STUDY

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Taxation of the Informal Economy in the EU

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EN

Taxation of the Informal Economy in the EU

Part 1: Latest Shadow Economy Estimates and Key Findings of Country Case Studies

Abstract

This study provides estimates of the size and development of the shadow economy in the EU up to 2022 and analyses the main factors that drive economic agents to enter the shadow economy activities (part 1). Moreover, the study reviews and elaborates on the main driving forces and the policy measures implemented to reduce the shadow economy in six EU countries (Germany, Austria, Italy, Denmark, Romania and Greece) (part 2).

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LIST OF ABBREVIATIONS

AML	Anti-Money Laundering
EP	European Parliament
EU	European Union
GDP	Gross Domestic Product
ICT	Information and Communication Technologies
ILO	International Labour Organization
MIMIC	Multiple Indicators Multiple Causes (Model)
NAFA	National Agency for Fiscal Administration
OECD	Organisation for Economic Development and Cooperation
SGI	Sustainable Governance Indicators
UK	United Kingdom
VAT	Value Added Tax

EXECUTIVE SUMMARY

Background

Both policy and academic circles have long debated the definition, scope, and key characteristics of the shadow economy. In comparison to the mainstream economic literature, research on the shadow economy and ways to measure it in various nations is relatively new. Beginning in the 1970s, academics began to take an interest in the topic of the shadow economy. However, during the past three decades, academic interest in ways to quantify the shadow economy has increased. There is now a sizable body of literature on quantifying the scope and growth of the shadow economy, as well as pinpointing the major drivers that contribute to it.

Since the individuals engaging in shadow economic activities actively avoid detection, measuring the size of the shadow economy in a country can be difficult. In order to avoid paying taxes and abiding by the laws and regulations set forth by governments, agents involved in shadow economic activity attempt to escape detection by law enforcement. However, the shadow economy's existence is well established, as outlined and presented in this study.

The reliability of official economic data can be impacted by the existence of the shadow economy, which in turn affects other socio-economic indicators that rely on those official data. It may also have an impact on the main goals of social and economic policy. Thus, there are a variety of political, social, and economic ramifications that the shadow economy may have. From the perspective of fiscal policy, the greater the shadow economy persists in a country, the more detrimental an effect it will have on the amount of tax revenues collected. At the same time, it can lead to increases in public expenditures, thus exacerbating any misbalance between tax collection and government spending which may also lead to misallocation and misuse of resources.

Aim

The general aim of this study was twofold. One was to estimate and analyse the size and development of the shadow economy in the EU Member States and other OECD countries between 2003 and 2021 and provide projected estimates for 2022, too. The other was to present case studies on six EU countries (Austria, Denmark, Germany, Greece, Italy and Romania) by reviewing and analysing the key drivers of the shadow economy and discussing the policy measures taken to reduce such informality in each of these respective countries. In this context, the impact of the informal economy on tax revenues is of particular interest. Finally, the aim of the study was also to provide some policy options for countries to adopt to reduce the level of tax evasion and shadow economy in general.

Key Findings

Our results show that there are broadly four different developments concerning the development of the shadow economy of in 36 OECD countries up to 2022. Our results indicate a strong increase of the shadow economy from 14.98% (in 2019) to 16.48% (in 2020); i.e. 1.5 percentage points or 10% increase year on year, which is the strongest increase since the last 20 years for an average figure! The worldwide coronavirus pandemic and the subsequent severe recession worldwide can be blamed for this. Although our results for 2022 (as projected as of January 2022) indicate a decline of the shadow economy by roughly 0.52 percentage points, we believe that this decline will not be materialised. This is as a direct result of the exacerbating costs of living and the severe energy shortage, which might lead to an increase of 5-7% of shadow economy in almost all EU countries.

Our results also indicate that the eastern or central and southern European countries, such as Bulgaria, Cyprus, the Czech Republic, Latvia, Lithuania and Poland have higher shadow economies than the "old" western European Union countries, like Austria, Germany, France and the Netherlands.

Hence, we have an increase of the size of the shadow economy from west to east. In addition, we observe an increase in the size and development of the shadow economy from north to south of Europe. On average, the southern European countries have considerably higher shadow economies than those of central and western Europe.

In part two of the study, we provide detailed analysis on the main drivers of shadow economy in the six countries (part of the case studies). We identify the key policies that were implemented over the years by these six EU countries in combating tax evasion, undeclared work and shadow economy in general. After reviewing these policy measures for each country, we can conclude that they were in line with our recommended policy options identified in this study and that most of them were of the preventative, monitoring, enforcement, deterring, incentive and fiscal policy measures.

Finally, this study presents a number of policy options for governments. A comprehensive package of reforms is needed to successfully combat the shadow economy, carefully designed based on the determinants most relevant in that specific case. Measures can range from regulatory and institutional reforms, to tax policies and administration. In addition, a well-designed policy set should address incentives for informal workers to transition to the formal sector, especially in countries reliant on remittances and where the shadow economy provides a social safety net. Furthermore, policy actions focused on encouraging private-sector job creation and fostering human capital development would help to bring firms and workers out of the shadows and promote growth that is more inclusive.

1. SOME GENERAL REMARKS ON PART 1

This study is grouped into two parts. The first part deals with the latest estimates of the shadow economy of 36 OECD countries up to 2022 and provides an extended summary of the results of the shadow economy. It analyses the main drivers, and recommends policy measures in reducing the shadow economy. In the second part, we present the case studies on the side and development of the shadow economy of six countries, Austria, Denmark, Germany, Greece, Italy, and Romania and discuss the main drivers as well as country specific policy measures to reduce the shadow economy.

In the second section of part 1, we present the latest estimates of the shadow economy of 36 OECD countries from 2003 to 2022. Furthermore, in this section, we investigate the effect of the Coronavirus-pandemic on the shadow economy. In section 3, we provide and discuss a general perspective on the most significant drivers leading to the existence of the shadow economy for 38 OECD countries. In section 4, we present and discuss briefly the policy options to reduce the shadow economy[1]. Finally, section 5 of this study provides a summary and some general conclusions are drawn.

[1] There will be overlapping areas between part 1 and part 2. In part 1, we want to give the reader a more general overview and/or perspective of this quite broad research field, but certain results for single countries will show up in part 2 as well.

2. DEVELOPMENT OF THE SIZE OF SHADOW ECONOMY OF 36 OECD COUNTRIES FROM 2003 TO 2022

2.1. Some general remarks about the shadow economy

The definition, size, and key characteristics of the shadow economy have been subject of long-standing debate in both policy and academic circles. More recently, global developments, such as migration waves, climate change, trade tensions, and technological changes (such as digitalization) have triggered a renewed interest in the topic of the shadow economy.

There is controversy about how to define and measure the shadow economy. The shadow economy is also referred to as the "hidden" economy, "grey" economy, "black" or "lack" economy, "cash" or "informal" economy[2]. All these synonyms refer to some type of shadow-economy activities and have been used frequently and often inconsistently.

This study defines the *shadow economy* as all economic activities that are hidden from official authorities for monetary, regulatory, and institutional reasons. Monetary reasons may include avoiding paying taxes and social security contributions, while regulatory reasons may entail skirting governmental bureaucracy or the burden of regulatory frameworks. Institutional reasons include corruption, poor quality of political institutions, and weak rule of law. Such institutional reasons have a strong influence on individual behaviour and create additional incentives to be engaged in additional shadow economy activities; for example, in a corrupt state, where a citizen has to bribe a public employee, his incentive to pay the taxes are low and then he switches to shadow economy activities. In this paper, the shadow economy reflects mostly legal economic and productive activities that, if recorded, would contribute to national GDP; therefore, its definition in our study tries to exclude illegal or criminal activities and do-it-yourself or other household activities[3]. Of course, all these shadow economy activities are by law illegal, but there is a difference, that these shadow economy activities create a valued added, which for classical crime activities is not the case.

In addition to the difficulty associated with its definition, the size of the shadow economy is also difficult to measure, as agents engaged in shadow economic activities try purposefully to remain undetected. In this study, we will not discuss the various methods or procedures to measure the shadow economy[4]. We make further remarks in footnote 5 in relation to the methods and procedures to estimate the size of the shadow economy. The following sub-sections (2.2 and 2.3) focuses predominantly on the latest empirical findings and their explanations.

2.2. The Effect of the Corona-Pandemic on the Shadow Economy

The Coronavirus-Pandemic caused a severe recession in almost all OECD countries in 2020 but to a lower extent in 2021. These recessions caused a strong rise in unemployment and a sharp decline in GDP and national income. As these are major driving forces of the shadow economy, they had the effect of a strong increase in the shadow economies of these 36 countries. In tables 2.1 to 2.4, we present the

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[2] Compare here Schneider (2023), where an extensive discussion about the definition of se and it's wording takes place.

[3] Of course, we are aware that there are overlapping areas, like prostitution, illegal construction firms, and corruption; see, for example, Dreher and Schneider (2009), Dreher, Katsogrannis, and McCorriston (2009), Williams and Schneider (2016), Schneider (2011, 2021), and Medina and Schneider (2018, 2021).

[4] A number of studies provide a well-covered discussion on the main methods used to measure or estimate the size of the shadow economy - See for example Medina and Schneider (.2018, 2021) and Schneider (2023).

size and development of 31 European and 5 non-European shadow economies over the period 2003-2022[5].

Let us first consider the results of the average size of the shadow economy of the 28 European Union countries (current EU 27 + UK) over a more long-term perspective and before the coronavirus pandemic occurred. In table 2.1, we realize that the shadow economy in the year 2003 was 22.6% (of the official GDP), which decreased to 19.6% in 2008, then increased to 20.1% in 2009 before decreasing again to 16.3% in 2019. Hence, we had in general a negative trend of the size of the shadow economies in almost all OECD countries. The main reason was the strong increase in GDP and an equally strong rise in national income. The effect of this was much less engagement in shadow economic activities.

2.2.1. Results in 2020 for EU-Countries

In 2020, the worldwide coronavirus-pandemic (also referred to as the COVID-19 pandemic) occurred and triggered a severe recession in almost all countries as repeated lockdowns were imposed in almost all countries of the EU and worldwide. One consequence of this 'great lockdown recession' was a strong rise in the average size of the shadow economy to 17.9% (of the official GDP) of the 28 EU countries. Compared to 2019 this average increase is remarkably high with 1.69 percentage points or with 9.8% increase from the previous year, and it is the highest in the last 20 Years! In such a recession, a shrinking GDP and a strong increase in the unemployment rate are the key drivers of such a significant rise in the shadow economy. During an economic crisis or a recession, people try to compensate for their income loss with increased shadow economic activities.

The strongest increase (3.1 percentage points) took place in Croatia from 26.4% of official GDP (2019) to 29.6% (2020); the next strongest increase (2.8%) was in Bulgaria from 30.1% (2019) to 32.9% (2020). The weakest increase (0.8) was in Finland from 10.69% to 11.3% (of GDP); the second one (0.92) in Denmark from 8.92% to 9.84% (of GDP).

2.2.2. Results for 2021 and Projected Ones for 2022 for EU-Countries

With the help of projections for some countries, we made calculations on the development of the shadow economies for 2021. In 2021, "only" a modest decrease of the shadow economy from 17.87% (2020) to 17.42% of GDP (average value for the EU-Countries) took place; hence, the average decline of the shadow economy of the EU countries will be 0.45 percentage points or 2.5%. The causes of this decline were massive public spending on infrastructure and subsidies to enterprises and special transfers to individuals that did lead to a sizeable GDP growth combined with a decline in the rate of unemployment. The labour retention schemes applied in OECD countries, typically partially replaced the previous labour income of workers who effectively were laid off temporarily (see IMF, 2021). But workers stayed on the payroll of the firm so that firm-specific human capital effectively was maintained despite lower aggregate demand, supply disruptions and unanticipated liquidity constraints during the pandemic (effects of lockdowns, shutdowns and increased uncertainty). Such workers had in most cases an excess of leisure time, which they typically could use either in the self-service economy or in

[5] The calculation of the size and development of the shadow economy is done with the MIMIC (Multiple Indicators and Multiple Causes) estimation procedure. Using the MIMIC estimation procedure one gets only relative values and one needs other methods like the currency demand approach or the income discrepancy method, to calibrate the MIMIC values into absolute ones. For a detailed explanation of these calculation methods, see Schneider (2011, 2021), and Schneider and Williams, (2013), and Williams and Schneider (2016), as well as Medina and Schneider (2018, 2021).

the shadow economy. In summary, the global recovery of the most important economies took place and lead to this modest decline of the shadow economy in 2021 for most countries.

In 2022, but only to the end of March 2022, a further recovery of the world economy took place, but as in most OECD countries, the Coronavirus Pandemic was almost ineffective in 2022, and a further reduction of the shadow economy was expected. The first calculations were made in January 2022, which are shown in tables 2.1, 2.2, and 2.3, revealing that the average size of the shadow economy of the 27 EU-Countries (+ the UK) will decline from 17.42% (in the year 2021) to 17.29% in 2022. A decline will happen in 15 EU-Countries and an increase in 12 EU Countries.

However, these shadow economy predictions were made in January 2022, but in February 2022, Russia launched a military offensive in Ukraine leading to a war between the two countries. Consequently, by the fall of 2022, most EU countries are experiencing a significantly high inflation rate of about 10.0% and a severe (fossil energy, e.g. gas) energy shortage. Due to these events, the projected decline of the shadow economy (as forecasted in January 2022) will not happen, and on the contrary, the shadow economy will rise by 5-7% in almost all EU countries. This latest development is NOT shown in tables 2.1 to 2.4 and figures 2.1 and 2.2.

2.2.3. Results for Non-EU-OECD Countries

The results presented in table 2.2 show the development of the shadow economy of three Non-EU European, but OECD countries, from 2003 to 2022. As for the 27 EU countries plus the UK, the shadow economy as a percentage of GDP sharply increased between 2019 (10.8%) and 2020 (11.62%) in Norway, in Switzerland from 5.5% to 6.1% for the same period, and in Turkey from 29.4% to 32.54% for the same years. The strongest increase of 3.14 percentage points or 10.4% occurred in Turkey. Due to a relatively strong economic recovery in 2021 and forecast for 2022, we predict a small decrease in the shadow economy roughly by 0.42 percentage points in these three countries. If we add these three countries to the EU countries, the average size of the shadow economy of the 31 European countries was 22.4% in 2003, decreased to 19.4% in 2008, and then increased again to 19.9% in 2009. The shadow economy since then followed a declining trend and decreased to 16.20% by 2019. However, it sharply increased to 17.76% in 2020 and, as per our January 2022 forecasts, we predict that there will be a decline to 17.20% in 2022 (see Table 2.2 but also compare figures 2.1 (values for 2020) and 2.2 (values for 2021)). As already discussed, the second half of 2022 can be characterised by a high inflation rate in most EU countries. This inflation rate reaching levels of 10.0% or more and the severe (fossil energy, e.g. gas) energy shortage, will lead to the shadow economy increasing by 5-7% in most EU countries, contrary to our in January 2022 projected decline.

Next, we turn to the size and development of the shadow economy from 2003 to 2022 of the highly developed Non-European OECD countries such as Australia, Canada, Japan, New Zealand and the USA. We present our estimated results in table 2.3. Similar to the 31 European countries, we calculate a strong increase in the shadow economy of these six countries from 7.6 % (the average value of 2019) to 8.6 % of GDP in 2020. This is a substantial rise of 1.0 percentage points or 13% increase year on year (for more details see table 3). In 2021 and 2022, we forecast a modest decline of the shadow economies of these 6 countries by 0.3 percentage points, because an economic upswing took place in 2021 and is expected to continue in all five countries in 2022. However, as already argued, a significant rise in the rate of inflation worldwide (mainly driven now by energy prices and food prices) our January 2022 forecasts of a decline of the shadow economy will not take place, and on the contrary, the shadow economy could rise by 5-7% in almost all OECD-countries.

Finally, we consider the development of the shadow economy of all 36 OECD countries from 2003 to 2022; the various averages are shown in table 2.4.

Likewise, we show that the average size of the shadow economy of all 36 OECD countries strongly increased from 15.0%in 2019 to 16.5% in 2020. This is a rise of 1.5 percentage points or 11% year on year. Because of a strong economic recovery, the shadow economy slightly decreased to 16.1% of GDP (average of all 36 countries) in 2021 and will modestly further decrease to 16.0 % in 2022. As has already been discussed, the most important reason for this decrease is the current state of the official economy. If the official economy is recovering or booming, people have fewer incentives to undertake additional activities in the shadow economy and earn extra "black" money. The decrease is stronger in those countries, where corruption is low and good institutional governance is in place, coupled with an effective rule of law. However, due to the unexpected events that took place, after our forecast estimates were made in January 2022, we argue that the size of the shadow economy will not decline in 2022 for most OECD countries, but on the contrary, we are likely to see a significant year on year increase from 2021.

2.3. Summary of the Latest Shadow Economy Developments

In summary, we show that there are four different developments concerning the development of the shadow economy of these 36 OECD countries up to 2022:

(1) In 2020, we observe a strong increase in the shadow economy from 14.98% (in 2019) to 16.48% (in 2020); i.e. 1.5 percentage points or 10% increase year on year. This is the strongest increase in the last 20 years for an average figure! The main reason for this increase can be attributed to the worldwide coronavirus pandemic and the subsequent severe recession. In 2022, we forecast a modest decline of the shadow economy by roughly 0.52 percentage points as per our forecasts made in January 2022. The main reason was the recovery of the official economy in 2021 and a forecast recovery for 2022. However, in light of the exacerbating costs of living, which is prevailing in most of the EU countries, and the severe energy shortage contributing to a further increase in the cost of living in most EU countries, our forecasted estimate of a further reduction of the shadow economy for 2022 (as projected in January 2022 in our forecasts) might not happen. On the contrary, the shadow economy will rise by 5-7% in almost all EU countries;

(2) The eastern or central and southern European countries, such as Bulgaria, Cyprus, the Czech Republic, Latvia, Lithuania and Poland have higher shadow economies than the "old" western European Union countries, like Austria, Germany, France and the Netherlands. Hence, we have an increase of the size of the shadow economy from west to east.

(3) In addition, we observe an increase in the size and development of the shadow economy from the North to the South of Europe. On average, the southern European countries have considerably higher shadow economies than those of central and western Europe. Figures 2.1 and 2.2 also underpin these movements.

(4) The five non-European highly developed OECD countries (Australia, Canada, Japan, New Zealand and the United States) have lower shadow economies with an average size of about 8.40 % of GDP in 2021.

Table 2.1: Size of the Shadow Economy of the 27 EU-Countries + United Kingdom (up to 2020) over 2003 – 2022 (in % of official GDP)

Country / Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Austria	10.8	11.0	10.3	9.7	9.4	8.1	8.5	8.2	7.9	7.6	7.5	7.8	8.2	7.8	7.1	6.7	6.1	7.2	6.9	6.6
Belgium	21.4	20.7	20.1	19.2	18.3	17.5	17.8	17.4	17.1	16.8	16.4	16.1	16.2	16.1	15.6	15.4	15.1	16.2	16.0	16.0
Bulgaria	35.9	35.3	34.4	34.0	32.7	32.1	32.5	32.6	32.3	31.9	31.2	31.0	30.6	30.2	29.6	30.8	30.1	32.9	32.4	33.1
Croatia	32.3	32.3	31.5	31.2	30.4	29.6	30.1	29.8	29.5	29.0	28.4	28.0	27.7	27.1	26.5	27.4	26.4	29.6	29.0	29.7
Cyprus	28.7	28.3	28.1	27.9	26.5	26.0	26.5	26.2	26.0	25.6	25.2	25.7	24.8	24.2	23.6	23.2	22.1	24.3	23.7	23.9
Czech Republic	19.5	19.1	18.5	18.1	17.0	16.6	16.9	16.7	16.4	16.0	15.5	15.3	15.1	14.9	14.1	13.6	13.1	14.2	13.9	13.5
Denmark	17.4	17.1	16.5	15.4	14.8	13.9	14.3	14.0	13.8	13.4	13.0	12.8	12.0	11.6	10.9	9.3	8.9	9.8	9.6	9.7
Estonia	30.7	30.8	30.2	29.6	29.5	29.0	29.6	29.3	28.6	28.2	27.6	27.1	26.2	25.4	24.6	23.2	22.1	23.6	23.1	22.7
Finland	17.6	17.2	16.6	15.3	14.5	13.8	14.2	14.0	13.7	13.3	13.0	12.9	12.4	12.0	11.5	11.0	10.6	11.4	10.9	10.8
France	14.7	14.3	13.8	12.4	11.8	11.1	11.6	11.3	11.0	10.8	9.9	10.8	12.3	12.6	12.8	12.5	12.4	13.6	13.1	14.2
Germany	16.7	15.7	15.0	14.5	13.9	13.5	14.3	13.5	12.7	12.5	12.1	11.6	11.2	10.8	10.4	9.7	8.5	10.4	10.0	8.8
Greece	28.2	28.1	27.6	26.2	25.1	24.3	25.0	25.4	24.3	24.0	23.6	23.3	22.4	22.0	21.5	20.8	19.2	20.9	20.3	20.93
Hungary	25.0	24.7	24.5	24.4	23.7	23.0	23.5	23.3	22.8	22.5	22.1	21.6	21.9	22.2	22.4	22.7	23.2	26.0	25.0	25.4
Ireland	15.4	15.2	14.8	13.4	12.7	12.2	13.1	13.0	12.8	12.7	12.2	11.8	11.3	10.8	10.4	9.7	8.9	9.9	9.4	10.1
Italy	26.1	25.2	24.4	23.2	22.3	21.4	22.0	21.8	21.2	21.6	21.1	20.8	20.6	20.2	19.8	19.5	18.7	20.4	20.2	20.3
Latvia	30.4	30.0	29.5	29.0	27.5	26.5	27.1	27.3	26.5	26.1	25.5	24.7	23.6	22.9	21.3	20.2	19.8	20.9	20.2	19.9
Lithuania	32.0	31.7	31.1	30.6	29.7	29.1	29.6	29.7	29.0	28.5	28.0	27.1	25.8	24.9	23.8	23.0	21.9	23.1	22.9	22.4
Luxembourg	9.8	9.8	9.9	10.0	9.4	8.5	8.8	8.4	8.2	8.2	8.0	8.1	8.3	8.4	8.2	7.9	7.4	8.6	8.4	8.3
Malta	26.7	26.7	26.9	27.2	26.4	25.8	25.9	26.0	25.8	25.3	24.3	24.0	24.3	24.0	23.6	23.2	22.0	23.5	23.1	23.4
Netherlands	12.7	12.5	12.0	10.9	10.1	9.6	10.2	10.0	9.8	9.5	9.1	9.2	9.0	8.8	8.4	7.5	7.0	8.1	7.8	8.2
Poland	27.7	27.4	27.1	26.8	26.0	25.3	25.9	25.4	25.0	24.4	23.8	23.5	23.3	23.0	22.2	21.7	20.7	22.5	22.0	21.9
Portugal	22.2	21.7	21.2	20.1	19.2	18.7	19.5	19.2	19.4	19.4	19.0	18.7	17.6	17.2	16.6	16.1	15.4	17.0	16.5	15.7
Romania	33.6	32.5	32.2	31.4	30.2	29.4	29.4	29.8	29.6	29.1	28.4	28.1	28.0	27.6	26.3	26.7	26.9	29.3	28.9	29.0
Slovenia	26.7	26.5	26.0	25.8	24.7	24.0	24.6	24.3	24.1	23.6	23.1	23.5	23.3	23.1	22.4	22.2	21.5	23.1	22.5	22.1
Spain	22.2	21.9	21.3	20.2	19.3	18.4	19.5	19.4	19.2	19.2	18.6	18.5	18.2	17.9	17.2	16.6	15.4	17.4	16.9	15.8
Slovakia	18.4	18.2	17.6	17.3	16.8	16.0	16.8	16.4	16.0	15.5	15.0	14.6	14.1	13.7	13.0	12.8	12.2	14.0	13.7	13.1
Sweden	18.6	18.1	17.5	16.2	15.6	14.9	15.4	15.0	14.7	14.3	13.9	13.6	13.2	12.6	12.1	11.6	10.7	11.7	11.0	10.8

Country / Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
United Kingdom	12.2	12.3	12.0	11.1	10.6	10.1	10.9	10.7	10.5	10.1	9.7	9.6	9.4	9.0	9.4	9.8	9.6	10.7	10.2	10.9
28 EU-Countries / Average (unweighted)	**22.6**	**22.3**	**21.8**	**21.1**	**20.3**	**19.6**	**20.1**	**19.9**	**19.6**	**19.3**	**18.8**	**18.6**	**18.3**	**17.9**	**17.3**	**17.0**	**16.3**	**17.9**	**17.4**	**17.3**

Source: Own Calculations, January 2022.

