joined EIPA Maastricht in 2021; she works as a Researcher in the field of Public Policy Evaluation and Impact assessment. Before joining EIPA she was working at Maastricht Graduate School of Governance (Maastricht University/ United Nations University-MERIT) as a Teaching Assistant providing quantitative and econometric assistance. In the past she has been interested in social protection, multi-dimensional poverty indices, conditional-cash transfer programmes, and the effects of corruption on human development. Miranda has a double-MSc in Public Policy degree from Maastricht University and UNU-MERIT and a MSc in Economics from the School of Business and Economics at Maastricht University.

Paolo Giovanetti

Together with Miranda, Paolo Giovanetti worked on data analysis for the public administration chapter and contributed to its drafting. Paolo joined EIPA Maastricht in 2022 as a Research Assistant, joining the Effective Public Administration team. His interests lie at the intersection between politics and economics, with particular focus on quantitative analysis and cross-country comparison. Before joining EIPA, Paolo studied at the London School of Economics where he obtained a Master of Science in Political Science and Political Economy. He also holds a Master of Arts in Political Economy from King's College London.

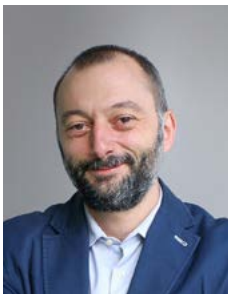
SOCIAL SAFETY

Lorenzo Pasculli | Dawes Centre for Future Crime, UCL, UK - Nebrija University, Spain

Lorenzo Pasculli is Principal Research Fellow and Deputy Director at the Dawes Centre for Future Crime, University College London. He is also a Visiting Professor at Nebrija University in Madrid. Lorenzo's research focuses on current and future developments in crime, crime prevention and criminal justice brought about by globalisation. In particular, his main research interests concern the relationships between science, technology and the law and the unintended criminogenic and corrupting effects of the law. Prior to joining UCL, Lorenzo held academic positions at Coventry University, Kingston University and the University of Padua. He also held visiting positions at the University of Oxford, Queen's University Belfast, Columbia University, Fordham University, University of Adelaide, Florida International University, Bahçeşehir Üniversitesi Istanbul.

EDUCATION

Tommaso Agasisti | Politecnico di Milano School of Management



Tommaso Agasisti is Full Professor at Politecnico di Milano School of Management – Department of Management, Economics & Industrial Engineering. Since January 2020, he is serving as Associate Dean for International Relations & Quality at MIP-Politecnico di Milano Graduate School of Business. Since January 2019, he is member of the Politecnico di Milano's Board of Governors (period 2019-21). His research activity is focussed on Public Economics, Finance and Management, and the mainstream is in the field of economics and management of educational services. In particular, his research interests are concerned with evaluating by means of econometric and statistical methods the performance of educational institutions and of students, the study of governance models for Higher Education institutions and systems, the application of new theories and methods in the area of Learning Analytics and the role of digital learning in innovating the educational process. Since 2005, he has participated to several research projects dealing with a wide variety of topics, ranging from the assessment of performance of territorial Higher Education System, to the development of proper accounting principal for public universities.

Marta Cannistrà | Politecnico di Milano

Marta Cannistrà is a PhD student in Data Analytics and Decision Sciences at the Politecnico di Milano - Department of Management Engineering. Her main research interests focus on the use of statistical methods to predict students' performance, together with the implementation and evaluation of educational interventions aimed at improving the school careers of the students most at risk. A second line of research focuses on the evaluation of financial education interventions for students and adults, using econometric methods.

Giovanna D'Inverno | University of Pisa

Giovanna D'Inverno is Tenure-track Assistant Professor in Mathematical Methods for Economics, Actuarial Science and Finance at the Department of Economics and Management, University of Pisa (Italy). She is also Research Associate in the Leuven Economics of Education Research center at KU Leuven (Belgium). She has a joint PhD degree (2018) from Scuola IMT Alti Studi Lucca (Italy) and KU Leuven (Belgium), a postdoc at KU Leuven in the Leuven Economics of Education Research center and a flourishing academic career in the field of quantitative methods and public economics, with publications in top-ranked journals. Her research focuses on the development of quantitative methods and policy evaluation techniques to address policy relevant issues, so to complement efficiency with effectiveness analysis in an integrated economic framework. Recurrent empirical applications mostly cover public economic issues and sustainability challenges, with a particular attention on education and public economics. She works on several national and international projects, including collaborations with consultancy agencies and policy makers.

Kristof De Witte | KU Leuven

Kristof De Witte is a full professor in Education Economics and Political Economy at the Faculty of Economics and Business at KU Leuven, Belgium, and he holds the chair in 'Effectiveness and Efficiency of Educational Innovations' at United Nations University (UNU-MERIT) at Maastricht University, the Netherlands. Kristof De Witte is further a Fellow member of the CESifo Network. At KU Leuven he is program director of the 'Master in Economic Education', and the founding member and director of the research group 'Leuven Economics of Education Research'. The research interests of Kristof comprise education economics, performance evaluation, and political economy. His work touches upon multiple disciplines which is reflected in publications in the leading journals from various academic fields. Kristof served as an expert in the 'European Commission Expert Group on quality investment in education and training'. He is an associate editor for 'International Transactions in Operational Research', and former guest editor in three academic journals. He spent academic visits at, among others, Columbia University, Wissenschaftszentrum Berlin für Sozialforschung and Aston University.

HOUSING

Kees Dol | RIGO Research & Advisory

Kees Dol is a housing market and housing finance researcher at RIGO Research & Advisory in Amsterdam. Currently he conducts studies on affordable home ownership and housing markets in the Netherlands. From 1999-2020, he worked at TU Delft, where he received a PhD on a series of articles on Western European home ownership markets and the Global Financial Crisis. He was involved in the Housing chapter in a previous edition of the Public Sector Performance project.

Pieter Kranenborg | RIGO Research & Advisory

Pieter Kranenborg is a Researcher at RIGO, where he is mainly involved in research on housing distribution, housing needs and scarcity. These studies help housing associations, for example, to form and evaluate their policy, or serve as a basis for municipal housing policy. In addition, he is involved in research on the private rental market and discrimination in the housing market. With colleague Kees Dol he regularly works on research projects related to house purchase policy. Pieter has a Bachelor in Human Geography & Urban Planning and a Masters in Urban Studies from the University of Amsterdam.

Sander ten Hove | RIGO Research & Advisory

Sander has been working at RIGO Research en Advies since September 2021.
He has studied at the Erasmus University Rotterdam where he got his Bachelor's degree in Economics and Business Economics and his Master's degree in International Economics. He used his economical background to explain the use of the 'Mietspiegel' in Germany and of the Rent Pressure Zones in Ireland.

ISBN: 978-90-6779-224-0

European Institute of Public Administration
O.L. Vrouweplein 22 | P.O. Box 1229
6201 BE Maastricht | The Netherlands

+31 43 32 96 222
info@eipa.eu
www.eipa.eu

ISBN 978-90-6779-224-0