Note: The values for some countries in 2021 and all in 2022 are projections. The United Kingdom left the EU on 31 December 2020.

Table 2. 2: Size of the Shadow Economy of 3 European OECD-Countries (Non-EU Members) over 2003 – 2022 (in % of official GDP)

Country / Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Norway	18.6	18.2	17.6	16.1	15.4	14.7	15.3	15.1	14.8	14.2	13.6	13.1	13.0	12.6	12.2	11.8	10.8	11.6	11.1	10.4
Switzerland	9.5	9.4	9.0	8.5	8.2	7.9	8.3	8.1	7.8	7.6	7.1	6.9	6.5	6.2	6.0	5.8	5.5	6.1	5.8	5.6
Turkey	32.2	31.5	30.7	30.4	29.1	28.4	28.9	28.3	27.7	27.2	26.5	27.2	27.0	26.8	27.2	28.3	29.4	32.5	32.0	32.9
3-Non-EU Countries / Average	**20.1**	**19.7**	**19.1**	**18.3**	**17.6**	**17.0**	**17.5**	**17.2**	**16.8**	**16.3**	**15.7**	**15.7**	**15.5**	**15.2**	**15.1**	**15.3**	**15.2**	**16.7**	**16.3**	**16.3**
Unweighted Average of all 31 European Countries	**22.4**	**22.1**	**21.6**	**20.9**	**20.1**	**19.4**	**19.9**	**19.7**	**19.3**	**19.0**	**18.5**	**18.3**	**17.9**	**17.7**	**17.1**	**16.7**	**16.2**	**17.8**	**17.3**	**17.2**

Source: Own Calculations, January 2022.

Note: The values for some countries in 2021 and all in 2022 are projections.

Table 2. 3: Size of the Shadow Economy of 5 Highly Developed Non- European OECD-Countries over 2003 – 2022 (in % of official GDP)

Country / Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Australia	13.7	13.2	12.6	11.4	11.7	10.6	10.9	10.3	10.1	9.8	9.4	10.2	10.3	9.8	9.4	9.2	8.9	9.7	9.5	9.3
Canada	15.3	15.1	14.3	13.2	12.6	12.0	12.6	12.2	11.9	11.5	10.8	10.4	10.3	10.0	9.8	9.6	9.4	10.3	9.7	10.0
Japan	11.0	10.7	10.3	9.4	9.0	8.8	9.5	9.2	9.0	8.8	8.1	8.2	8.4	8.5	8.6	8.5	8.2	9.1	8.8	8.6
New Zealand	12.3	12.2	11.7	10.4	9.8	9.4	9.9	9.6	9.3	8.8	8.0	7.8	8.0	7.8	7.4	6.9	6.8	7.9	7.3	7.6
United States	8.5	8.4	8.2	7.5	7.2	7.0	7.6	7.2	7.0	7.0	6.6	6.3	5.9	5.6	5.4	5.1	4.8	6.1	6.6	6.1
Other OECD Countries / Unweighted Average	**12.2**	**11.9**	**11.4**	**10.4**	**10.1**	**9.6**	**10.1**	**9.7**	**9.5**	**9.2**	**8.6**	**8.6**	**8.6**	**8.3**	**8.1**	**7.9**	**7.6**	**8.6**	**8.4**	**8.3**

Source: Own Calculations, January 2022.

Note: The values for some countries in 2021 and all in 2022 are projections.

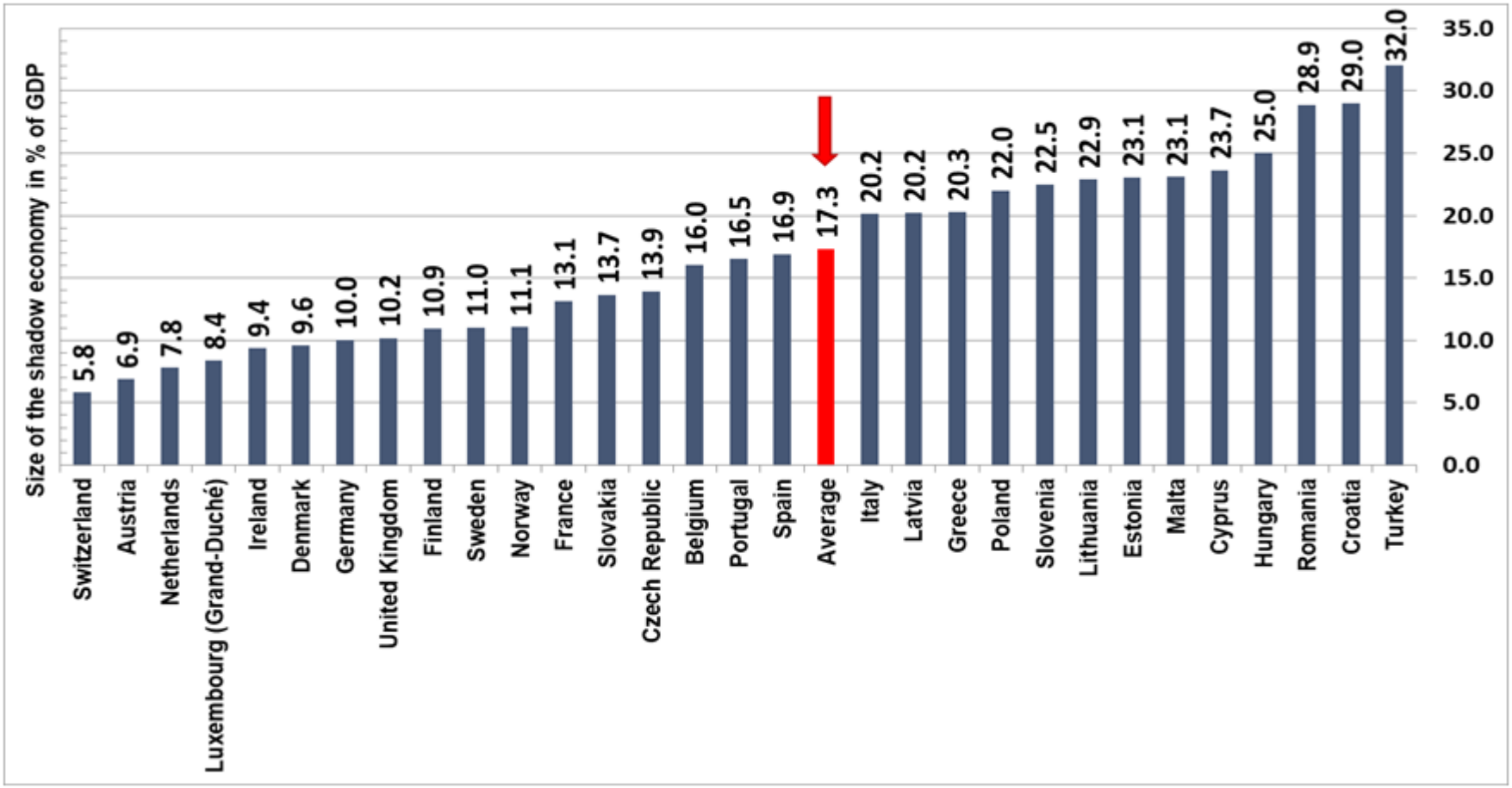
Table 2. 4: Size of the Shadow Economy of 36 OECD Countries of Various Unweighted Averages over 2003 – 2022 (in % of official GDP)

Country / Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
28 EU Countries / Average (unweighted)	22.6	22.3	21.8	21.1	20.3	19.6	20.1	19.9	19.6	19.3	18.8	18.6	18.3	17.9	17.3	16.8	16.3	17.9	17.4	17.3
3 Non-EU Countries / Average (unweighted)	20.1	19.7	19.1	18.3	17.6	17.0	17.5	17.2	16.8	16.3	15.7	15.7	15.5	15.2	15.1	15.3	15.2	16.7	16.3	16.3
5 Other OECD Countries / Average (unweighted)	12.2	11.9	11.4	10.4	10.1	9.6	10.1	9.7	9.5	9.2	8.6	8.6	8.6	8.3	8.1	7.9	7.6	8.6	8.4	8.3
All 36 Countries / Average (unweighted)	21.0	20.7	20.2	19.4	18.7	18.0	18.5	18.3	18.0	17.6	17.1	17.0	16.7	16.4	15.8	15.4	15.0	16.5	16.1	16.0

Source: Own Calculations, January 2022.

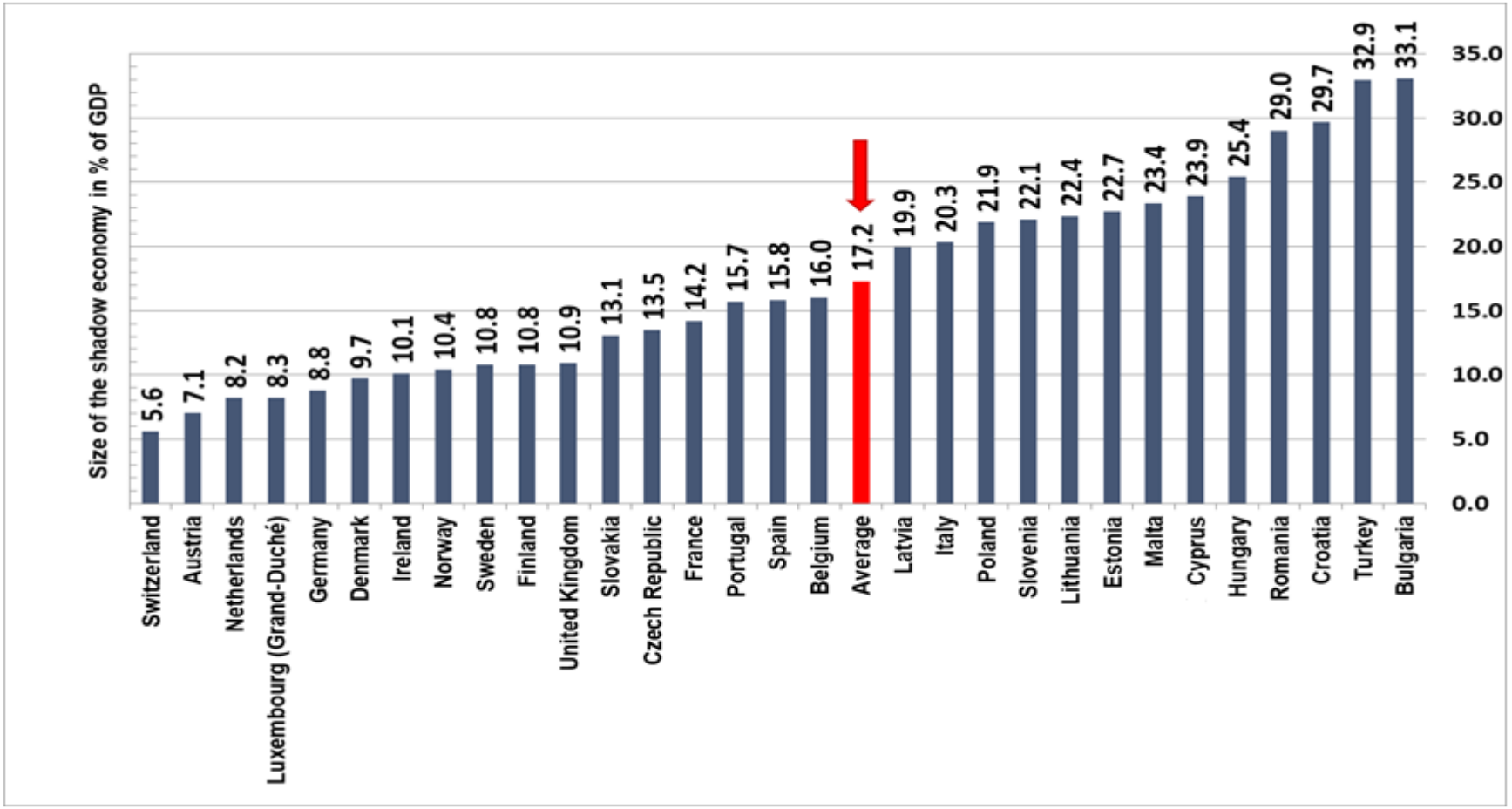
Note: The values for some countries in 2021 and all in 2022 are projections.

Figure 2. 1: Size of the Shadow Economy of 31 European Countries in 2021 (in % of official GDP)



Source: Own Calculations, January 2022

Figure 2. 2: Size of the Shadow Economy of 31 European Countries in 2022 (in % of official GDP)



Source: Own Calculations, January 2022

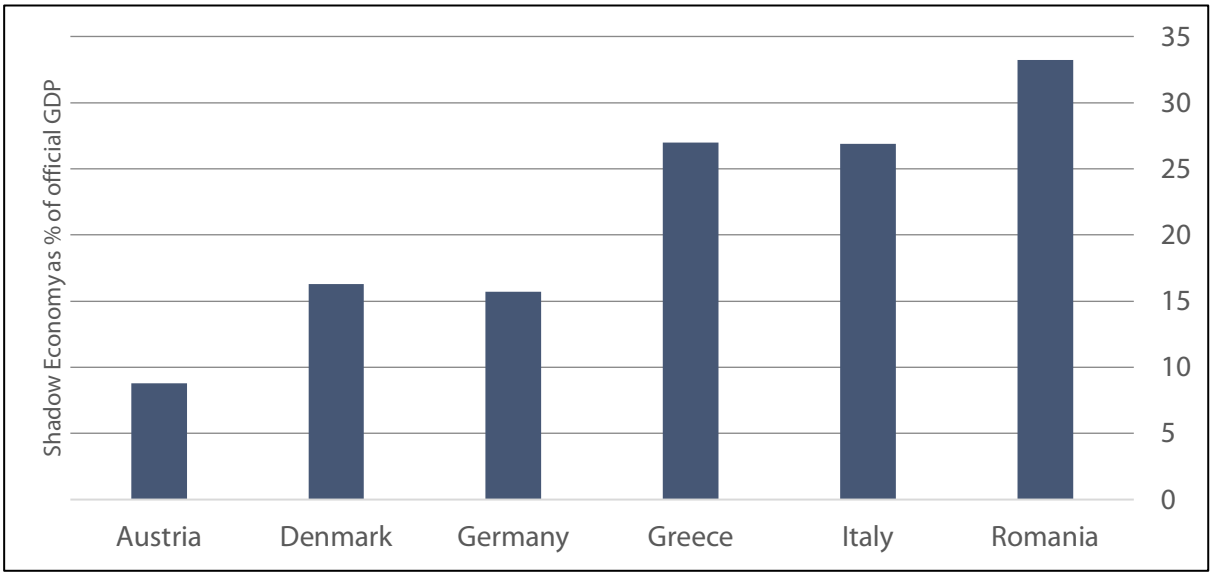
3. DRIVING FORCES OF THE SHADOW ECONOMY

3.1. General Findings

The findings presented in section 2 are in line with most literature on the shadow economy. There is now a general consensus in the literature that weak institutional quality, ineffective government institutions, complex and burdensome tax and regulatory systems, a lack of a strong legal system, and pervasive corruption are the main determinants of economic informality in most countries. Subsequently, these factors could lead towards lower tax morale, which in turn increases the incentives to work in the shadow economy.

Examining the shadow economies of the six EU Member States which belong to the case studies within part 2, we observe that generally there is a decrease in the level of shadow economy between 2003 and 2019 for Germany, Denmark and Austria. The shadow economies of Romania, Italy and Greece (as some of the countries of the EU with the highest shadow economy) have also followed a declining trend between the same years, but remain some of the countries with a large shadow economy as a percentage of official GDP. After 2019, the shadow economy for most of the EU Member States including the 6 countries we are focusing on, has started to increase. Figure 3.1 presents the averages of the shadow economy of these six countries.

Figure 3. 1: The average size of the shadow economy in 6 EU countries (case studies of this study) between 1999 and 2017.



Source: Own Calculations, January 2022

Table 3.1 shows our estimates of the average size of the informal economy as a percentage of GDP in 38 OECD countries and the determinant's average relative impact (in %) of the shadow economy. These estimates are based on the work of Schneider and Buehn (2012, 2013).

Table 3. 1: Average relative impact (in %) of the shadow economy determinants in 38 OECD countries (period 1999 to 2017)

Country	The average size of the shadow economy	Personal income tax	Indirect taxes	Tax morale	Unemployment	Self-employment	GDP growth	Business Freedom
Australia	10.8	21.3	25.4	7.4	15.8	19.3	0.9	9.9
Austria	8.8	18.5	27.4	11.6	12.1	20.5	0.8	9.1
Belgium	20.5	19.2	20.2	19.1	16.5	17.3	0.4	7.2
Bulgaria	35.6	5.1	37.7	5.7	25.9	17.5	1.9	6.2
Canada	13.6	22.1	17.5	7.7	19.2	22.4	0.7	10.4
Chile	18.4	1.8	35.3	5.5	17.3	32.7	0.8	6.7
Cyprus	28.2	4.3	35.9	9.1	11.2	29.9	0.8	8.7
Czech Rep.	15.6	7.8	30.7	9.4	19.0	23.5	1.2	8.3
Denmark	16.3	34.6	33.5	4.0	9.5	9.9	0.3	8.2
Estonia	20.7	10.0	36.0	11.7	21.8	10.4	1.8	8.3
Finland	15.4	19.7	29.1	8.7	18.6	15.2	0.8	7.9
France	14.8	12.8	24.3	15.5	23.2	15.1	0.4	8.6
Germany	15.7	16.6	24.2	8.3	24.3	16.9	0.6	9.1
Greece	27.0	5.8	21.8	10.4	18.0	37.6	0.7	5.7
Hungary	24.1	12.3	34.9	6.4	18.6	18.5	1.2	8.0
Iceland	14.2	19.9	39.7	6.5	7.1	17.9	0.6	8.2
Ireland	15.1	12.5	36.4	7.9	12.5	21.3	1.0	8.5
Italy	26.9	15.6	18.9	9.0	18.6	31.0	0.1	6.8
Korea	25.2	5.7	27.3	3.4	9.8	44.3	1.4	8.0
Latvia	21.0	8.2	32.3	13.3	23.3	14.6	1.8	6.6
Lithuania	25.4	9.0	28.8	17.5	19.9	17.1	1.5	6.1
Luxembourg	8.6	13.2	33.4	20.0	10.4	11.9	1.2	9.8
Malta	26.3	5.9	39.7	3.2	20.0	21.2	0.8	9.3
Mexico	31.0	2.3	42.1	10.2	5.9	33.8	0.4	5.3

Country	The average size of the shadow economy	Personal income tax	Indirect taxes	Tax morale	Unemployment	Self-employment	GDP growth	Business Freedom
Netherlands	11.8	13.6	32.5	13.0	10.4	19.7	0.8	10.0
New Zealand	11.2	21.8	25.4	8.4	11.9	22.9	0.6	9.1
Norway	17.6	21.2	31.5	12.5	10.8	13.0	0.5	10.5
Poland	25.4	6.1	27.8	7.8	26.1	25.7	1.3	5.3
Portugal	21.2	8.1	29.9	8.7	14.6	31.1	0.4	7.2
Romania	33.2	4.2	24.5	14.2	13.1	37.7	1.1	5.2
Slovak Rep.	16.5	4.8	31.7	6.4	34.9	13.7	1.5	7.1
Slovenia	24.1	9.6	33.9	9.6	15.4	21.7	1.2	8.6
Spain	21.8	10.6	17.9	10.4	29.2	23.8	0.6	7.5
Sweden	16.6	23.5	30.6	8.7	15.2	13.2	0.8	8.0
Switzerland	7.3	17.7	30.7	9.0	9.6	23.8	0.5	8.7
Turkey	31.6	4.9	31.4	0.7	16.4	41.4	0.6	4.6
UK	11.5	18.2	30.8	8.1	14.3	18.0	0.6	9.9
United States	8.2	27.5	5.1	13.2	22.0	16.0	0.9	15.4
Average	**19.4**	**13.1**	**29.4**	**9.5**	**16.9**	**22.2**	**0.9**	**8.1**

Source: Own calculations based on Schneider and Buehn (2012; 2013). Note: The average size of the shadow economy is expressed as a ratio of GDP (in %).

The most significant driver of this level of the shadow economy in these countries can be attributed to the indirect and personal income tax where their average relative impact (in %) on the shadow economy amounts to 42.5%. The second most important driver is the level of self-employment relative to the overall employment level.

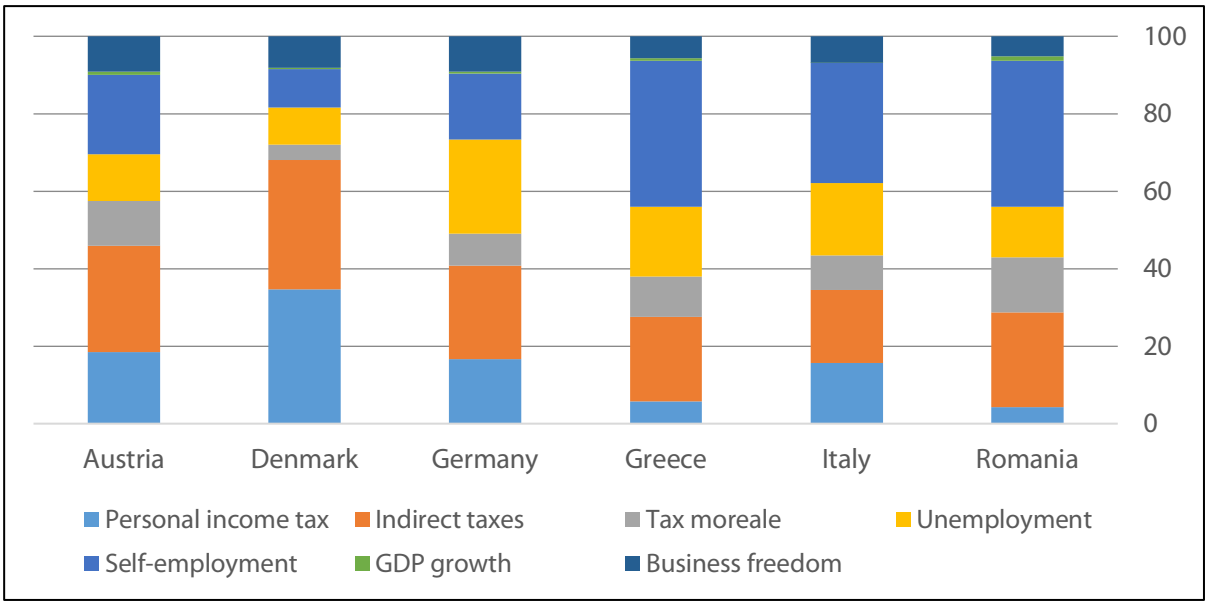
Dell'Anno et al. (2007), Schneider and Buehn (2013) and various other studies have suggested that the higher the level of self-employment, the higher tends to be the participation rate in the shadow economy. From table 3.1, we can see that self-employment's average relative impact (in %) on the shadow economy is over 22%.

Other important drivers, with relatively higher average relative impact (in %) of the shadow economy, are the unemployment rate in the country, tax morale and the level of business freedom, which is used as a proxy to indicate the level of bureaucracies and stringent laws/regulations in conducting economic activities in the formal sector.

The relative impact of each determinant differs slightly when we look at countries individually in table 3.1. In examining the shadow economy of the six EU countries, we find that the impact of determinants differs between Germany, Austria and Denmark on one hand, and Italy, Romania and Greece on the other hand. While in Germany, Austria and Denmark, factors like tax burden (direct and indirect) are the major causes of the shadow economy, for Italy, Greece and Romania, the level of self-employment, unemployment and tax morale as well as indirect taxes, respectively, are the most important determinants of the shadow economy.

In the following sections, we only make some brief and general remarks about the main drivers of the shadow economy in our six selected countries. In part two of this study, an extensive discussion takes place.

Figure 3. 2: Average relative impact (in %) of the shadow economy determinants in six EU countries (1999-2017)



Source: Authors calculations, 2022.

3.2. Country Study: Austria

Our estimates are in line with the literature in terms of the size and the development of the shadow economy of Austria, but also in terms of the main drivers of the shadow economy for Austria (see for example Schneider (2022), and Medina and Schneider (2018, 2019)). Our results shown in table 2.1 reveal that the shadow economy in Austria followed a declining trend from 2003 (10.8%) to 2019 (6.1%). It then increased to 7.2% in 2020, slightly declining in 2021 and is predicted to decline again to pre-pandemic levels by the end of 2022, if economic recovery and resilience stay the course. The main drivers of shadow economic activity in Austria are depicted in figure 3.2.

We find that indirect taxes, personal income tax rate, the level of self-employment, overall unemployment rate, tax morale, and business freedom (regulatory burden) are among the main determinants of the shadow economy in Austria between 1999 and 2017, respectively. The driving force of the GDP growth rate as a cause of the shadow economy in Austria is less significant, although it is statistically significant in our Multiple Indicators Multiple Causes (MIMIC) model. The impact of the Coronavirus pandemic led to a significant economic downturn in the country, resulting in higher unemployment levels. This translated to an increase in the level of the shadow economy for Austria.

Despite this increase, however, Austria continues to have one of the **smallest shadow economies within the EU**.

The biggest unregulated markets can be found in **Eastern Europe** and those countries which were hardest hit by economic crises (sovereign debt crisis) and later by the coronavirus pandemic, such as **Greece and Italy**, where the shadow economy is estimated at significantly over 20% of GDP in average terms.

3.3. Country Study: Denmark

According to our results, the shadow economy in Denmark has followed a year-on-year declining trend from 2003 to 2019, too. The level of the shadow economy in 2003 was 17.4% of the official GDP and by 2019 this level was estimated to fall to 8.9% (one of the lowest rates ever estimated). There are some exceptions where the shadow economy increased between 2008 and 2010, predominantly due to the global financial crisis of 2008 causing economic recessions worldwide, including in Denmark. The shadow economy also increased in 2020 in Denmark from 8.9% in 2019 to 9.8% in 2020 (this is just over a 10% increase, year on year). It fell slightly in 2021 as the pandemic restrictions were relaxed and the economy opened up, but for 2022, we forecast a slight increase in the size of the shadow economy again from the previous year.

The main drivers of the shadow economy in Denmark as per our estimates provided in table 3.1 and depicted in figure 3.2 are almost exclusively related to the high level of the tax burden. We show that 34.6% of the shadow economy is driven by the level of personal income tax. Almost the same impact (33.5%) is the level of indirect taxation in the country driving economic agents to engage in informal economic activities. Other determinants are also significant, with self-employment and unemployment rate contributing together to the size of the shadow economy by almost 20%.

3.4. Country Study: Germany

Our results shown in table 2.1 reveal that the shadow economy in Germany followed a declining trend from 2003 (16.7%) to 2019 (8.5%) as well. The shadow economy then increased to 10.4% in 2020, slightly declining in 2021, but remaining above 10%, and is predicted to decline again to almost pre-pandemic levels by the end of 2022 (8.8%), if favourable economic conditions persist. The main drivers of shadow economic activity in Germany are presented in figure 3.2 and show that the unemployment rate, indirect taxes, the level of self-employment, personal income tax rate, tax morale and business freedom (regulatory burden) were among the main determinants of the shadow economy in Germany between 1999 and 2017, respectively.

The driving force of the GDP growth rate as a cause of the shadow economy in Germany is less significant, although it is statistically significant in our MIMIC model. This is supported by the literature review discussed more extensively in part 2 of this study. The impact of the Coronavirus pandemic led to a significant economic downturn in the country, resulting in higher unemployment levels, predominantly over the less skilled labour force. This translated to an increase in the level of the shadow economy for Germany.

3.5. Country Study: Greece

Greece's shadow economy is among the highest in the EU. Our recent estimates show that the average shadow economy in Greece between 1999 and 2017 amounts to 27% of the official GDP. The development of the shadow economy in Greece between 2003 and 2022 is presented in table 2.1. Our results presented in this table show that the trend of the shadow economy in Greece is also declining

year on year. Greece's shadow economy is estimated to have been around 28.2% in 2003, and by 2019, it fell to 19.23%. In 2020, just like for most other EU countries, our results show an increase in the shadow economy to over 20% levels.

Forecasts for 2022 also show a slight increase from the 2021 level.

The main drivers contributing to a high degree of informality in Greece have been presented in table 3.1 (table 4.1 in part 2). We can conclude that for Greece the main driving causes of the shadow economy are the high level of self-employment, followed by indirect taxation, the rate of unemployment in the country, tax morale, personal income tax and regulatory burden (measured by the business freedom index), respectively. The high level of self-employment in the country contributes to explaining the existence of the shadow economy in the country by 37.6%. Hassan and Schneider (2016), Medina and Schneider (2018, 2019), Almenar et al. (2020), Davidescu and Schneider (2022) and Schneider (2022) support these conclusions.

For Greece, we notice a higher relative impact on average as a percentage of the shadow economy from tax morale. Low tax morale (distrust in public institutions) is still a major cause for the inability of fiscal authorities to meet projected tax receipts goals (Kaplanoglou and Rapanos, 2013). However, references are also made to another dimension of tax morale in Greece that is not related to trust in public institutions. This form of tax morale, which has been frequently termed by the Greek media as the "sport of tax evasion", describes the norm of evading taxes for personal gain, and can be understood through the absence of the "social norm" of tax compliance (Alm and Torgler, 2011).

3.6. Country Study: Italy

Our estimates reveal that the average size of the shadow economy in Italy is among the highest within the 'old' EU. The results of this study show that the shadow economy of Italy as a percentage of the official GDP followed a declining trend year on year from 2003 and 2019, which is similar to most other EU countries. However, our results show a slight increase in 2009, but then immediately the trend started to decline until 2019. The shadow economy of Italy as a percentage of the official GDP was just over 25% in 2003, and this fell to 18.7% by 2019. Italy was one of the first European countries to be severely impacted by the Coronavirus pandemic in 2020. The economic downturn in the country was significant as discussed above. Our estimate for 2020 shows an increase in the size of the shadow economy in the country from 18.7% in 2019 to 20.4% of GDP. This is an increase of around 9.4% and can be considered the highest increase year on year since 2003.

In a separate analysis (based on the work of Schneider and Buehn (2013), presented in table 3.1) we analysed the driving forces of the development and size of the shadow economy in 39 OECD countries. We found that for Italy, the number of self-employed, indirect taxes, unemployment rate and personal income tax are among the main driving causes of the shadow economy. Contrary to Germany, Austria and Denmark, the level of self-employment in Italy is the key driver contributing to the existence of the shadow economy by over 30%.

3.7. Country Study: Romania

Romania's shadow economy also declined between 2003 and 2019. The shadow economy as a percentage of Romania's official GDP decreased from 33.6% in 2003 to just under 27% in 2019. This is a significant decrease, although there were some fluctuations along the way, notably in 2009 and 2010, these changes were very small. Various tax and labour market policies over the years and the migration of many citizens to other EU Member States may explain this decline in the trend of Romania's shadow economy. However, our study reveals that the size of the shadow economy in Romania has increased

markedly in 2020 from 26.9% in 2019 to 29.3% in 2020. This is just over a 9% increase. It fell slightly in 2021, but our estimates forecast a slight increase for 2022.

The main driving forces identified by our study and estimated based on the methodology used by Schneider and Buehn (2013) show that the Romanian shadow economy is mainly driven by the level of self-employment in the country, indirect taxes, low tax morale and unemployment rate, respectively. Other drivers like the regulatory burden, personal income tax and GDP growth are also statistically significant in our model but contribute less in explaining the existence of the shadow economy in the country. Unlike in most other EU countries, the high degree of self-employment in Romania is a major cause of the shadow economy. From table 3.1 we can see that the relative average impact of self-employment is 37.7% of the shadow economy. Various literature, such as Schneider (2022), and Medina and Schneider (2018, 2019) can support our findings on the drivers of informality for Romania.

3.8. Summary of the key drivers

In summary, with almost full consensus with most literature, we find the following eight key hypotheses of drivers and their causality of the shadow economy have a strong influence on its size and development of the shadow economy in OECD countries:

1. An increase in tax burden increases the shadow economy;
2. The more the country is regulated, the greater the incentives are to work in the shadow economy;
3. The lower the quality of state institutions, the higher the incentives to work in the shadow economy;
4. The lower the tax morale, the higher the incentives to work in the shadow economy;
5. The higher unemployment, the more people engage in shadow economy activities;
6. The higher the level of self-employment, the higher the participation in the shadow economy;
7. The lower GDP per capita in a country, the higher the incentive to work in the shadow economy; and
8. The higher level of freedom, the smaller the size of the shadow economy.

4. POLICY OPTIONS TO REDUCE THE SHADOW ECONOMY

4.1. General Remarks

A combination of policies should be employed, targeting the determinants most pertinent in any particular country. The size of the shadow economy (using any of the estimation approaches) is strongly and inversely related to per capita income, and more effective institutions play a key role in achieving development goals. Furthermore, improving tax administration, reducing regulatory burdens and enhancing transparency would reduce incentives for informal activities driven by "exit" factors, while improving the operation of the labour market and promoting human capital help to address informality caused by "exclusion" factors[6]. As indicated earlier, the current section provides "only" some general and brief remarks about the policy options, an extended discussion takes place in part 2 of this study, using the six countries chosen as case studies.

In summary: A comprehensive package of reforms is needed to successfully combat the shadow economy, carefully designed based on the determinants most relevant in that specific case. Measures can range from regulatory and institutional reforms, to tax policies and administration. The menu of policies most relevant for emerging economies would include; reducing regulatory and administrative burdens, promoting transparency and improving government effectiveness as well as improving tax compliance, automating procedures, and promoting electronic payments. In addition, a well-designed policy set should address incentives for informal workers to transition to the formal sector – especially in countries reliant on remittances and where the shadow economy provides a social safety net. Furthermore, policy actions focused on encouraging private-sector job creation and fostering human capital development would help to bring firms and workers out of the shadows and promote more inclusive growth.

In the following sub-sections, we shortly summarize the key case study results from part 2 of this report, so that a reader gets some knowledge of what has been done in these six countries.

4.2. Government policies to fight informality in Austria

The Austrian government has predominantly focused on monitoring, detection and prevention policies in an attempt to reduce the level of the shadow economy. An early policy measure in Austria was the Social Fraud Bill[7], which was passed by the parliament at the end of 2004 and came into effect in March 2005. The bill extended the legal provisions of criminal law concerning organised tax and social fraud. Before this legislation, operators of 'pseudo-companies' had only been threatened with administrative fines. Since March 2005, they face imprisonment of up to five years for such practices.

Over the years, punitive measures have been strengthened in several countries within the EU, including Austria, for employers who fail to register their employees. In Austria, these penalties increased in 2007, with an individual now facing a penalty of two years' imprisonment in case of organised recruitment, placement, and hiring out of workers without registering them[8]. These policy measures reflect the dual function of registration as the gateway to services as well as to public audit and control. EU citizens in

6 Compare Davidescu, A. A.(2014, 2016 and 2017). Williams and Horodnic (2017).

7 Social Fraud Bill (https://www.ris.bka.gv.at/Dokumente/BgblAuth/BGBLA_2004_I_152/BGBLA_2004_I_152.html - in German).

8 For more details, see Resources section to access: Williams and Piet, 2008, Measures to tackle undeclared work in the European Union, p.21-24. The term of imprisonment, for organised undeclared work – that is, the recruitment, placement and hiring out of workers without registering them with the relevant social insurance institutions – was extended to two years in 2011 by the Anti-Wage Dumping Law. The law was also revised in 2015 to improve its efficacy.

Austria not applying for a residence certificate after three months may also face a fine (Enengel and Reeger, 2015). Zelano (2018) found that low-skilled Central and East European (CEE) citizens contribute significantly to the existence of undeclared employment and hence the shadow economy in the country. Policy initiatives were identified in Austria towards the group of unregistered, non-educated and low-skilled CEE citizens. The city of Vienna offers for example short-term employment to homeless CEE migrants as a step towards inclusion since 2015. Such policy measures are aimed at incentivising workers to enter the formal sector, or exit the shadow sector.

By mid-2007, General Social Security Act[9] was amended. The amendment, which came into effect in January 2008, stipulates that employers be obliged to register their employees with the relevant social insurance institutions before the commencement of work. This measure aims to prevent the practice of social security fraud and can lead to a reduction in tax evasion as a result of a potential decrease in the level of undeclared work. Moreover, the amendment in the law provides for a stricter penalty scheme for infringements of the registration law, increasing the ceiling of fines for repeated offenders from €3,630 to €5,000 for each case of illegal employment[10].

Several European countries, including Austria, have introduced data sharing and access to registries managed by tax authorities or social security institutions or have established new coordinating institutions. These are mainly policies aimed at detecting and monitoring shadow economic activities, with a primary focus on undeclared work[11].

It is argued that the Austrian tax policy is characterized by a significant bias[12], as the source of tax revenue is overwhelmingly skewed toward the personal incomes of the working population. As employees and self-employed individuals pay the maximum tax rate beginning at what is widely perceived to be a middle-class level of income, and the country lacks property and inheritance taxes, the system of taxation is unbalanced in terms of equity. Effective tax reform is needed to have an impact on the size of the shadow economy in the country.

Policies on providing lifelong learning, fairer pensions and providing support for businesses and households from various stimulus packages announced by the Austrian government could potentially help reduce the shadow economy, although temporarily. These measures are for alleviating the hardship caused by the Coronavirus pandemic and might help in reducing the size of the shadow economy indirectly[13]. This is because for people and businesses to benefit from these measures, such as grant reliefs, tax reliefs and other support for businesses as well as government economic recovery plans, they would have to 'exit' the shadow economy and enter the formal economy. Such measures are incentives, for exiting the shadow economy and entering the formal economy (Kelmanson et al., 2019).

Finally, governments around the world, including Austria are facing rising cost of living issues. Inflation is high, which tends to distort public finances and drastically reduces the purchasing power of many households. Without indexing tax systems, rising inflation results in the tax bracket being distorted and can lead to larger taxpayer tax liabilities, which raises the incentives for greater tax evasion and hence shadow economy. In this respect, the Austrian government abolished to a large extent the cold

[9] General Social Security Act (Allgemeines Sozialversicherungsgesetz, ASVG).

[10] More from https://www.eurofound.europa.eu/data/tackling-undeclared-work-in-europe/database/measures-to-combat-social-fraud-austria.

[11] For more details see ILO, 2010, Labour Inspection in Europe: Undeclared Work, Migration, Trafficking, Labour Administration and Inspection Programme p.10.

[12] See https://www.sgi-network.org/2022/Austria/Economic_Policies.

[13] Stimulus packages - see here: https://home.kpmg/xx/en/home/insights/2020/04/austria-government-and-institution-measures-in-response-to-covid.html.

progression, meaning that the income tax system will be indexed from January 1, 2023, onwards; this was a major step in fighting the shadow economy because under this measure the Austrian government does not additionally tax every inflation based wage increase. Governments, around the world, including Austria, have put forward various policy measures in helping households with the cost of living, such as help with energy costs, and tax/social security contribution reliefs – policies that are likely to have a temporary impact on the shadow economy but may not be lasting.

4.3. Government policies to fight informality in Denmark

The most significant determinant of the shadow economy in Denmark is the level of the tax burden (both direct and indirect). Most policy measures implemented by the Danish government are either preventative, detective or fiscal measures. On the preventative side, the government has put in place penalties for employers failing to register employees, which could reduce the size of the shadow economy by deterring people to enter into informal activities.

Denmark is characterised by a high degree of the tax burden. The sizeable welfare state in Denmark is financed predominantly through taxes, which make up around 50% of the GDP. In contrast to most other countries, the tax system is predominantly made up of direct income taxation and indirect taxation (e.g. VAT), with social security contributions playing a minor role.

Between 1999 and 2016, the Danish government lowered taxation on work. For a low-income earner, the marginal tax rate has fallen from 45.5 % in 1999 to 40.3 % in 2016. For high-income earners, the reduction is 6.9 percentage points, from 63.3 % in 1999 to 56.4 % in 2016. In 2017, a "house-tax" reform was approved, but its implementation has been postponed until 2024 (SGI Data, 2022[14]). There has thus been a reduction in the incentive for shadow economy activities driven by the income tax system. Such reduction is manifested in most estimates of the shadow economy in Denmark.

While lowering the tax burden slightly, tax authorities in Denmark have started to implement monitoring and detecting measures in 2015, aimed at persons who declare a very low taxable income, while at the same time having a high standard of living exemplified by an expensive house, ownership of luxury cars etc. Thus, by combining various administrative registers, the tax authorities hope to better target individuals who get their income from undeclared work or criminal activities.

The level of unemployment in Denmark is low thanks to its state of the economy and active labour market policies, which at times causes shortages of labour in some sectors as a result (Anderson, 2020). The tripartite agreement with the social partners and the Local Government of Denmark (KL) in October 2021, seeks to reduce labour shortages by instigating more workers to enter the labour market in the short term. These efforts target especially four areas: Matching unemployed workers and businesses, tightening the rules on unemployed workers' availability to the labour market, strengthening efforts to get unemployed seniors into jobs, and reinforcing businesses in recruiting foreign labour. At the same time, encourages people to start working and thereby boosts the labour force participation rate. This is likely to provide incentives for households to 'exit' the shadow economy and enter the official economy.

Moreover, in September 2021, the government launched a "Denmark Can Do More programme"[15] - a proposal for the new reform agenda. Based on this proposal the government and a majority of the parties in the Danish parliament agreed to A New Reform Package for the Danish Economy (January

[14] SGI Data -https://www.sgi-network.org/2022/Denmark/Economic_Policies.

[15] See https://ec.europa.eu/info/sites/default/files/denmarks_national_reform_programme_2022_en.pdf.

2022). The agreement includes changes to both the unemployment insurance benefits system and rules related to the social pensions of labour income.

The reforms in the package are expected to increase potential employment by around 12,000 persons in 2025 and 2030 and increase potential GDP by around 0.7 per cent in 2030 amounting to around 17.5 billion DKK. As part of this reform programme,[16] the Danish parliament agreed on a strengthening of the AML framework[17] and opening eight new tax offices across the country in four stages from 2020-2023, to legally enforce efforts for AML and fight against tax avoidance and tax evasion.

A further incentive is the earmarked parental leave, which was adopted in 2022, following the adoption of the EU's Directive 2019/1158 on work-life balance. The agreement applies to all wage earners and earmarks 11 out of a total of 24 weeks of parental leave for both parents. This promotes equality between men and women in the labour market and within families by encouraging an equal distribution of parental leave. This could also encourage people to move to the formal sector to benefit from such arrangements.

A robust childcare system in Denmark enables both parents to work, with generous maternal and paternal leave provided. Recent pension-system reforms have improved sustainability. Immigration-related tensions have led to a tightening of rules, but labour market and educational integration is proving increasingly successful to decrease unemployment and significantly improve tax morale. The country is top-ranked for tax policies as it has a universal tax-funded healthcare system with services provided free of charge along with a flexible, highly developed welfare system. As a result, the Tax morale of Danish citizens is considered among the highest in the EU and OECD, and as confirmed by our our results, it has the lowest impact on the size of the shadow economy.

The Danish government has spent more than 20 years pursuing regulatory reform with the goal of cutting red tape for enterprises. Early in the 1980s, as part of a major deregulation drive to modernise the economy, the first policies for regulatory quality and simplification were formed – the Better Regulation policy. They intended to get rid of rules that hurt the business sector's ability to compete. The emphasis of policy has shifted over time from "deregulation" to "regulatory quality." To maintain the excellent economic and social performance of recent years, Denmark has implemented a Better Regulation policy as part of a comprehensive set of forward-looking changes.

From all the above policies, the government is in a strong position to effectively reduce the shadow economy in the coming years. For the policies to be effective, Denmark's official economy needs to continue the course, so that it attracts economic agents from the informal sector to the formal sector of the economy.

4.4. Government policies to fight informality in Germany

Relatively recent policy measures against the shadow economy in Germany are mostly focused on detection and prevention. Some do take the form of curative and fostering commitment as presented (Williams and Renooy, 2008, p.14). There is a recognised need to develop effective information and communication systems in all EU Member States to enable the collection and exchange of data that will allow the verification of the legal situation of the workers and their affiliation to social security schemes. To this effect, an agreement was reached between France and Germany in May 2001, to encourage the sharing of information on unlawful work.

[16] Ibid.

[17] AML-framework – Anti money loundering

Additionally, the governments of Belgium, France, Germany, Italy, and Romania established a European network of undeclared work to encourage the sharing of knowledge in the field[18].

Germany's policy decision in 2002 to categorise jobs and increase the number of small jobs exempted from social security, by introducing three new job categories - 400 Euros jobs, mini jobs and midi jobs – for which varying levels of social security contributions would be applicable[19] led to an initial reduction in undeclared work in the country.

Generally, it is quite difficult to estimate to what extent the policy measures contribute to a successful reduction of illicit employment or shadow economy in general. According to the earlier performed simulations by Schneider (2009), who analyses the impact of then new legislation, the net size of the shadow economy was reduced by 1.0 billion Euros between 2006 and 2007 in Germany. Policies implemented then by the German government, which led to increases in the size of the shadow economy during 2006 and 2007 were mainly fiscal – such as the increases in VAT from 16% to 19% in 2007, increases in the insurance fees for the "mini jobs" from 25% to 30%, the introduction of the 45% tax on the rich, the increase on the health insurance costs. Other policies implemented during 2006 and 2007, such as the decrease in non-wage labour costs (with unemployment benefits cut), tax deductibility of building maintenance and modernisation and tax-deductibility on childcare costs contributed to a reduction in the overall size of the shadow economy. Additionally, the German Mini-Job settlement (effective since 2000) has been an efficient solution to reduce the shadow economy; it means that one can (additionally) work up to 500€ per month and only pay health insurance[20].

Recent policy measures taken by Germany (which can lead to a reduction in the shadow economy indirectly or directly) are mostly punitive measures. Examples of such measures are the changes made to the criminal tax code, corrections to VAT returns and voluntary disclosures to avoid penalties and changes to the Annual Tax Act where the criminal limitation period for prosecution of tax evasion in particularly serious cases increases from 10 years to 15 years). Other fiscal measures such as the ceiling for social security contributions (40% of wage) introduced in 2020 and 2021, the introduction of carbon pricing in transport and heating from 2021, and real estate tax valuations to be updated by 2025 are likely to have mixed results. While the former, could lead to a reduction in the shadow economy, the two later measures might lead to a positive contribution to the shadow economy.

Other measures announced by the German government in alleviating the hardship caused by the Coronavirus pandemic, might help in reducing the size of the shadow economy, too, indirectly, although temporarily. This is because for people and businesses to benefit from these measures, such as grant reliefs, tax reliefs and other support for businesses as well as government economic recovery plans, they would have to 'exit' the shadow economy and enter the formal economy (Kelmanson et al., 2019).

Countries around the world, including Germany, are facing a huge inflation rate - which tends to distort public finances and drastically reduces the purchasing power of many households.

Without indexing tax systems, rising inflation results in the tax bracket being distorted and can lead to larger taxpayer tax liabilities, which raises the incentives for greater tax evasion and hence shadow economy.

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[18] For more details see Resources section to access ILO, 2010, Labour Inspection in Europe: Undeclared Work, Migration, Trafficking, Labour Administration and Inspection Programme, p.22.

[19] For more details see Resources section to access: Renooy, et al., 2004, Undeclared work in an enlarged Union. An analysis of undeclared work: An in-depth study of specific items p.35.

[20] SDI Data: https://www.sgi-network.org/2022/Germany/Economic_Policies.

Governments around the world, including Germany, have put forward various policy measures in helping households with the cost of living, such as help with energy costs, and tax/social security contribution reliefs. However, high inflation and forecast global recession for next year are likely to offset any positive impact in fighting informality.

4.5. Government policies to fight informality in Greece

Greece has a reputation for having a large size of shadow economy with one of the highest rates of tax evasion in Europe. For decades, successive governments in Greece have attempted to address this issue of tax evasion and shadow economy by enacting laws that specifically target tax evaders and amending other existing laws in an attempt to raise more money in dealing with significant government debt as a percentage of GDP. However, tax evasion in Greece remains very high, complex and inefficient (Katsios, 2006) due to the existence of an ineffective control mechanism and high levels of corruption (Vousinas, 2017). While Greek tax policy has evolved to become more business-friendly, it is nevertheless prone to erratic and frequent changes.

Since the 1990s, the Greek government has tried to reform three different categories of laws and regulations to combat tax evasion in particular and the shadow economy in general. First, the government made an effort to establish enforcement organisations that would have more control over financial crimes that occur in both the legal and shadow sectors of the economy. Second, to improve crosschecking and detection capabilities, the government made an effort to modernise its database and auditing technology. Finally, the government regularly tried to modify the tax laws governing personal, corporate, and self-employed income. For instance, the Independent Public Revenue Authority has achieved organisational and functional independence from the Ministry of Finance as of January 2017. To prevent tax evasion, Greek authorities have also frequently implemented primary and secondary legislation. The result was an increase in Greece's tax-to-GDP ratio from 36.6% in 2015 to 38.8% in 2021[21] (OECD average: 33.5%). However, their efforts have been significantly affected by the global financial crisis of 2008 and the subsequent government debt crisis, which meant that they had to increase the tax burden and decrease spending thereby lowering the quality and quantity of public goods and services.

Efforts to overhaul the tax system in recent years and the level of the tax burden have been a heated political debate in Greece. The top marginal tax rate on personal income is now 44% (it was 45% in 2019), the rate on business income is now 24% (it was 28% under the previous administration, which was overthrown in 2019), and the sales tax rate is now 24%.

The social security contributions made by employees and employers decreased by 14 and 23% since 2019, respectively. The rate of property tax (ENFIA) also decreased by 22%. Additionally, the government has committed to making greater cuts in the coming years. It has suspended the "solidarity tax" for the private sector for a year during the pandemic. Due to rampant tax evasion and the small tax base in the nation, even if personal and business taxes are considered to be relatively still high, direct taxes in 2019 only made up 9.9% of total revenue (the EU average in 2018 and 2019 was 13.2% and 13.3%, respectively) (SGI Data, 2022[22]).

However, the effect of such policies has been constrained by the Coronavirus pandemic, which reversed the moderate recovery that the Greek economy had achieved in 2019 as the economy experienced a significant downturn in 2020.

[21] SGI Data, 2022, https://www.sgi-network.org/2017/Greece/Economic_Policies.

[22] SDI Data: https://www.sgi-network.org/2022/Greece/Economic_Policies.

Although the unemployment rate, a major driver of the shadow economy in Greece, is slowly declining, it reached 16.3% in 2020 (down from 19.3% in 2018) and had fallen to 13.3% by September 2021 (EU average: 6.7%). The rise in part-time employment, expansion in the tourism industry and an increase in emigration are all responsible for the observed success in reducing total unemployment (among both skilled and unskilled workers). Though the total unemployment rate remains the highest in the EU, Greece has made substantial progress, given that it stood at 28% in 2013 and 25% in 2015 (SGI Data, 2022[23]). However, Greece is among the OECD countries with the highest long-term unemployment and youth unemployment rates. The youth unemployment rate is twice as high as total employment (33% in October 2021).

Self-employment is a major driver of the shadow economy of Greece. Greece is known to have the highest percentage of self-employed people in the EU28 at a rate of more than 32% (14% in the EU-28)[24]. Policies to address this should be implemented in an attempt to attract economic agents to formalise. The increase in emigration has led to a slight decrease in the level of self-employment and unemployment rate in the country, however, the emigration of young and skilled labour to other EU countries is leading to a brain drain for Greece.

In 2021, the government introduced a new labour law, which increases the flexibility of the eight-hour workday by allowing employees to work up to 10 hours on one day and fewer on another or take time off, and gives workers the right to disconnect outside of the office hours. Further, it introduced a "digital work card" to monitor employees working hours in real-time as well as increase legal overtime to 150 hours a year.

The government has also undertaken several preventive and detective measures. They introduced the "ERGANI" Information System (Article 55 of Law 6 4310/2014) intending to record (in real time) all employment flows in the private sector of the economy. This will also aim to record any illegal migrant workers who usually constitute the largest group of people working in the shadow economy. A further detective measure in Greece, as indicated in Greece's recovery and resilience plan[25], is their commitment to modernise and digitalise public administration including improving the tax administration and justice systems, promoting the innovation capacity, digital uptake and resilience of key economic sectors, and upgrade health care, education, and active labour market policies.

Another important development in helping reduce the shadow economy in Greece is the Manpower Employment Organization (OAED). OAED is responsible for information on the labour force and the unemployed, for the professional orientation of the labour force, the delivery of technical education and training, facilitating the link between labour demand and supply, and the payment of benefits such as unemployment benefits, maternity benefits etc.

Finally, in addition to the above, to create an environment for the growth of the official economy, the Greek government should enhance the quality of its institutions and public services while boosting the rule of law and reducing corruption.

The benefit of functioning on a legal basis should be promoted by education and awareness-raising programmes, in which public authorities should devise taxation procedures, thereby leading to

[23] SDI Data: https://www.sgi-network.org/2017/Greece/Economic_Policies.

[24] Eurobarometer Data: https://www.gesis.org/en/eurobarometer-data-service/home.
Please note that the data presented in this study for the EU aggregate relate to EU28 (i.e. current EU 27 + the UK), since the UK was a EU Member before end of January 2020.

[25] European Commission – Greece's recovery and resilient plan: https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility/greeces-recovery-and-resilience-plan_en.

improvements in tax morale. The government should also develop a plan to combat unemployment, boost the number of official agriculture jobs to spur regional growth, and streamline labour and tax rules for the self-employed to combat tax evasion.

Additionally, it is necessary to discourage the use of cash and encourage the use of debit and credit cards. In addition, a new digital system with no suspense should be developed to catch offenders before they enter the shadow economy in combination with tougher Penal Code sanctions.

4.6. Government policies to fight informality in Italy

Various policy measures have been taken by Italy over the past few years to reduce the level of tax evasion and the shadow economy in general. Such measures were mainly to monitor, detect and prevent households and businesses to enter the shadow economy activities. In addition, measures to incentivise economic agents to exit the shadow economy and enter the formal sector have been implemented through various tax and regulatory reforms.

The necessity to maintain the combined weight of high public spending and interest on the enormous public debt accumulated over previous decades has continued to put a strain on the Italian tax system. In addition, the tax system is characterised by its inability to considerably lower the extent of the shadow economy or the extremely high levels of tax evasion. Due to this, the level of fiscal pressure has been consistently high over time, and the level of the tax burden can be considered unfair in Italy. Financial pressure is quite high on people and firms that pay taxes on time, but it is minimal for anyone who can and does evade taxes (e.g., many businesses and large numbers of independent contractors and self-employed professionals).

Furthermore, the tax policy in Italy did not favour families with children. There are also high taxes on business and labour, which reduces the number of new companies and new job opportunities. The restricted incentives and lack of a strong motivation to report revenues and earnings can be considered a direct result of Italian tax legislation.

However, Italy has attempted in recent years to reduce the tax burden on households and businesses. The Ministry of Economy and Finance announced several measures taken by the Italian government to alleviate the hardship that households and businesses were facing during the pandemic. These measures, predominantly fiscal, were targeted during 2020-2022 to reduce to postpone or provide certain tax reliefs, social security reliefs, help for families, etc. To stimulate business growth and employment in disadvantaged areas following the coronavirus pandemic, with a particular focus on southern Italy in 2020, The August Decree (2020) introduced a 30% relief on the pension contributions that companies must pay for all employees, for the period between October and December 2020.

Since 2020, the government has also introduced more generous child allowance from 2022 to replace tax deductions and improve fairness. In addition, in 2020, the government introduced a 30% relief on the pension contributions that companies must pay for all employees, for the period between October and December 2020. Although these measures can alleviate some of the hardship for most households and businesses affected by the coronavirus pandemic, they are unlikely to have a very lasting impact on the level of the shadow economy and tax evasion in the country.

Key measures to reinforce Italy's economic and social resilience[26] are in the following areas: increasing the supply of childcare facilities; reforming the teaching profession; improving active labour market policies as well as women's and youth participation in the labour market, and reinforcing vocational

[26] See https://ec.europa.eu/info/system/files/italy-recovery-resilience-factsheet_en.pdf.

training; investing in the apprenticeship system; and various other measures from making public administration and the legal system more effective and efficient to removing barriers to competition for businesses.

The government has also implemented several monitoring and compliance policies in detecting illicit behaviour and tax evasion. Such policies are the Pre-filled tax returns and early communications, which are being expanded to raise compliance. The government has also been pushing for measures that encourage digital payments rather than cash payments, in an attempt to reduce the size of the shadow economy. The recent budget introduced sanctions for retailers and service providers that do not accept credit cards. These measures are announced under Cashless Plan in late 2020 to incentivise the move away from cash to digital payments. Many countries, for example, Bulgaria, Greece and Italy, have put in place a threshold above which cash payments are not allowed or must be flagged to authorities. However, the threshold is often set at a relatively high level, which has a limited impact on reducing cash payments as they normally occur in lower-value transactions. The correct level would be different between countries and depend on several factors, such as payment card usage, financial inclusion and payment infrastructure development.

The digitalisation of other services such as the compulsory digital invoicing extended and advanced taxpayer profiling to raise compliance introduced in 2019. The most recent recovery and resilient plan[27] of Italy have dedicated significant investment in supporting the digital transition with investments notably for digitalising public administration.

There is also a move to monitor business transactions and revenues. As of 1 January 2017, VAT traders must transmit all input/output invoice data to the Revenue Agency. This data can also be acquired directly by the Revenue Agency where private parties use the "Exchange System" for exchanging invoices.

Despite these policies implemented over the years, governments all around the world, including Italy, are struggling greatly with the cost of living. High inflation harms many households' purchasing power and tends to skew governmental finances. Without indexing tax systems, increasing inflation distorts the tax bracket and may result in higher tax liabilities for taxpayers, which increases the incentives for increased tax evasion and, consequently, the shadow economy. Just like other governments in the EU, Italy has announced various economic packages to help the most disadvantaged in society alleviate the problems caused by rising inflation. These are likely to deter people to enter shadow economy activities in the interim, but cannot be regarded as long-term strategies. Instead, various policy measures should be implemented as has been addressed in section 5 of part 2.

4.7. Government policies to fight informality in Romania

Relatively recent policy measures[28] against the shadow economy in Romania have mostly focused on preventative, monitoring and detecting measures. Romania has invested a lot in setting up the framework and institutions responsible for reducing informality. Entrusted with this role there are several government agencies which attempt to curtain the size of undeclared work and the shadow economy in general. Such agencies are the Labour Inspectorate[29], as of 2015 the Labour and Social Inspectorate, subordinated to the Ministry of Labour in Romania, which has the main task of preventing

[27] See https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility/italys-recovery-and-resilience-plan_en#digital-transition.

[28] See https://ec.europa.eu/info/sites/default/files/2019-european-semester-convergence-programme-romania_ro_0.pdf.

[29] The Labour Inspectorate is organised in accordance with Law no.108/1999 (republished last as of 2012, Romanian Official Journal/Monitorul Oficial al Romaniei no.290/03.05.2012.

and combating undeclared work as well as ensuring health and safety in work. The National Agency for Fiscal Administration (NAFA), which reports to the Ministry of Public Finances, is in charge of most areas of tax evasion.

The National Agency for Employment is also involved where undeclared work is accompanied by fraud concerning unemployment benefits or the improper use of the various subsidies provided to employers as active employment measures.

As a detection measure, in 2010 a European network on undeclared work was set up between the governments of Belgium, France, Germany, Italy and Romania, seeking to promote the exchange of expertise in the domain of undeclared work. To fight undeclared work, Romania changed the Labour Code (applied in May 2011) making undeclared work above a certain level equal to a criminal offence and as such liable for prosecution, for all the companies who employ more than five workers simultaneously without a labour contract.

In terms of reducing the tax burden (both direct and indirect taxation), Romania's policies have mainly focused on VAT amendments. The successive rounds of VAT reductions implemented starting in 2013, which included first a targeted reduction of VAT for bread and bakery products from 24 % to 9 %, then extended to meat products and then generalised to all of the alimentary products as of mid-2015. This has been followed by a general reduction of VAT from 24 % to 20 % as of 2016. Social security contributions have been also reduced by 5% as of the last quarter of 2014.

The inability to collect taxes can have many other subsequent issues within the official economy. Romanian residents are taxed at a flat rate of 10% on different types of revenues, including capital gains and interest, except for dividend income, which is taxed at a flat rate of 5%. Individuals may owe social security contributions types of income, including investment income. Romania's tax-to-GDP ratio continues to stand at around 26% to 27%. This is well below the EU average of 41% and one of the lowest in the European Union. Effective tax collection can improve the provision of public goods and services. In improving the provision of public goods and services, Romania can also access significant EU funds through its National Recovery and Resilience Plan, which will enable greater investment in large and important sectors such as transportation, and infrastructure to support the greater deployment of renewable energy, education, and healthcare.

Popescu et al. (2018) recommend that more needs to be done in Romania to encourage the use of electronic payments while discouraging the use of cash. The percentage of GDP that is made up of money in circulation can reach the level of 60%. This is six times higher than that of the Eurozone countries. Romania ranked last in the ranking of EU nations in 2013 with an average annual number of 4.3 electronic payments per person (excluding card payments and applications such as internet banking, home banking, mobile banking, and electronic transactions made at ATMs).

This figure is roughly 18 times lower than the EU average and 11 times lower than the average in the Central and East European countries.

The Romanian government has taken several measures in this regard by announcing various policy measures to help households and businesses during the Coronavirus pandemic. However, as a result of the Coronavirus pandemic, many economies, including Romania, have experienced significant economic contractions. Such economic contractions led to the level of unemployment rising from under 4% in pre-pandemic levels (2019) to over 5.5% in May 2022 (SGI, Oct 2022[30]). Increases in the unemployment rate can prolong any measures and policies that the Romanian government is doing

[30] SDI Data: https://www.sgi-network.org/2022/Romania/Economic_Policies

to fight shadow economic activities. To alleviate the hardship caused by the Coronavirus pandemic, the Romanian government announced several economic policy 'packages' in 2021 and 2022. These policies, although temporary measures, might help in reducing the size of the shadow economy too indirectly – since people and businesses benefit from these measures, such as grant reliefs, tax reliefs and other support for businesses as well as government economic recovery plans, they would have to 'exit' the shadow economy and enter the formal economy. Such measures are incentives, for exiting the shadow economy and entering the formal economy (Kelmanson et al., 2019).

5. SUMMARY AND GENERAL POLICY CONCLUSIONS

In summary, there are four different developments concerning the development of the shadow economy of these 36 OECD countries up to 2022:

- In 2020 we observe a strong increase in the shadow economy from 15.0% (in 2019) to 16.5% (in 2020); i.e. 1.5 percentage points or 10% increase year on year - the most significant increase since the last 20 years for an average figure! The main reason for this increase can be attributed to the worldwide coronavirus pandemic and the subsequent severe recession. In 2022, we forecast a modest decline of the shadow economy by roughly 0.52 percentage points as per our forecasts made in January 2022. The main reason was the recovery of the official economy in 2021 and a projected revovery for 2022. However, in light of the exacerbating cost of living crisis, which is prevailing in most of the EU countries, and the severe energy shortage contributing to a further increase in the cost of living, our forecasted estimate of the shadow economy for 2022 (as projected in January 2022 in our forecasts) might not happen. On the contrary, the shadow economy is expected to rise by 5-7% in almost all EU countries;
- The eastern or central and southern European countries, such as Bulgaria, Cyprus, the Czech Republic, Latvia, Lithuania and Poland have higher shadow economies than the "old" western European Union countries, like Austria, Germany, France and The Netherlands Hence, we have an increase of the size of the shadow economy from west to east;
- In addition, we observe an increase in the size and development of the shadow economy from north to south of Europe. On average, the southern European countries have considerably higher shadow economies than those of Central and Western Europe. Figures 2.1 and 2.2 also demonstrate both movements; and
- The five non-European but highly developed OECD countries (Australia, Canada, Japan, New Zealand and the United States) have lower shadow economies with an average size of about 8.40 % of GDP in 2021.

Finally, we make the following two general policy conclusions with a focus on reducing the shadow economy:

- Since 2020, all countries and their governments need to meet the challenge to undertake policy measures to stimulate the official economy with strong GDP growth and a reduction of unemployment to reduce a shadow economy. The better they succeed, the stronger the shadow economy declines! Most countries succeeded;
- However, the crucial question is: "Is this reduction of the shadow economy a blessing or a curse?".

Our answer is as follows:

- If one assumes, that roughly 50% of all shadow economy activities complement those of the official sector (i.e. those goods would not be produced in the official sector), the development of the total (official + shadow economy) GDP is always higher than the "pure" official one;
- A decline of the shadow economy will only increase the total welfare in a country, if the policymakers succeed in transferring a shadow economic activity into the official economy.

- Therefore, a policymaker has to favour and choose such policy measures that strongly increase the incentives to transfer production from the shadow (black) to the official sector.

Hence, the conclusion of these three remarks is: The decline of the shadow economy will only be a blessing for the whole economy, if incentive-orientated policy measures will be applied, which we strongly recommend.

Considering the latest developments last winter/spring/summer of 2022 and the events from February 2022 onwards, we make the following additional three conclusions:

- The massive recessions occurring in most OECD countries during the pandemic went along with high government deficits and rising expected long-run public debt-GDP ratios. This could generate medium-term pressure in many countries to raise tax rates that in turn would make it difficult to reduce the size of the shadow economy.
- As Russia launched a military offensive in Ukraine leading to a war between the two countries, which started in February 2022, many OECD countries will face a large wave of refugees for which working in the official economy will face initial impediments. Since standard modelling of immigration and refugee waves suggest that Eastern European countries would receive the highest shares of refugees from Ukraine, the lead position of Eastern European EU countries in terms of the size of the shadow economy in the overall EU will be reinforced in the medium term.
- Since March 2022, most EU and other OECD countries are suffering from a high inflation rate of approximately 10% and from a severe (fossil, e.g. gas) energy shortage, which might lead to recessions in most EU countries. Our forecasts from January 2022 projected a decline in the shadow economy. However, this is very unlikely, and on the contrary, we predict that the shadow economy will rise by 5-7% in almost all EU countries. The reasons are that people want to compensate for their income losses due to the high inflation rates and increasing energy bills with additional earnings in the shadow economy.

REFERENCES

- Alm, J. and A. Embaye, (2013), *Using Dynamic Panel Methods to Estimate Shadow Economies Around the World*, 1984-2006, Working Papers No. 1303, Tulane University, Department of Economics, USA.
- Abdih, Y. und L. Medina (2013), *Measuring the Informal Economy in the Caucasus and Central Asia*, WP/13/137, IMF Working Paper, International Monetary Fund, Washington DC, USA.
- Buehn, A., and Schneider, F. (2012). *Shadow economies around the world: novel insights, accepted knowledge, and new estimates*. International Tax and Public Finance, 19(1), 139-171.
- Andreas Buehn and Friedrich Schneider, (2013). *Shadow Economies in highly developed OECD countries: What are the driving forces?* Economics working papers 2013-17, Department of Economics, Johannes Kepler University Linz, Austria.
- Davidescu, A. A. (2014). *Estimating the size of the Romanian shadow economy. A labour Approach*, Journal of Social and Economic Statistics, vol.3, no.1, summer 2014.
- Davidescu, A. A. (2016). Mapping the Informal Employment in Romania. A Comparative Analysis based on Labour and Discrepancy Approaches. Journal of Applied Quantitative Methods, vol11, issue 1, March 2016, pp.64-88.
- Davidescu, A. A. (2017). *What Are the Main Determinants of the Romanian Shadow Economy? An Empirical Analysis Based on Structural Equation Models. in: Development, Growth and Finance of Organizations from an Eastern European Context* (pp. 159-170); Heidelberg. Springer International Publishing. Company.
- Dreher, A., C. Kotsogiannis, and S. McCorriston. (2009). *How Do Institutions Affect Corruption and the Shadow Economy?* International Tax and Public Finance 16/4, pp.: 773–96.
- Dreher, A., and F. Schneider. (2009). *Corruption and the Shadow Economy: An Empirical Analysis.* Public Choice 144, no. 2: 215–77.
- EY Report (2017), *Reducing the Shadow Economy through Electronic Payments*, Washington D.C.
- Gros, D. (2020). *The great lockdown: was it worth it.* CEPS Policy Insights, 11.
- Feld, L.P. and F. Schneider (2010), *Survey on the Shadow Economy and Undeclared Earnings in OECD Countries*, German Economic Review, 11(2), S. 109–149.
- Ferraresi, M., Kotsogiannis, C., Rizzo, L., & Secomandi, R. (2020). *The 'Great Lockdown' and its determinants*; Economics Letters, 197, pp. 109-118.
- IMF (2021), *World Economic Outlook*, Washington DC.
- IMF REI Europe (2017), *Chapter 2: Reforming the Judiciary: Learning from the Experience of Central, Eastern and Southeastern Europe*, Washington D.C.
- IMF REI Europe (2016), *Chapter 3: Effective government for stronger growth*, Washington D.C., November 2016.
- Medina L. and F. Schneider, (2018), *Shadow Economies around the World: What did we learn over the last 20 years?* IMF-WP 18/17, 2018, Washington, D.C.
- Medina, L. und F. Schneider, (2021), *The Evolution of Shadow Economies through the 21st Century, in: Delechat, C. und L. Medina (eds.), The Global Informal Workforce: Priorities for Inclusive Growth*, International Monetary Fund, Washington DC, USA, S. 10–6.

- Oviedo, A. M. (2009). *Economic Informality: Causes, Costs, and Policies: A Literature Survey of International Experience. Background Paper prepared for Country Economic Memorandum (CEM)– Informality: Causes, Consequences, and Policies*. Washington, D.C. 2011.
- Schneider F., (Editor), (2011), *Handbook on the Shadow Economy*, Cheltenham (UK) Edward Elgar Publishing Company, 2011.
- Schneider, F. (2021), *Mehr Licht im Schatten? Neuere Ergebnisse über die Schattenwirtschaft, Perspektiven der Wirtschaft* (PWP) 22/3, pp.225-247.
- Schneider, F. (2022), *New COVID-related results for estimating the shadow economy in the global economy in 2021 and 2022*, International Economics and Economic Policy, https://doi.org/10.1007/s10368-022-00537-6, 2022, pp. 33-48.
- Schneider, F. (2023), *Do Different Estimation Methods lead to Implausible Differences in the Size of the Non-observed or Shadow Economies?* A Preliminary Answer, forthcoming in the Journal of Resource Economics, 2023.
- Schneider, F., and Kearney, A. T. (2013), *The shadow economy in Europe, 2013*; Unpublished Manuscript, Department of Economics, Johannes Kepler University of Linz, Linz, Austria.
- Schneider, F. and Williams C.C., (2013), *The Shadow Economy*, The Institute of Economic Affairs, IEA, London, 2013.
- USAID's (2005) *Research and Development Progress Report, Reducing the complexity of the welfare state*, Washington D.C.
- Williams, C. C., and Horodnic, I. A. (2017). *Evaluating the Illegal Employer Practice of Under-Reporting Employees' Salaries*; British Journal of Industrial Relations, 55/1 March 2017, pp. 83–111.
- Williams C.C. and F. Schneider, (2016), *Measuring the Global Shadow Economy*, Cheltenham, (UK), Edward Elgar Publicity Company, 2016.

Taxation of the Informal Economy in the EU

Part 2: Review on the main drivers of the shadow economy and policies attempting to reduce its size: the case of six EU countries

Abstract

This study provides estimates of the size and development of the shadow economy in the EU up to 2022 and analyses the main factors that drive economic agents to enter the shadow economy activities (part 1). Moreover, the study reviews and elaborates on the main driving forces and the policy measures implemented to reduce the shadow economy in six EU countries (Germany, Austria, Italy, Denmark, Romania and Greece) (part 2).

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EXECUTIVE SUMMARY

Background

Both policy and academic circles have long debated the definition, scope, and key characteristics of the shadow economy. In comparison to the mainstream economic literature, research on the shadow economy and ways to measure it in various nations is relatively new. Beginning in the 1970s, academics began to take an interest in the topic of the shadow economy. However, during the past three decades, academic interest in ways to quantify the shadow economy has increased. There is now a sizable body of literature on quantifying the scope and growth of the shadow economy, as well as pinpointing the major drivers that contribute to it.

Since the individuals engaging in shadow economic activities actively avoid detection, measuring the size of the shadow economy in a country can be difficult. In order to avoid paying taxes and abiding by the laws and regulations set forth by governments, agents involved in shadow economic activity attempt to escape detection by law enforcement. However, the shadow economy's existence is well established, as outlined and presented in this study.

The reliability of official economic data can be impacted by the existence of the shadow economy, which in turn affects other socio-economic indicators that rely on those official data. It may also have an impact on the main goals of social and economic policy. Thus, there are a variety of political, social, and economic ramifications that the shadow economy may have. From the perspective of fiscal policy, the greater the shadow economy persists in a country, the more detrimental an effect it will have on the amount of tax revenues collected. At the same time, it can lead to increases in public expenditures, thus exacerbating any misbalance between tax collection and government spending which may also lead to misallocation and misuse of resources.

Aim

The general aim of this study is threefold. One was to estimate and analyse the size and development of the shadow economy in the EU Member States and other OECD countries between 2003 and 2021 and provide projected estimates for 2022, too.The second is, that the impact of the informal economy on tax revenues is of particular interest. The third is o to present case studies on six EU countries (Austria, Denmark, Germany, Greece, Italy and Romania) by reviewing and analysing the key drivers of the shadow economy and discussing the policy measures taken to reduce such informality in each of these respective countries. Finally, the aim of the study was also to provide some policy options for countries to adopt to reduce the level of tax evasion and shadow economy in general.

Key Findings

Our results show that there are broadly four different developments concerning the development of the shadow economy of in 36 OECD countries up to 2022. Our results indicate a strong increase of the shadow economy from 15.0% (in 2019) to 16.5% (in 2020); i.e. 1.5 percentage points or 10% increase year on year, which is the strongest increase since the last 20 years for an average figure! The worldwide coronavirus pandemic and the subsequent severe recession worldwide can be blamed for this. Although our results for 2022 (as projected as of January 2022) indicate a decline of the shadow economy by roughly 0.5 percentage points, we believe that this decline will not be materialised. This is as a direct result of the exacerbating costs of living and the severe energy shortage, which might lead to an increase of 5-7% of shadow economy in almost all EU countries.

Our results also indicate that the eastern or central and southern European countries, such as Bulgaria, Cyprus, the Czech Republic, Latvia, Lithuania and Poland have higher shadow economies than the "old" western European Union countries, like Austria, Germany, France and the Netherlands.

Hence, we have an increase of the size of the shadow economy from west to east. In addition, we observe an increase in the size and development of the shadow economy from north to south of Europe. On average, the southern European countries have considerably higher shadow economies than those of central and western Europe.

In part two of the study, we provide detailed analysis on the main drivers of shadow economy in the six countries (part of the case studies). We identify the key policies that were implemented over the years by these six EU countries in combating tax evasion, undeclared work and shadow economy in general. After reviewing these policy measures for each country, we can conclude that they were in line with our recommended policy options identified in this study and that most of them were of the preventative, monitoring, enforcement, deterring, incentive and fiscal policy measures.

Finally, this study presents a number of policy options for governments. A comprehensive package of reforms is needed to successfully combat the shadow economy, carefully designed based on the determinants most relevant in that specific case. Measures can range from regulatory and institutional reforms, to tax policies and administration. In addition, a well-designed policy set should address incentives for informal workers to transition to the formal sector, especially in countries reliant on remittances and where the shadow economy provides a social safety net. Furthermore, policy actions focused on encouraging private-sector job creation and fostering human capital development would help to bring firms and workers out of the shadows and promote growth that is more inclusive.

1. INTRODUCTION

This report with the title "Taxation of the Informal Economy in the EU" is grouped into two parts. The first part of this study deals with the latest estimates of the shadow economy of 36 OECD countries up to 2022 and provides an extended summary of the results of the shadow economy. It analyses the main drivers and recommends policy measures in reducing the shadow economy. In the second part, we present the case studies on the side and development of the shadow economy of six countries, Austria, Denmark, Germany, Greece, Italy, and Romania and discuss the main drivers as well as country-specific policy measures to reduce the shadow economy.

This second part of the study has two major goals: the first is to review and elaborate on the main driving forces of the shadow economy of six EU countries (Germany, Austria, Italy, Denmark, Romania and Greece). The second is to review and discuss policy measures implemented or recommended to reduce the shadow economy in these countries.

1.1 Background on the shadow economy

The research on the shadow economy and methods to measure it in various countries is rather recent in the context of the general economic literature. The subject of the shadow economy started to receive academic interest at the beginning of the 1970s. However, the methods to estimate the shadow economy received greater academic interest in the last three decades. Currently, there is rather extensive literature on measuring the size and development of the shadow economy and identifying the key determinants causing it.

The concept of a shadow economy can be defined in some ways, from a broader definition to a narrower one. This literature review will adopt the narrower definition of the shadow economy, which is mainly about tax evasion. The broader definition of the shadow economy is described as an economic sector that does not comply with any of the government regulations, norms or laws in the country (Hart, 2008; Ihrig & Moe, 2004). It can involve illegal and legal activities from a monetary and non-monetary transaction point of view. Illegal activities involve those activities from trading stolen goods to drug dealing and manufacturing, from prostitution to smuggling and growing and production of drugs and trafficking (Mirus & Smith, 1997). The legal but shadow activities according to Mirus & Smith (1997) can be characterised by tax evasion and tax avoidance categories from a monetary and non-monetary perspective. Tax evasion refers to unreported income from different sources, while tax avoidance can refer to different employee discounts and fringe benefits from a monetary perspective, to all do-it-yourself and neighbour-help activities from a non-monetary perspective.

The narrower definition of the shadow economy[31] adopted here is the one suggested by Pedersen (2003) and Kazemier (2003). They refer to the shadow economy as all market-based legal production of goods and services that are deliberately concealed from public authorities for tax evasion and avoidance reasons. The shadow economy is considered to be a fact of life in almost all countries worldwide (Schneider, 2000; Medina and Schneider, 2019). It is an integral part of the economy as a whole, and it does affect the development of a country in different ways depending on its level of economic development (Nikopour et al., 2008).

Measuring the size of the shadow economy in a country can be challenging since the very agents involved in shadow economic activities are purposefully hiding from being identified (Gerxhani, 2004; Buehn & Schneider, 2011; 2012).

[31] Shadow Economy and Informal Economy will be used interchangeably throughout this part.

Agents engaged in shadow economic activities try to stay undetected from authorities to avoid paying taxes and operating by the rules and regulations imposed by governments (Medina & Schneider, 2017).

The existence of the shadow economy, however, is known. The main evidence of the existence of the shadow economy in a country in most cases comes from surveys of leading international organisations, such as the World Bank and the International Labour Organisation. Their accuracy, however, is questionable, because surveys tend to produce biased results. Those engaged in shadow economic activities will not be willing to answer all the questions that the survey may want to ask (Gerxhani, 2004).

To avoid biased results, literature has grown significantly over the past two decades introducing econometric methodologies and techniques to estimate the level of the shadow economy. In general, there is a common consensus in the literature that there are three main approaches to estimating the size of the shadow economy. These three main approaches are distinguished between the direct or indirect approaches or the statistical modelling approach, which estimates the informal economy as an unobserved variable. Table 1.1 lists different methods currently being used to measure the size of the economy using different models under each of the three methods described above[32].

Table 1. 1: Main approaches and their methods for measuring the shadow economy

Approaches	Methods available
Direct Approach	• Survey method • Tax Auditing method
Indirect Approach	• The Discrepancy between National Expenditure and Income Statistics • The Discrepancy between official and actual Labour Statistics (Labour market analysis) • The Transactions method • The Currency Demand method • The Physical Input (Electricity Consumption) Method • The Kaufmann – Kaliberda Method • The Lackó Method •
Modelling Approach	• The MIMIC (multiple indicators multiple causes) model

Source: Own collection of methods based on Schneider and Buehn (2018)

The existence of the shadow economy can affect the reliability of the official economic data, which consequently affects other socio-economic indicators that are based on that official data (Schneider & Enste 2000; 2002; 2013; Dell'Anno & Schneider, 2003). It can also affect the main objectives of social and economic policy-making. Thus, the shadow economy can have many implications that are in nature political, social and economic.

From a fiscal policy standpoint, the greater the shadow economy is in a country, the greater will be the negative impact on the number of tax revenues collected, and at the same time, it can lead to increases in public expenditures, thus exacerbating any misbalance between tax collection and government spending which may also lead to misallocation and misuse of resources (Arby et al., 2012).

[32] The different approaches (and associated limitations of each) for assessing the size of the shadow economy have been extensively studied; however, a thorough summary of this body of work (including the MIMIC method) is not presented in this literature review. Schneider and Enste (2002), Feld and Schneider (2010), Schneider, Buehn, and Montenegro (2010), Schneider (2015), Williams and Schneider (2013; 2016) are a few examples of literature that explain in detail main approaches to estimating the shadow economy. A good literature review on methods used to measure the shadow economy is also provided by Gerxhani (2004).

Recent worldwide estimates from Medina and Schneider (2019) estimate that the size of the shadow economy in 157 countries is on average just over 30% of the official GDP over the period 1991 to 2017[33]. Countries with the highest shadow economy as a percentage of official GDP are mainly developing and transition economies. Countries with the lowest shadow economies are the more developed countries (Williams, 2005).

Other recent studies, such as that from Kelmanson et al. (2019, p.70), provide new estimates of the shadow economy in 47 European countries from 2016 and 2019. They find that the share of the shadow economy remains markedly high in many European countries, hovering between less than 10% and as high as 40% of the GDP. Although there was a slight decrease in the shadow economy over the years across Europe, it is still a serious issue, particularly in Eastern Europe. Since the global financial crisis, when the shadow economy peaked slightly, it has since then followed a decreasing trend in most of Europe until 2019 (Kelmanson et al., 2019). The shadow economy is still, nevertheless, a significant portion of the GDP in many countries, accounting for significantly more than the average of 10-20% of GDP in Advanced Economies and 30-35% of GDP in Emerging Economies (Kelmanson et al., 2019).

The structure of this part 2 of the study is organised as follows: In chapter 1, we provided a brief background on the theories and most recent estimates of the shadow economy. In chapter 2 of this part 2, we shortly summarise the discussions on the main drivers of the shadow economy worldwide. Chapter 3 again shortly discusses in general the main policies available for governments to use in reducing the shadow economy. In chapter 4, we extensively present our six case studies of EU countries and discuss in detail the main drivers of informality and policy measures adopted in these countries, respectively. Finally, in chapter 5 we provide a summary and some conclusions on policy measures to fight the shadow economy.

[33] Contribution to the literature on the size of the shadow economy has been given by a number of other studies on individual country basis, such as Pommerehne & Schneider (1985), Schneider et al., (1989), Schneider & Neck (1993), Schneider & Enste (2000), and more recent studies of Chen (2012), Andersdale et al. (2006), Dell'Anno (2003, 2007), Buehn et al. (2009), Bovi & Dell'Anno (2010), Dell'Anno & Halicioglu (2010), Schneider et al., (2010), Buehn & Schneider (2012), Alm & Embaye (2013), Hassan & Schneider (2016), and Medina and Schneider (2018).

2. DISCUSSION ON THE MAIN DRIVERS OF THE SHADOW ECONOMY

2.1. Some general remarks

The main drivers of the shadow economy have been extensively studied in the literature, too. There is a common consent in the literature that weak institutional quality, ineffective government institutions, complex and burdensome taxation and regulatory systems, a lack of a strong legal system, and pervasive corruption are the main determinants of economic informality in most countries.

Perry (2007) and Oviedo et al. (2009) divide these main determinants into two major groups in an attempt to better understand the dynamics surrounding the shadow economy. The first group are known as the "exit" factors while the second group are known as the "exclusion" factors. It is argued that both such factors are present to varying degrees in the majority of nations. The "exit" factors from the formal economic sector frequently result in voluntary shadow employment, where shadow employees typically earn comparable or higher than comparable incomes than the formal workers earn and at the same time enjoy more flexibility with their employment. In contrast, when employees are unable to secure formal employment, "exclusion" factors from the formal economic sector frequently lead to forced shadow employment. The main distinction is whether workers are better off with formal employment as opposed to a shadow one (Perry, 2007; Oviedo et al., 2009).

These "exit" factors are predominantly reflected in literature as the intensity of regulation and bureaucracy, complexity of the taxation system and its burden on the purchasing power of economic agents, poor tax administration policies, high levels of corruption, weak enforcement and monitoring policies and administration, poor quality on the provision of public goods and services, and the level of the workforce as self-employed. The "exclusion" factors on the other hand predominantly come from the lack of opportunities within the formal economic sector, especially for certain demographics such as migrant workers, young and old workers or ethnic groups, who may also lack the necessary skills and human capital to find employment.

According to Schneider and Enste (2000), Schneider and Buehn (2012) and Schneider (2014; 2015) as well as more recent studies such as Kelmanson et al., (2019, p. 70), there are several causes behind the rise and development of the shadow economy[34] in many countries worldwide. First, there are the general economic causes regarding the unjust distribution of income, high inflation and high unemployment levels. Second, the taxation system and the existence of intense regulation and administrative bureaucracies provide an incentive for people to engage in shadow economic activities. In the following pages the leading causes of the shadow economy will be discussed.

2.2. Fiscal Policies

Fiscal policies are important determinants of the level of the shadow economy in a country. High tax rates, deficiency in auditing, insufficient accounting services etc., are just some of the main factors facilitating the size of the shadow economy (Azuma and Grossman, 2002; Kelmanson et al., 2019). In this context, the leading drivers of the shadow economy are the burden of direct and indirect taxation, both actual and perceived. A rising burden of taxation provides a strong incentive to work in the shadow economy. Furthermore, it is assumed that increases in the burden of tax regulation give a strong incentive to enter the shadow economy (Friedman et al., 2000; Schneider and Buehn, 2012; 2018).

[34] The term 'shadow economy' and 'informal economy' will be used interchangeably in this review.

Additionally, the "tax morality" (citizens' attitudes toward the state), which describes the readiness of individuals (at least partly) to leave their official occupations and enter the shadow economy is also a significantly important driver. It is assumed that a declining tax morality tends to increase the size of the shadow economy[35].

Moreover, Schneider (2014) and Sarac and Basar (2014) argue that there are administrative, social and political causes of informality. Regarding administrative causes, the organisation of tax authorities, technical structures and auditing mechanisms are considered the main causes of informality. While regarding social causes, tax ethics and tax morale, taxpayer psychology and historical causes can trigger agents to undergo shadow economic actives. In some cases, causes such as elections, government reforms, corruption, etc., are considered the main political causes of informality.

2.3. Public Sector Goods and Services

The provision and the quality of public sector goods and services are also important factors determining the size of the shadow economy. The level of public sector goods and services and their quality highly depend on the level of government revenues (Schneider et al., 2010; Schneider & Buehn, 2012). The larger the size of the shadow economy is, the higher the level of tax evasion and avoidance will be, which would lead to a reduction in government revenues. Such a reduction in government revenues is likely to affect the provision and the quality of public sector services (Johnson et al. 1998). This could lead to higher tax rates which are likely to provide further incentives for firms and individuals to engage in shadow economic activities to avoid higher taxes.

2.4. The state of the overall economy

The overall economic activity and business cycles in a country are also crucial determinants of the level of the shadow economy. Various studies suggest that during a recession people tend to engage in shadow economic activities in an attempt to compensate for any income losses from the formal economy (Bajada & Schneider, 2005; 2009; Vuletin, 2008; Hassan & Schneider, 2016). Thus, the level of unemployment can be considered a cause of the shadow economy (Schneider and Buehn, 2012; Kelmanson et al., 2019). The level of GDP is also an important determinant. It indicates the level of overall economic well-being in a country and the availability of opportunities to work in the formal economy (Schneider et al., 2010).

According to Alm & Embaye (2013), the level of inflation also plays a vital role in providing an incentive to people to engage in shadow economic activities. Inflation tends to reduce the real income firms and individuals can generate from the formal economy. This reduction in their real income is likely to incentivise some individuals to undertake additional economic activities, which might be informal in an attempt to compensate for any reduction in their purchasing power (Vuletin, 2008; Alm & Embaye, 2013; Elshamy, 2015).

2.5. Administrative Bureaucracies and intensity of regulations

The intensity of the regulatory burden and the level of administrative bureaucracies are other main drivers of the shadow economy (Gerxhani, 2004; Schneider & Enste, 2000; Kelmanson et al., 2019). There is significant empirical evidence that strict labour regulations can increase the size of the shadow economy (Johnson et al., 1998; Schneider et al., 2010). Strict labour regulations in a country can fuel incentives for individuals to work in the shadow economy since such regulations significantly increase

[35] Earlier studies agree, see Thomas (1992); Schneider (1994, 1997, 2003, 2005); Pozo (1996); Johnson et al. (1998); Giles (1997, 1999); Giles et al. (2002), Del'Anno (2003).

labour costs which are shifted to employees from firms. Johnson et al. (1997), Friedman et al. (2000), and Hassan & Schneider (2016) also find significant empirical evidence that a country with a greater intensity of regulation tends to have a higher size of the shadow economy relative to its GDP.

3. DISCUSSION ON THE MAIN GOVERNMENT POLICIES TO REDUCE THE SHADOW ECONOMY

Political agendas place a high priority on combating shadow economy activities since such activities can have many negative repercussions. The foundations of a country's tax and social security contribution can be eroded, because of resource misallocation with corresponding effects on public finances and the subsequent negative impact on the quality of public goods and services offered. Particularly since the sovereign debt crisis within the European Monetary Union (EMU), the budgetary ramifications of the shadow economy have once more come under the scrutiny of the general public and scholarly interest. If countries want to combat the shadow economy, they need to know its size and development and the main drivers causing it, so that effective policy measures are designed and implemented to tackle it.

The extensive discussion in terms of winners and losers from a high shadow economy as a percentage of the official GDP has not been very conclusive in the literature. On the one hand, the literature argues that the shadow economy is wholly responsible for wider macroeconomic problems such as higher levels of unemployment in the formal sector (leading to a potential deficit in the national pension schemes) and growing budget deficits (leading to higher public debt in most countries). While on the other hand, the literature argues that the move towards a shadow economy is the escape of economic agents from unfair and onerous restraints imposed by government policies (Schneider and Badekow 2006). Additionally, other literature takes more of a social stance, arguing that the shadow economy is a good source of income and social welfare for many in various countries – without it, the economic impact would be more burdensome for the official economy (Loayza and Rigolini, 2006, Medina et al., 2017).

Controlling economic informality is a challenging task (Schneider & Enste, 2000). Most countries attempt to control economic informality through punitive measures rather than reforms in their tax systems, regulation, the rule of law and other bureaucracies involved with operating in the formal economy[36]. Agents involved in the shadow economy consider it as an opportunity cost in operating in the formal economy as opposed to the shadow economy. However, punitive measures such as punishments and prosecution may not be the appropriate measures to control shadow economic activities (Frey & Schneider, 2000; Medina and Schneider, 2017; Berens, 2020). Some countries try to use educative measures as a means to educate and inform people not to engage in the shadow economy, but they too highlight the punitive measures involved (la Porta & Schleifer, 2014).

Effective policies to control the shadow economy in a country are essential. Such effective policies can be achieved if governments have consistent and reliable statistics to control and reduce the size of the shadow economy. The growing size of the shadow economy can be seen as a reaction to popular mistrust of the institutions and the government, as individuals may feel overburdened and may decide to engage in the shadow economy, rather than raise their voices against the system which could result in reforms (Schneider & Enste, 2000).

A sizeable shadow economy may also compete with the formal economy. Firms that operate in the formal economy may find themselves in an unfair competitive environment (la Porta & Schleifer, 2014). However, according to Schneider & Enste (2000), the existence of the shadow economy can have positive effects on the formal economy because about two-thirds of the income earned from shadow economic activities are spent immediately on the formal or official economy.

[36] Formal and/or official economy is used interchangeably throughout this thesis.

The more recent study by Kelmanson et al. (2019, p.70), who estimate the informal economy in Europe provides an extensive list of government policies that could be implemented in an attempt to reduce the size of the shadow economy. Their study, published in an IMF report, argues that a combination of policies should be employed which would target the determinants most pertinent in any particular country. Strong and negative relationships between the extent of the shadow economy and GDP per capita have been demonstrated in the literature, and it is generally accepted that stronger governmental institutions are essential to accomplishing economy-wide development objectives. Additionally, improving tax administration, reducing regulatory burdens, and enhancing transparency would lessen incentives for informal activities driven by "exit" factors while addressing informality brought on by "exclusion" factors would be helped by enhancing the mobility of the labour market and promoting human capital.

The main range of measures available to countries to tackle undeclared work and the shadow economy, in general, are presented in table 3.1 below. In most cases, however, labour inspection plays a key role as do information campaigns on the benefits of paying taxes and social security contributions, and reducing the regulatory burden (ILO[37]; Williams and Renooy, 2008, p.14). Most of these legislative measures have been put in place throughout the EU to fight undeclared work and the shadow economy in general, with different measures put in place in different regions to respond to different types of undeclared work.

Table 3. 2: Approaches to tackling undeclared work

Approach	Method	Measures
Deterrence	Improve detection	Data matching and sharing Joining-up strategy Joining up operations
	Penalties	Increase penalties for evasion
Enabling compliance	Preventative	Simplification of compliance Direct & indirect tax incentives Smooth transition into self-employment Introducing new categories of work Micro-enterprise development
	Curative	*Purchaser incentives:* service vouchers; targeted direct taxes; targeted indirect taxes *Supplier incentives:* society-wide amnesties; voluntary disclosure; business advisory and support services
	Fostering commitment	Promoting benefits of declared work Education Peer-to-peer surveillance Tax fairness Procedural justice Redistributive justice

Source: Williams and Renooy (2008, p.14)

[37] ILO report: http://www.ilo.org/wcmsp5/groups/public/@ed_emp/@emp_policy/documents/publication/wcms_210453.pdf.

4. CASE STUDIES FROM SIX EU COUNTRIES: AUSTRIA, DENMARK, GERMANY, GREECE, ITALY, AND ROMANIA

4.1. Case study 1: Austria

4.1.1 Determinants of the shadow economy

According to the study by Schneider and Buehn (2012), Austria's shadow economy is one of the lowest in the EU and overall continental Europe. Their study reveals that the average size of the shadow economy in Austria between 1999 and 2012 is just under 10% (See table 3). The average relative impact of the main determinants in the percentage of the shadow economy is also provided in table 3. It shows that the key driving determinant of the shadow economy in Austria is the level of indirect taxes. Unlike, Germany, for Austria, it is the level of self-employment that is more significant in explaining the existence of the shadow economy. Personal income tax is also one of the key indicators for Austria, followed by the level of unemployment in the country. For Austria too, the level of GDP growth and intensity of regulations (measured by the Business Freedom index) is not as significant.

Medina and Schneider (2019) agree with the above. They estimate the shadow economy of Austria as part of a larger sample of countries worldwide and find that the country's shadow economy is amongst the lowest within the sample. Their estimates in 157 countries reveal that the shadow economy as a percentage of official GDP is on average 30.9% from 1991 to 2017 for the overall sample of 157 countries. Its highest estimates are in Bolivia, Georgia and Nigeria where it accounts for 62.9%, 61.7% and 56.8% of GDP, respectively. The lowest estimates are in Austria, the USA and Switzerland where it accounts for 7.9%, 7.6% and 6.4% of GDP, respectively. Their study supports the findings by Schneider and Buehn (2012) on the main drivers of the shadow economy in the country.

Another recent re-estimation of the size of the shadow economy worldwide, which confirms previous findings of Schneider, Buehn and Montenegro (2010) was provided by Hassan and Schneider (2016), who estimated the shadow economies of 157 countries between 1999 and 2013 using the MIMIC model. This study estimates that the average size of the shadow economy (as a percentage of official GDP) of the 157 countries averaged from 1999 to 2013 is 33.8%. For the 28 European countries, the average size of the shadow economy was 23.1%, with Austria having the lowest average rate of the shadow economy (9.83%). This estimate and the main driving forces of the shadow economy are in line with the other studies too which estimate Austria's shadow economy to be in the range of 8% to 12% (for example Schneider and Buehn, 2012; 2018).

Kelmanson et al. (2019) provide a recent estimation of the shadow economy in Europe and provide recommendations for converting shadow activities to the formal sector. Austria is included in their estimation, and they show that the size of the shadow economy in Austria was less than 10% of the official GDP in 2016. The factors contributing to this size of the shadow economy in Austria are the tax burden, regulatory burden and the developments in the official sector. They also find out that for other countries less developed than Austria, factors such as government effectiveness and human capital tend to be more significant.

Schneider (2009) estimates the size and development of the shadow economy of Germany, Austria and other OECD countries. Schneider (2009) uses various estimation procedures and finds that an increased burden of taxation and social security payments, combined with intensive labour market regulation, quality of state institutions and the tax morale are the driving forces for the shadow

economy. Moreover, the study looks into the results of surveys for Germany and Austria. These survey results demonstrate that the readiness to undertake illicit employment as well as its acceptance were high in both countries at that time. The study reveals that the impact of the tax burden (direct and indirect) can help explain as much as 52% of the shadow economy in Germany, Austria and other OECD countries. The other significant driver is tax morale and intensity of state regulations, contributing up to 25% and 15%, respectively, on the size of the shadow economy. The size of the shadow economy of Austria according to this study covers between 7% and 11% from 1989 to 2007.

The most recent study is that from Schneider (2022) who estimate the shadow economies of 36 European and OECD countries over the period from 2003 to 2022 and analysed the effect of the Coronavirus pandemic from 2020 onwards. This study shows that the average size of the shadow economy of 36 European and OECD countries decreased from 16.5% of GDP in 2020 to 16.1% in 2021 (a decline of 0.4 percentage points). In this study, we see that the shadow economy in Austria declined significantly year on year between 2003 and 2022. The shadow economy of Austria in 2003 was around 10.8%, then in almost all subsequent years when its size declined year on year, with few exceptions in 2015 and 2020.

In 2020, the worldwide Coronavirus pandemic occurred and caused a severe recession in almost all countries worldwide, including Austria. One consequence of this was a strong rise in the average size of the shadow economy to 17.9% (of GDP) of the 28 EU countries. Compared to 2019, this average increase is remarkably high at 1.6 percentage points (or by 9.8%) and is the highest seen over the last 20 years (Schneider, 2022). In such a recession, a shrinking GDP and a strong increase in the unemployment rate are the key drivers of such a sharply rising shadow economy, as people try to compensate for their official income loss with increased shadow economy activities (Schneider, 2022; Schneider and Medina 2021). The Austrian shadow economy also increased in 2020 from 2019 with a rate of 6.1% to 7.23%, respectively. This is equivalent to an over 18% increase from one year to the next. This was estimated to fall slightly in 2021 as economies opened up after the pandemic, but forecasted by Schneider (2022) to increase back to over 7% of GDP in Austria. The main drivers of the shadow economy for Austria in this paper were discussed to be the overall state of the official economy, and microeconomic indicators such as the rate of unemployment and GDP growth. The study, therefore, showed that in times of economic downturns, the shadow economy can grow as a result of fewer opportunities in the formal economy (Schneider, 2022; Schneider and Medina, 2021).

Earlier studies which investigate the shadow economy of Austria (for example Schneider (2000), Schneider and Neck (1993), Schneider, Hofreither and Neck (1989), and Skolka (1985)) more or less come to the same conclusions that the shadow economy of Austria compared to other European countries is relatively small as a percentage of the official GDP and that the driving forces are the burden of direct and indirect taxation, other fiscal and taxation policies, the bureaucracy of doing business and the state of the official economy's business cycle. Correlations between the shadow economy and economic indicators for Austria are broadly consistent with expectations and literature, too. The relationship between the shadow economy and unemployment, for example, is positive in most studies. The relationship between the shadow economy and GDP per capita, credit to the private sector, the revenue burden and regulation is negative. These relationships are relatively stable over time.

Our study is in line with the literature in terms of the size and the development of the shadow economy of Austria, but also in terms of the main drivers of the shadow economy for Austria.

Our results, shown in Table 2.1 (from Part 1), reveal, that the shadow economy in Austria followed a declining trend from 2003 (10.8%) to 2019 (6.1%).

It then increased to 7.2% in 2020, slightly declining in 2021 and is predicted to decline again to pre-pandemic levels by the end of 2022, if favourable economic conditions persist. The main drivers of shadow economic activity in Austria are presented in Table 4.1.1 in this part 2 (table 3.1. in part 1).

Our results show that indirect taxes, personal income tax rate, the level of self-employment, overall unemployment rate, tax morale, and business freedom (regulatory burden) are among the main determinants of the shadow economy in Austria between 1999 and 2017, respectively. The driving force of the GDP growth rate as a cause of the shadow economy in Austria is less significant, although it is statistically significantly in our MIMIC model. This is supported by the literature review discussed above. The impact of the Coronavirus pandemic led to a significant economic downturn in the country, resulting in higher unemployment levels. This translated to an increase in the level of the shadow economy for Austria. Despite this increase, however, Austria continues to have one of the **smallest shadow economies within the EU**. The biggest unregulated markets can be found in **Eastern Europe** and those countries which were hardest hit by economic crises (sovereign debt crisis) and coronavirus pandemic, such as **Greece and Italy**, where the shadow economy stands at significantly over 20% of GDP on average terms.

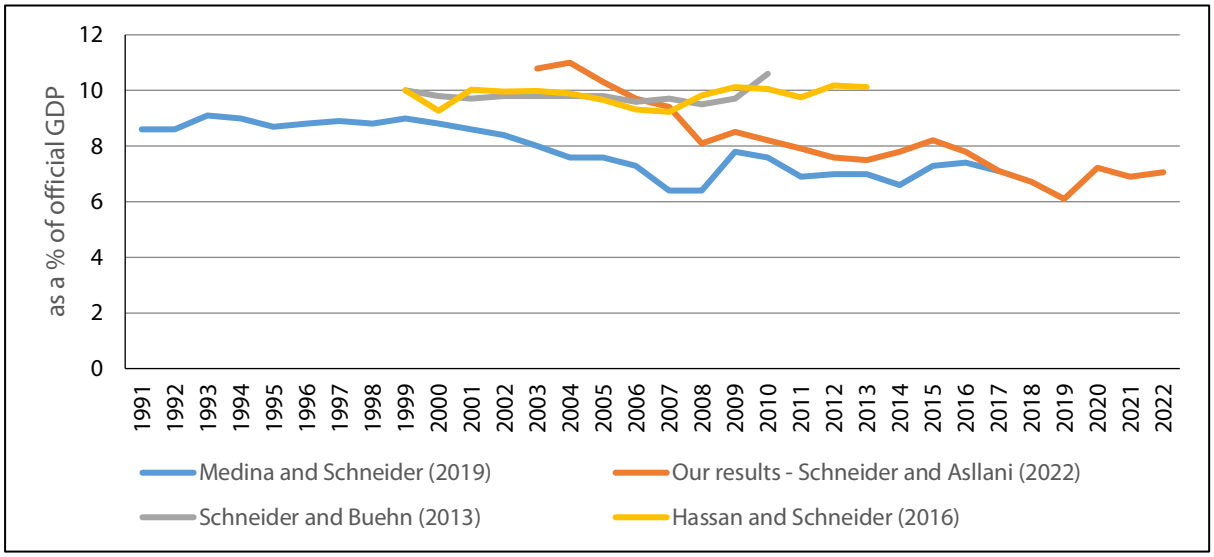
Table 4.1. 1: Average relative impact (in %) of the shadow economy determinants in Austria (1999:2017)

Country	The average size of the shadow economy	Personal income tax	Indirect taxes	Tax morale	Unemployment	Self-employment	GDP growth	Business freedom
Austria	**8.8**	**18.5**	**27.4**	**11.6**	**12.1**	**20.5**	**0.8**	**9.1**
Denmark	16.3	34.6	33.5	4.0	9.5	9.9	0.3	8.2
Germany	15.7	16.6	24.2	8.3	24.3	16.9	0.6	9.1
Greece	27.0	5.8	21.8	10.4	18.0	37.6	0.7	5.7
Italy	26.9	15.6	18.9	9.0	18.6	31.0	0.1	6.8
Romania	33.2	4.2	24.5	14.2	13.1	37.7	1.1	5.2

Source: Our results from part 1 of this study. Note: The average size of the shadow economy is expressed as a ratio of GDP (in %).

Figure 4.1 below shows the size and development of the shadow economy of Austria as a percentage of the official GDP from 1991 to 2022 from three main studies discussed here and compares the results with our estimates provided in part 1 of this report and discussed above. As the graph shows, we can conclude that the range of the shadow economy in Austria is one of the lowest in the EU and hovers between 6% and just above 11% - with the highest values attributed to those periods of times where economic downturn, tax rises and subsequent rise in the unemployment rate was manifested.

Figure 4. 1: Comparing the estimates from various studies on the size and development of the shadow economy as a % of official GDP in Austria



Source: Own adaptation from sources as included in the graph

From the extensive literature, there is a common ground that the Austrian shadow economy is amongst the lowest in Europe and beyond. It is also common to see that the main drivers are in line with the main theoretical background on why the shadow economy arises (discussed in the introduction section). However, even though the economy of Austria is low compared to other countries worldwide, Austria's policy measures targeted at reducing the shadow economy further have predominantly focused on monitoring, detection and prevention. Enste (2013) argues that policymakers should view undeclared work as a signal of a need to decrease the attractiveness of the shadow economy through better regulation, a fair and transparent tax system, and efficient working public institutions.

4.1.2. Government policies to fight informality in Austria

Austria is considered a conservative welfare state and the Austrian labour market is characterized by institutionalised tripartite dialogue between labour, business and the government (Afonso, 2013; Zelano, 2018). The Austrian government has predominantly focused on monitoring, detection and prevention policies in an attempt to reduce the level of the shadow economy. An early policy measure in Austria was the Social Fraud Bill[38], which was passed by the parliament at the end of 2004 and came into effect in March 2005. The bill extended the legal provisions of criminal law concerning organised tax and social fraud. Before this legislation, operators of 'pseudo-companies' had only been threatened with administrative fines. Since March 2005, they face imprisonment of up to five years for such practices.

Over the years, punitive measures have been strengthened in several countries within the EU, including Austria, for employers who fail to register their employees. In Austria, these penalties increased in 2007, with an individual now facing a penalty of two years' imprisonment in case of organised recruitment, placement, and hiring out of workers without registering them[39].

[38] Social Fraud Bill - https://www.ris.bka.gv.at/Dokumente/BgblAuth/BGBLA_2004_I_152/BGBLA_2004_I_152.html .

[39] For more details see Resources section to access: Williams and Piet, 2008, Measures to tackle undeclared work in the European Union, p.21-24.
The term of imprisonment, for organised undeclared work – that is, the recruitment, placement and hiring out of workers without

These policy measures reflect the dual function of registration as the gateway to services as well as to public audit and control. EU citizens in Austria not applying for a residence certificate after three months may also face a fine (Enengel and Reeger, 2015). Zelano (2018) found that low-skilled Central and East European (CEE) citizens contribute significantly to the existence of undeclared employment and hence the shadow economy in the country. Policy initiatives were identified in Austria towards the group of unregistered, non-educated and low-skilled CEE citizens. In Vienna, the city offers short-term employment to homeless CEE migrants as a step towards inclusion since 2015. Such policy measures are aimed at incentivising workers to enter the formal sector, or exit the shadow sector.

By mid-2007, General Social Security Act[40] was amended. The amendment, which came into effect in January 2008, stipulates that employers are obliged to register their employees with the relevant social insurance institutions before the commencement of work. This measure aims to prevent the practice of social security fraud and can lead to a reduction in tax evasion as a result of a potential decrease in the level of undeclared work. Moreover, the amendment in the law provides for a stricter penalty scheme for infringements of the registration law, increasing the ceiling of fines for repeated offenders from €3,630 to €5,000 for each case of illegal employment[41]. However, according to Schneider (2009), tougher criminal laws won't help in reducing the shadow economy in Austria because 2/3 of German and Austrian individuals would not disclose illegal economic activity to the police as they do not view illegal employment as a violation of the law. Rather, the focus should turn on incentives to attract economic agents to transfer to the formal sector, i.e. policies which do not create a higher financial burden and red tape.

Several European countries, including Austria, have introduced data sharing and access to registries managed by tax authorities or social security institutions or have established new coordinating institutions. These are mainly policies aimed at detecting and monitoring shadow economic activities, with a primary focus on undeclared work[42].

It is argued that the Austrian tax policy is characterized by a significant bias[43], as the source of tax revenue is overwhelmingly skewed toward the personal incomes of the working population. As employees and self-employed individuals pay the maximum tax rate beginning at what is widely perceived to be a middle-class level of income, and the country lacks property and inheritance taxes, the system of taxation is unbalanced in terms of equity. Tax reform is needed to have an impact on the size of the shadow economy in the country.

Policies on providing lifelong learning, fairer pensions and providing support for businesses and households from various stimulus packages announced by the Austrian government could potentially help reduce the shadow economy, although temporarily. These measures are for alleviating the hardship caused by the Coronavirus pandemic and might help in reducing the size of the shadow economy indirectly[44].

registering them with the relevant social insurance institutions – was extended to two years in 2011 by the Anti-Wage Dumping Law. The law was also revised in 2015 to improve its efficacy.

40 General Social Security Act (Allgemeines Sozialversicherungsgesetz, ASVG).

41 More from https://www.eurofound.europa.eu/data/tackling-undeclared-work-in-europe/database/measures-to-combat-social-fraud-austria.

42 For more details see ILO, 2010, Labour Inspection in Europe: Undeclared Work, Migration, Trafficking, Labour Administration and Inspection Programme p.10.

43 See https://www.sgi-network.org/2022/Austria/Economic_Policies.

44 Stimulus packages – see here: https://home.kpmg/xx/en/home/insights/2020/04/austria-government-and-institution-measures-in-response-to-covid.html.

This is because for people and businesses to benefit from these measures, such as grant reliefs, tax reliefs and other support for businesses as well as government economic recovery plans, they would have to 'exit' the shadow economy and enter the formal economy. Such measures are incentives, for exiting the shadow economy and entering the formal economy (Kelmanson et al., 2019).

Finally, governments around the world, including Austria are facing an increasing cost of living issue. Inflation is high, which tends to distort public finances and drastically reduces the purchasing power of many households. Without indexing tax systems, rising inflation results in the tax bracket being distorted and can lead to larger taxpayer tax liabilities, which raises the incentives for greater tax evasion and hence shadow economy. Alm and Embaye (2013) contend that a higher inflation rate increases currency demand, presumably because it causes tax bracket creep, which causes taxpayers to attempt to evade taxes by using more currency as they move into higher tax brackets and have larger tax liabilities. In this respect, the Austrian government abolished to a large extend the cold progression, meaning that the income tax system will be indexed from January 1, 2023, onwards; this was a major step in fighting the shadow economy because under this measure every wage increase is not additionally taxed by the Austrian government. Governments, around the world, including Austria, have put forward various policy measures in helping households with the cost of living, such as help with energy costs, and tax/social security contribution reliefs – policies which are likely to have a temporary impact on the shadow economy but may not be lasting.

Generally, it is quite difficult to estimate to what extent the policy measures contribute to a successful reduction of illicit employment or shadow economy in general. In table 4.1.2, a summary of all policy measures, which directly or indirectly reduce the shadow economy, is provided.

Table 4.1. 2: Policy measures in Austria, which can affect directly or indirectly the size of the shadow economy

Causes	Type of measures	Policies/Current situation
Fiscal Policy and state of the Economy	• Fiscal measures • Enforcement • Preventative	**Biased/Criticized Tax Policies**[45] • Austrian tax policy is characterized by a significant bias, as the source of tax revenue is overwhelmingly skewed toward the personal incomes of the working population. As employees and self-employed individuals pay the maximum tax rate beginning at what is widely perceived to be a middle-class level of income, and the country lacks property and inheritance taxes, the system of taxation is unbalanced in terms of equity. **A flaw in Budgetary Policy**[46] • In times of low economic growth, the government engaged in extra spending, which it regarded as an investment in fostering growth. In times of high growth, however, available funds were not used effectively to prepare the government for poorer times. Likely to have an indirect impact on the size of the shadow economy – in times of crises and economic downturns this could lead to an increase in the size of the shadow economy. **Prediction of the strength of the economy**[47] • In November 2021, the governing parties passed the budget for 2022, which projected a reduction in the overall deficit to 2.3% of the gross national product and a slightly reduced debt quota of 79.1%. Due to its strong economy and overall economic outlook, it is fair to assume that Austria will follow a path of debt reduction over the medium to long term. **Unemployment rate** • The unemployment rate for young people (up to 25 years old) also decreased to 6.5% on average in 2021 (down 2.8% compared to the previous year). Over the same period, unemployment in Austria among the older generation (55+) stood at 10.6% and remained approximately the same compared with the previous year. The unemployment rate for

[45] Link: https://www.sgi-network.org/2022/Austria/Economic_Policies
[46] Ibid.
[47] Ibid.

Causes	Type of measures	Policies/Current situation
		foreign nationals (11.9%) is significantly higher than the Austrian average (8%), whereas the number of registered unemployed persons from the EU/EEA/Switzerland (8.3%) hardly differs from the unemployment rate in Austria as a whole. • There will be an above-average increase in staff numbers in those regions that suffered above-average job losses in 2020 (Tyrol, Salzburg, and Vorarlberg). Unemployment in the eastern region (Vienna, Lower Austria and Burgenland) will also fall within the next 5 years (3%)[48].
Tax burden	• Monitoring • Detection • Preventative	**Tax Fraud Detection** • The Tax Fraud Investigation Unit has become more effective over the years, especially since 2020. During 2020, 193 employees have been processed and concluded a total of 527 cases. Despite difficult working conditions during the Coronavirus pandemic, their work succeeded in generating additional revenues for the Austrian taxpayer totalling around EUR 172 million[49]. **For the years 2016 to 2025, income above EUR1 million is taxed at a rate of 55%** • The **2016 income tax model** brought about the following six levels: the initial income tax rate is 25 % for those with an annual gross income of € 11 000 to below € 18 000; a tax rate of 35 % applies to an income of € 18 000 to below € 31 000; a tax rate of 42 % applies to an annual gross income of € 31 000 to below € 60 000; a rate of 48 % to incomes from € 60 000 to below € 90 000; a rate of 50 % to incomes from € 90 000 to € 1 million; and a tax rate of 55 % applies to annual gross incomes of above € 1 million. • Law against wage and social dumping (Lohn- und Sozialdumping-Bekämpfungsgesetz LSDB-G) • This Act to Combat Wage and Social Dumping is considered a key law in Austria concerning illegal employment, especially since its 2016 amendment, which introduced stricter sanctions against underpayment along with provisions regarding the posting of workers (regardless of their nationality), thereby implementing the Enforcement Directive (2014/67/EU) in national law.

[48] Link: https://eures.ec.europa.eu/living-and-working/labour-market-information/labour-market-information-austria_en.

[49] Link: https://www.bmf.gv.at/en/press/press-releases/2021/August-2021/Bl%C3%BCmel--In-2020,-Tax-Fraud-Investigation-Unit-recovered-EUR-172-million-in-the-fight-against-fraud-.html.

Causes	Type of measures	Policies/Current situation
Illegal Migrant workers	**Monitoring** • Detection • Preventative • Fostering commitment	**Law against wage and social dumping** • Information support for employers, simplification of administrative procedures and information support for employers recruiting TCNs (Third-Country Nationals) (e.g. helpline, information on government website etc.)[50]. • The Federal Government's website www.migration.gv.at provides information in German and English on the requirement for immigration to and residence/settlement in Austria including the respective labour market access rights and required documentation. **Drop-in Centre for Undocumented Workers (UNDOK)** The Vienna Chamber of Labour, for example, together with several trade unions supports the Drop-in Centre for Undocumented Workers (UNDOK).
Labour policies and Employment	• Fostering commitment • Incentives	**Fairer pensions**[51] • Recognising early entries into working life while abolishing early retirement pensions will minimise the risk of old age poverty; splitting equally pension benefits obtained during parental leave between the two partners will reduce the pension gap between men and women. **Lifelong learning** • Providing up - and reskilling opportunities for people who have become unemployed during the crisis. **Expected updates on the Labour Law 2021**[52] could help reduce undeclared employment. **Flexibility on working hours** - To make working hours more flexible, effective from 1 September 2018, the legislator provided the possibility to increase the maximum amount of working time allowed (including overtime) from ten to 12 hours per day and 50 to 60 hours per week.

[50] Link: https://www.emn.at/wp-content/uploads/2017/07/EMN-National-Report-2016_Illegal-Employment.pdf.

[51] Link: https://ec.europa.eu/info/files/factsheet-austrias-recovery-and-resilience-plan_en.

[52] Link: https://igloballaw.com/wp-content/uploads/2021/01/iGlobal-Law-Annual-Update-2021-Austria.pdf.

Causes	Type of measures	Policies/Current situation
		Overtime pay - Under section 10 of the Working Hours Act (Arbeitszeitgesetz) (AZG) overtime must be paid at a 50% surcharge above the contractual remuneration for every overtime hour worked. **Since 1 January 2021, workers and freelancers have been entitled to the same statutory notice periods** in the event of termination of work as employees. The statutory notice periods range from six weeks to five months, depending on the worker's/freelancer's duration of work with the employer

Source: Collection of policies from various sources. See footnotes.

4.2. Case study 2: Denmark

4.2.1. Determinants of the shadow economy

Schneider (2022) presents the most recent estimates of the shadow economy in Denmark. Schneider (2022) shows that the size of the shadow economy as a percentage of the official GDP in Denmark stands at around 9.6% on average (between 2003 and 2022). They also show that Denmark experienced a gradual, but almost year-on-year decline in the size of the shadow economy, with exception of a very slight increase during 2009 and 2010. The shadow economy shrank from 17.4% in 2003 to the lowest ever recorded by end of 2019 (8.92%). The main drivers of informality for EU countries used in the MIMIC model, and that were statistically significant showing correct causality with shadow economy, are tax burden (both direct and indirect), level of unemployment, GDP growth rate as well as the economic and business freedom (proxies for regulatory burden and ease of doing business).

For 2020 Schneider (2022) finds, that due to the coronavirus pandemic resulting in the 'Great Lockdown' and the subsequent economic downturn as well as a strong increase in the unemployment rate in Denmark and worldwide, the shadow economy of Denmark increased 9.84% in 2020 (this is just over 1 percentage point increase but over 10% increase year on year from 2019). Schneider (2022) also forecasts estimates for 2021 and 2022 and predicts that the shadow economy will decline slightly, and then increase again by 2022, respectively. During economic contractions, shadow economic activities increase, as people try to compensate for their official income loss with increased shadow economy activities.

Similarly, although with slightly higher estimates, Medina and Schneider (2019) show that the size of the shadow economy in Denmark is on average 13.4% of the office GDP between 1991 and 2017, with a very small standard deviation of just 1.5. They also show that there was a declining trend from 1991 to 2008, where the economy decreased almost year on year from 15.3% to 10.9%. In 2009 and 2010 this trend was broken, as a result of the global recession, leading to a higher unemployment rate in the country and a contraction of GDP, led to a rise of the shadow economy from 10.9% in 2008 to 13.3% and 13% in subsequent two years. After this, the shadow economy started to decline and at times fluctuate gradually reaching a level of 11.7% by the end of 2017. The authors' results show that Denmark's shadow economy is among the lowest in north Western Europe. Medina and Schneider's (2019) estimation relied on the following drivers of the shadow economy: (i) a measure of the tax burden on the economy, as everything else equal, a larger tax burden is likely to encourage economic agents to remain outside of the formal sector; (ii) institutional quality, as weak institutions, such as lack of respect for the law or high levels of corruption, would encourage informal activities; (iii) openness, a proxy of trade openness used, as economies become more interconnected and trade more with their neighbours and other countries it would be harder to hide these activities from authorities; and (iv) unemployment, as lack of opportunities in the formal sector would force individuals to engage in informal economic activities. Similar work was also conducted a year earlier by the same authors, who estimated the shadow economy for Denmark and several other European countries and found relatively similar results and drivers of the shadow economy (Medina and Schneider, 2018).

An earlier study by Schneider and Buehn (2012; 2013), which estimated the size and development of the shadow economy (as % of GDP) in 39 OECD countries, found that for Denmark, the average size of the shadow economy is 17.3% between 1999 and 2010. On the main drivers contributing to such a degree of informality, the results from Schneider and Buehn (2012) (presented in this part in Table 3) show that the tax burden is the most significant driver of informality (showing a combined

average relative impact (in %) of the causal variables on the shadow economy to be at 68.1%), followed by the level of self-employment and unemployment in the country, as well as the business freedom index (used as a proxy for ease of doing business – regulatory burden), respectively. Tax morale in Denmark, contrary to other countries part of this study (such as Greece and Romania), is less of a significant contributor for the same period according to Schneider and Buehn (2012). The order of significance of the most important drivers of informality for Denmark is also confirmed by Schneider and Buehn (2013) in their estimates between 1999 and 2010, although the estimates are slightly different and the tax morale becomes more important in this analysis. Schneider and Buehn (2013) show that the main driver of informality is the combined tax burden (direct and indirect personal taxes), followed by the unemployment rate, self-employment, tax morale, GDP growth rate and finally with the least impact from the business freedom. These two studies are more in line with Schneider, Buehn and Montenegro (2010).

Hassan and Schneider (2016), on the other hand, find a slightly higher average of the shadow economy for Denmark between 1999 and 2013. They estimate that the average shadow economy as a % of official GDP is 19.04%. The other interesting point about their estimates is that the shadow economy in Denmark is shown to be relatively constant, fluctuating between a minimum of 17.65% and a maximum of 18.70% between 1999 and 2007. From 2008 to 2010, the trend became positive and the level of the shadow economy reached above 21% by the end of 2010. It started to sluggishly decline by 2011 but remained much higher than in the pre-2008 period. Hassan and Schneider (2016), concluded that the signs associated with the causal and indicator variables are as expected with most literature and the most significant variables leading to the existence and the development of the shadow economy for Denmark, and most countries from their 157-country sample, are Tax burden, Regulatory burden, Unemployment rate, Self-employment rate, and the Economic freedom index. Kelmanson et al (2019) provide a similar result on average for 2016 for Denmark too.

Our results presented in part 1 and the main drivers causing the shadow economy are generally in line with the literature reviewed. According to our latest results presented in part 1, the shadow economy in Denmark has followed a year-on-year declining trend from 2003 to 2019. The level of the shadow economy in 2003 was 17.4% of the official GDP and by 2019 this level was estimated to fall to 8.92% (one of the lowest rates ever estimated). There are some exceptions where the shadow economy increased between 2008 and 2010, predominantly due to the global financial crisis of 2008 causing economic recessions worldwide, including in Denmark. The shadow economy also increased in 2020 in Denmark from 8.92% in 2019 to 9.84% in 2020 (this is just over a 10% increase, year on year). It fell slightly in 2021 as the pandemic restrictions were relaxed and the economy opened up, but for 2022 we forecast a slight increase in the size of the shadow economy again from the previous year.

The main drivers of the shadow economy in Denmark as per our estimates provided in table 4.2.1 below (or table 3.1 from part 1 of this study) are almost exclusively related to the high level of the tax burden. We show that 34.6% of the shadow economy is driven by the level of personal income tax. Almost the same impact (33.5%) is the level of indirect taxation in the country driving economic agents to engage in informal economic activities. Other determinants are also significant, with self-employment and unemployment rate contributing together to the size of the shadow economy by almost 20%.

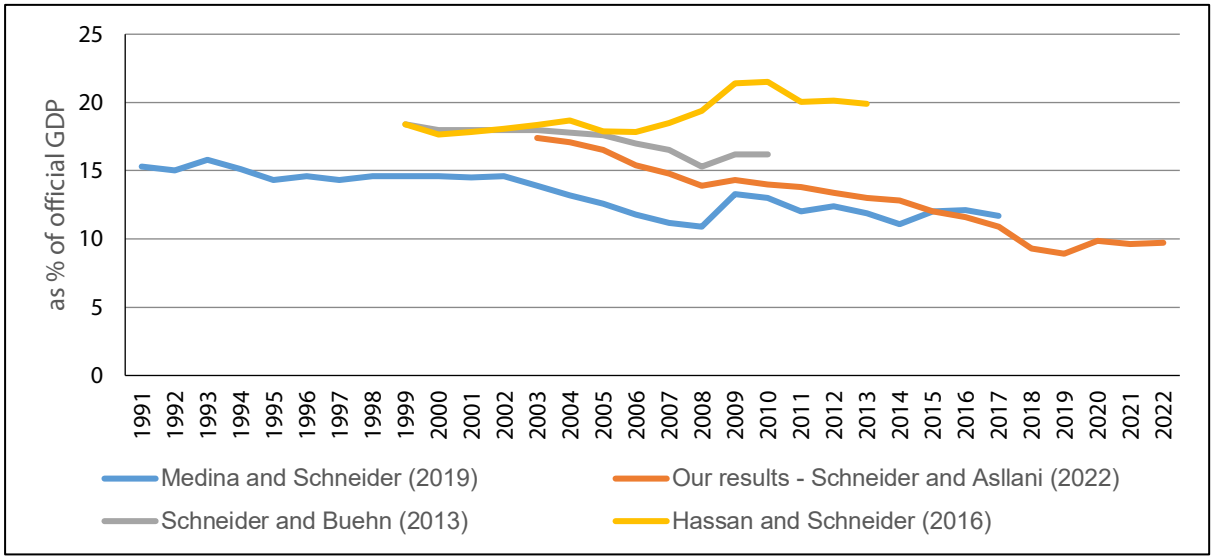
Table 4.2. 1: Average relative impact (in %) of the shadow economy determinants Denmark (1999:2017)

Country	The average size of the shadow economy	Personal income tax	Indirect taxes	Tax morale	Unemployment	Self-employment	GDP growth	Business freedom
Austria	8.8	18.5	27.4	11.6	12.1	20.5	0.8	9.1
Denmark	**16.3**	**34.6**	**33.5**	**4.0**	**9.5**	**9.9**	**0.3**	**8.2**
Germany	15.7	16.6	24.2	8.3	24.3	16.9	0.6	9.1
Greece	27.0	5.8	21.8	10.4	18.0	37.6	0.7	5.7
Italy	26.9	15.6	18.9	9.0	18.6	31.0	0.1	6.8
Romania	33.2	4.2	24.5	14.2	13.1	37.7	1.1	5.2

Source: Our results from part 1 of this study. Note: The average size of the shadow economy is expressed as a ratio of GDP (in %).

Figure 4.2 below shows the size and development of the shadow economy of Denmark as a percentage of the official GDP from 1991 to 2022 from three main studies discussed here and compares the results with our estimates provided in part 1 of this report and discussed above. As the graph shows, we can conclude that the range of the shadow economy in Denmark is between 9% and just above 21% - with the highest values attributed to those periods of times where economic contraction, tax rises and subsequent rise in the unemployment rate was manifested.

Figure 4. 2: Comparing the estimates from various studies on the size and development of the shadow economy as a % of official GDP in Denmark



Source: Own adaptation from sources as included in the graph

In summary, we can conclude that the main drivers of informality in Denmark are similar to those in Austria and Germany. The significant drivers of informality in Denmark are predominantly the level of taxes (both direct and indirect). Denmark is known for the highest tax burden among EU countries. However, most studies, discussed above, indicate that tax morale is high in the country, thereby contributing less to the existence of the shadow economy in the country.

We can also conclude that the shadow economy in Denmark is among the lowest in Europe and OECD countries, although still exhibiting levels above the EU average (for example as per estimates of Schneider, 2019).

4.2.2. Government policies to fight informality in Denmark

The most significant determinant of the shadow economy in Denmark is the level of the tax burden (both direct and indirect). Most policy measures implemented by the Danish government are either preventative, detective or fiscal measures. On the preventative side, the government has put in place penalties for employers failing to register employees, which could reduce the size of the shadow economy by deterring people to enter into informal activities.

Denmark is characterised by a high degree of the tax burden. The sizeable welfare state in Denmark is financed predominantly through taxes, which make up around 50% of the GDP. In contrast to most other countries, the tax system is predominantly made up of direct income taxation and indirect taxation (e.g. VAT), with social security contributions playing a minor role.

Between 1999 and 2016, the Danish government lowered taxation on work. For a low-income earner, the marginal tax rate has fallen from 45.5 % in 1999 to 40.3 % in 2016. For high-income earners, the reduction is 6.9 percentage points, from 63.3 % in 1999 to 56.4 % in 2016. In 2017, a "house-tax" reform was approved, but its implementation has been postponed until 2024 (SGI Data, 2022)[53]. There has thus been a reduction in the incentive for shadow economy activities driven by the income tax system. Such reduction is manifested in most estimates of the shadow economy in Denmark.

While lowering the tax burden slightly, tax authorities in Denmark have started to implement monitoring and detecting measures in 2015, aimed at persons who declare a very low taxable income, while at the same time having a high standard of living exemplified by an expensive house, ownership of luxury cars etc. Thus by combining various administrative registers the tax authorities hope to better target individuals who get their income from undeclared work or criminal activities.

The level of unemployment in Denmark is low thanks to its state of the economy and active labour market policies, which at times causes shortages of labour in some sectors as a result (Anderson, 2020). The tripartite agreement with the social partners and the Local Government of Denmark (KL) in October 2021, seeks to reduce labour shortages by instigating more workers to enter the labour market in the short term. These efforts target especially four areas: Matching unemployed workers and businesses, tightening the rules on unemployed workers' availability to the labour market, strengthening efforts to get unemployed seniors into jobs, and reinforcing businesses in recruiting foreign labour. At the same time, encourages people to start working and thereby boosts the labour force participation rate. This is likely to provide incentives for households to 'exit' the shadow economy and enter the official economy.

Moreover, in September 2021, the government launched Denmark Can Do More programme[54] - a proposal for the new reform agenda. Based on this proposal the government and a majority of the parties in the Danish parliament agreed to A New Reform Package for the Danish Economy (January 2022). The agreement includes changes to both the unemployment insurance benefits system and rules related to the social pensions of labour income.

[53] SGI Data - https://www.sgi-network.org/2022/Denmark/Economic_Policies.

[54] See https://ec.europa.eu/info/sites/default/files/denmarks_national_reform_programme_2022_en.pdf.

The reforms in the package are expected to increase potential employment by around 12,000 persons in 2025 and 2030 and increase potential GDP by around 0.7 per cent in 2030 amounting to around 17.5 billion DKK. As part of this reform programme[55], the Danish parliament agreed on a strengthening of the AML framework[56] and opening eight new tax offices across the country in four stages from 2020-2023, to legally enforce efforts for AML and fight against tax avoidance and tax evasion.

A further incentive is the earmarked parental leave which was adopted in 2022, following the adoption of the EU's Directive 2019/1158 on work-life balance. The agreement applies to all wage earners and earmarks 11 out of a total of 24 weeks of parental leave for both parents. This promotes equality between men and women in the labour market and within families by encouraging a more equal distribution of parental leave. This could also encourage people to move to the formal sector to benefit from such arrangements.

A robust childcare system in Denmark enables both parents to work, with generous maternal and paternal leave provided. Recent pension-system reforms have improved sustainability. Immigration-related tensions have led to a tightening of rules, but labour-market and educational integration is proving increasingly successful to decrease unemployment and significantly improve tax morale. The country is top-ranked for tax policies as it has a universal tax-funded healthcare system with services provided free of charge along with a flexible, highly developed welfare system. As a result, the Tax morale of Danish citizens is considered among the highest in the EU and OECD, and as our results show has the lowest impact on the size of the shadow economy.

The Danish government has spent more than 20 years pursuing regulatory reform to cut red tape for enterprises. Early in the 1980s, as part of a major deregulation drive to modernise the economy, the first policies for regulatory quality and simplification were formed – the Better Regulation policy. They intended to get rid of rules that hurt the business sector's ability to compete. The emphasis of policy has shifted over time from "deregulation" to "regulatory quality." To maintain the excellent economic and social performance of recent years, Denmark has implemented a Better Regulation policy as part of a comprehensive set of forward-looking changes.

From all the above policies, the government is in a strong position to effectively reduce the shadow economy in the coming years. For the policies to be effective, Denmark's official economy needs to continue the course, so that it attracts economic agents from the informal sector to the formal sector of the economy. Finally, in table 4.2.2, a summary of all policy measures, which directly or indirectly reduce the shadow economy, is provided.

[55] Ibid.

[56] AML-framework – Anti money loundering

Table 4.2. 2: Policy measures in Denmark, which can affect directly or indirectly the size of the shadow economy

Causes	Type of Measure	Policies/Current situation
Labour Market policies		**A tripartite agreement on labour shortage (October 2021)**[57] • Due to low unemployment rates as well as recruitment challenges among Danish businesses, the Government entered a tripartite agreement with the social partners and the Local Government of Denmark (KL) in October 2021. • The agreement seeks to reduce labour shortages by instigating more workers to enter the labour market in the short term. These efforts target especially four areas: Matching unemployed workers and businesses, tightening the rules on unemployed workers' availability to the labour market, strengthening efforts to get unemployed seniors into jobs, and reinforcing businesses in recruiting foreign labour. **Earmarked parental leave (October 2021)**[58] • Following the adoption of the EU's Directive 2019/1158 on work-life balance, the Government agreed upon an agreement on earmarked parental leave. The agreement applies to all wage earners and earmarks 11 out of a total of 24 weeks of parental leave for both parents. By securing earmarked parental leave, the agreement promotes equality between men and women in the labour market and within families by encouraging a more equal distribution of parental leave. This regulation comes into effect on August 2, 2022. **Tackling unemployment**[59] • The country's "flexicurity" model continues to support a high degree of labour-market mobility, with training and assistance provided to the unemployed. However, the unexpectedly quick recovery has led to a resumption of concern over labour shortages. Policymakers are considering easing rules on labour immigration from non-EU countries.

[57] Denmark's National Reform Programme 2022 - https://ec.europa.eu/info/sites/default/files/denmarks_national_reform_programme_2022_en.pdf.

[58] Ibid.

[59] Link: https://www.sgi-network.org/2022/Denmark/Economic_Policies.

Causes	Type of Measure	Policies/Current situation
Economic Policy and targets		**Denmark Reform: Denmark can do more**[60] • In September 2021, the government launched Denmark Can Do More, which is the proposal for the new reform agenda. Based on this proposal the government and a majority of the parties in the Danish parliament agreed upon the agreement A New Reform Package for the Danish Economy (January 2022). The agreement includes changes to both the unemployment insurance benefits system and rules related to the set-off in social pensions of labour income. **The Danish Government has set three national 2030 targets** • The target for employment: 80 per cent of people aged 20 to 64 should be employed by 2030 (structural employment rates). • The target for training: 60 per cent of adults aged 25 to 64 should participate in training every year by 2030. However, this target may be revised in light of upcoming new data on Denmark's current rates for 2022. • The target for social inclusion: The number of people living in households with low work intensity (LWI) should be reduced by 30,000 people in 2030 compared to the 2019 level.

Source: Collection of policies from various sources. See footnotes. 57, 58, and 59.

[60] Link: https://ec.europa.eu/info/sites/default/files/denmarks_national_reform_programme_2022_en.pdf.

4.3. Case study 3: Germany

4.3.1. Determinants of the shadow economy

Across many countries in Europe, shadow economic activities make up a significant portion of the overall economy. Various estimates assess that the size of the shadow economy in EU member states averages about 16% of the official GDP (Schneider, 2019). Yet, the estimates at the country level can vary depending on the methodology applied in the estimation process. The main methodologies to measure the shadow economy has been highlighted in table 1.1 of this part. A relatively recent study by Medina and Schneider (2018) estimates that the size of the shadow economy of 157 countries for the period between 1991 and 2017 is approximately 30.9% of the official GDP on average. While the shadow economy on average is below 30% of GDP in the OECD countries, this figure can reach almost 40% or more in many Latin American and African countries.

The size of the shadow economy and the level of a country's economic development in inversely related. The more developed the country is, where the rule of law is effective and the quality of institutions is effective and efficient, the lower the shadow economy is reported. Germany is one of the most developed countries in Europe and the world, with good-quality of institutions and high GDP per capita. The size of the shadow economy as a percentage of the official GDP in Germany is low compared to many countries in the periphery of Europe or many other countries worldwide.

Germany's shadow economy has been assessed extensively in the literature. Predominantly the results presented in the literature show that the size of the shadow economy in Germany as a percentage of GDP hovers between 10% and 18%. Along with Austria, Luxembourg and Switzerland, this is one of the lowest ranges. A study by Davidescu and Schneider (2017) concluded that the eastern or central European countries and/or the "new" European Union members, such as Bulgaria, Cyprus, the Czech Republic, Latvia, Lithuania and Poland have higher shadow economies than the "old" European Union countries, like Austria, Belgium, and Germany; therefore, there is an increase of the size of the shadow economy as you move from west to east.

Although the percentage of the shadow economy in Germany is quite low, the nominal size can still be considered as high when compared with a smaller country, whose shadow economy as a percentage of GDP is higher. Most literature provides common causes or drivers of the shadow economy in most countries, with few variances in the significance of the causality of each driver for different countries. For Germany, most literature is in agreement that taxes and regulations are the primary causes of the shadow economy.

The most recent study is that from Schneider (2022) who estimate the shadow economies of 36 European and OECD countries over the period from 2003 to 2022 and analysed the effect of the Coronavirus pandemic from 2020 onwards. This study shows that the average size of the shadow economy of 36 European and OECD countries decreased from 16.48% of GDP in 2020 to 16.07% in 2021 (a decline of 0.41 percentage points). In this study, we see that the shadow economy in Germany declined significantly year on year between 2003 and 2022. The shadow economy of Germany in 2003 was around 16.7%, then in almost all subsequent years its size declined year on year and halved by 2019 to 8.54%. Then in 2020, the shadow economy increased to over 10.4%. The main drivers of the shadow economy in this paper are discussed to be the macroeconomic indicators such as the level of unemployment and GDP per capita.

Another recent study by Kelmanson et al., (2019) which examines the drivers, and provides updated estimates on the size of shadow economies in Europe, finds that the size of the shadow economy of Germany hovers between 15% and 17.8% over the years of 2000 to 2016.

The years with the highest are between 2002 and 2007 and then 2009 and 2010. In other years the shadow economy fell well below 17%. During these years, when the shadow economy fell, the German economy grew leading to more opportunities in the formal sector. The growing number of people employed in the regular economy and the positive economic growth will lead the shadow economy to shrink (Schneider, 2008; Kelmanson et al., 2019). Kelmanson et al., (2019) highlight various drivers which lead economic agents to enter the shadow economy. They take the approach of Perry (2007) and Oviedo et al. (2009) and divide these main drivers into two major groups - the "exit" factors and the "exclusion" factors[61] – which predominantly relate to the tax burden, regulatory burden, corruption, lack of opportunities in the formal sector, and the quality of government institutions and provision of qualitative public goods and services.

An earlier study provides similar results and conclusions. Schneider and Buehn (2012; 2018) provide estimates of the shadow economy of 38 OECD countries from 1999 to 2010. From this larger sample, they estimate that the average size of the shadow economy in Germany is around 15.7%. Their results show that the main drivers of the shadow economy in Germany are indirect taxes, followed by the level of unemployment in the country and the number of people self-employed. Almost equally a significant driver is the level of personal income taxes, driving people to take up undeclared work (Schneider and Buehn, 2012; 2018). The business freedom index in this study is used as a proxy for the intensity of regulations[62], which in the case of Germany explains less than 10% of the shadow economy.

Due to a better quality of institutions and provision of qualitative public goods and services, the tax morale in Germany is not as significant as the other drivers, although around 8.3% of the shadow economy can be explained by low tax morale. However, Enste (2018) found higher importance on the intensity of state regulations concerning its contribution to the shadow economy of Germany, concluding that its impact was by 10% to 15% with specific labour market regulation affecting the shadow economy by as much as 5% to 8% in 2013 (Enste, 2018).

Correlations between the shadow economy and main macroeconomic indicators are broadly consistent with expectations. The most important driver of the shadow economy from the main macroeconomic indicators tends to be the level of unemployment in the country. GDP growth, although statistically significant (at different levels, dependant on the methodology applied) is not the main driver of the shadow economy in most countries as a result of growing income inequality. The reason for this has been given by Yap et al. (2018) who in the study which used unbalanced panel data of 154 countries from 2000 to 2007, concluded that income inequality and shadow economy show an inverted-U relationship, similar to the original Kuznets hypothesis. For Germany, GDP growth only helps to explain less than 1% of the shadow economy.

An even earlier study which estimates the size and development of the shadow economy of Germany, Austria and other OECD-countries is conducted by Schneider (2009). Schneider (2009) uses various estimation procedures and finds that an increased burden of taxation and social security payments, combined with intensive labour market regulation, quality of state institutions and the tax morale are the driving forces for the shadow economy. Moreover, the study looks into the results of surveys for Germany and Austria.

[61] Discussed in more detail in the introduction section of this literature review.

[62] These findings are supported by earlier studies too such as that of Kirchgaessner (1982) for Germany. Johnson, Kaufmann, and Zoido-Lobatón (1998) also find significant overall empirical evidence of the influence of (labour) regulations on the shadow economy; and the impact is clearly described and theoretically derived in other studies, e.g. for Germany (Deregulation Commission 1990/91).

These survey results demonstrate that the readiness to undertake illicit employment as well as its acceptance were high in both countries at that time. The study reveals that the impact of the tax burden (direct and indirect) can help explain as much as 52% of the shadow economy in Germany, Austria and other OECD countries. The other significant driver is tax morale and intensity of state regulations, contributing up to 25% and 15%, respectively, on the size of the shadow economy. The size of the shadow economy of Germany according to this study, hovers between 11% and 17% from 1989 to 2007.

Other studies, such as that from Schneider and Buehn (2013) who analysed the driving forces of the development and size of the shadow economy in 39 OECD countries, found that the main driving forces are tax policies and state regulation, unemployment, self-employment and the tax burden. Schneider and Buehn (2013b) re-estimated the shadow economy and undeclared work in highly developed OECD, developing and transition countries highlighting that for selected transition and developing countries the determinants of the shadow economy are not equally important across countries, finding indirect taxation, unemployment, and self-employment to be the most influential determinants of the shadow economy for the majority of countries.

Similar conclusions as to the main drivers of informality in Germany have been reached in other publications. For example, Hassan and Schneider (2016) use a MIMIC model to study the size and development of the shadow economies of 157 countries from 1999 to 2013. They find that higher tax and regulatory burden, unemployment and self-employment rates are key drivers of the shadow economy, meaning that an increase in these causal variables increases the shadow economy. Their results also confirm previous findings of Schneider, Buehn and Montenegro (2010). The estimated average informality of 157 countries around the world, including developing, eastern European, central Asian and high-income OECD countries averaged over 1999 to 2013 was 33.77% of official GDP. Germany's shadow economy was estimated to be 15.77% on average over the same period.

Another study by Medina and Schneider (2019) find a lower average shadow economy for Germany. Using panel data from 157 countries from 1991 to 2017, the find that the shadow economy of Germany is around 11.4% of the official GDP, with a standard deviation of just 1.5. The main determinants discussed in this paper for all countries and Germany are in line with the other studies discussed above. They conclude that the crucial question for policymakers is whether the shadow economy "Is this a blessing or a curse?" for a country. They argue that if one assumes, that roughly 50% of all shadow economy activities complement those of the official sector (i.e. those goods would not be produced in the official sector) the development of the total (official + shadow economy) GDP is always higher than the "pure" official one. A decline in the shadow economy will only increase the total welfare in every country if the policy maker succeeds in transferring a shadow economic activity into the official economy (Medina and Schneider, 2019; Medina and Schneider, 2018; Schneider and Williams, 2013). Therefore, a policy maker has to favour and choose such policy measures that strongly increase the incentives to transfer production from the shadow (black) to the official sector. Only then the decline of the shadow economy will be a blessing for the whole economy.

Our study is in line with the literature in terms of the size and the development of the shadow economy of Germany, but also in terms of the main drivers of the shadow economy for Austria. Our results, shown in Table 2.1 (from part 1), reveal that the shadow economy in Germany followed a declining trend from 2003 (16.7%) to 2019 (8.54%). It then increased to 10.42% in 2020, slightly declining in 2021, but remaining above 10%, and is predicted to decline again to almost pre-pandemic levels by the end of 2022 (8.81%), if favourable economic conditions persist.

The main drivers of shadow economic activity in Germany are presented in table 4.3.1 below (table 3.1 from part 1). Our results show that the unemployment rate, indirect taxes, the level of self-employment, personal income tax rate, tax morale and business freedom (regulatory burden) are among the main determinants of the shadow economy in Germany between 1999 and 2017, respectively. The driving force of the GDP growth rate as a cause of the shadow economy in Germany is less significant, although it is statistically significantly in our MIMIC model. This is supported by the literature review discussed above on the size and driving forces of the shadow economy. The impact of the Coronavirus pandemic led to a significant economic downturn in the country, resulting in higher unemployment levels, predominantly over the less skilled labour force. This translated to an increase in the level of the shadow economy for Germany.

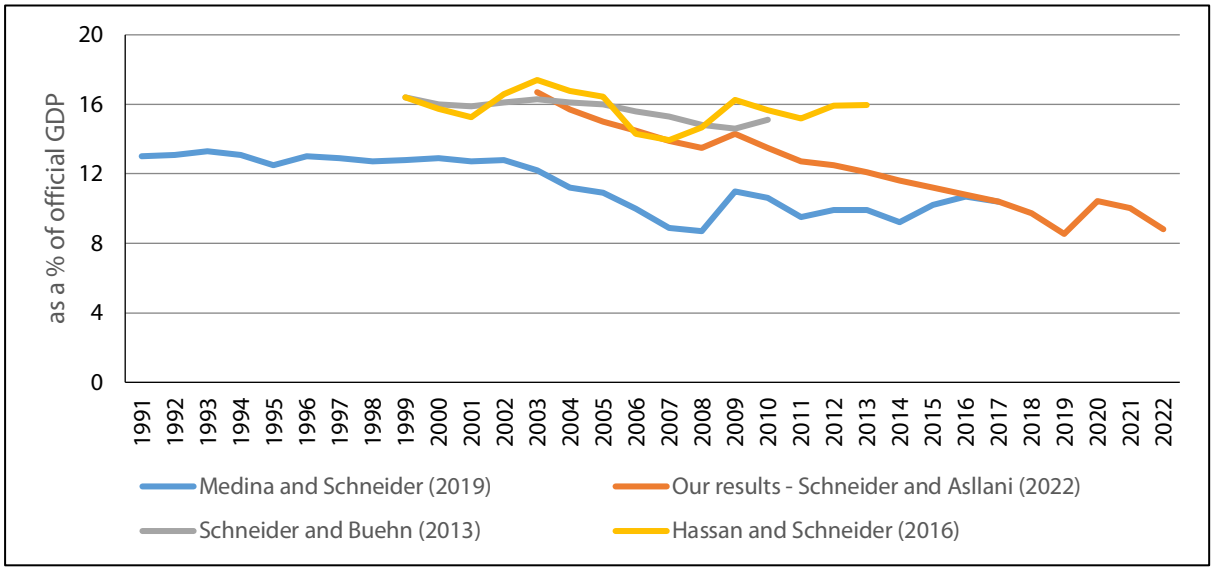
Table 4.3. 1: Average relative impact (in %) of the shadow economy determinants in Germany (1999:2017)

Country	The average size of the shadow economy	Personal income tax	Indirect taxes	Tax morale	Unemployment	Self-employment	GDP growth	Business freedom
Austria	8.8	18.5	27.4	11.6	12.1	20.5	0.8	9.1
Denmark	16.3	34.6	33.5	4.0	9.5	9.9	0.3	8.2
Germany	**15.7**	**16.6**	**24.2**	**8.3**	**24.3**	**16.9**	**0.6**	**9.1**
Greece	27.0	5.8	21.8	10.4	18.0	37.6	0.7	5.7
Italy	26.9	15.6	18.9	9.0	18.6	31.0	0.1	6.8
Romania	33.2	4.2	24.5	14.2	13.1	37.7	1.1	5.2

Source: Our results from part 1 of this study. Note: The average size of the shadow economy is expressed as a ratio of GDP (in %).

Figure 4.3 below shows the size and development of the shadow economy of Germany as a percentage of the official GDP from 1991 to 2022 from three main studies discussed here and compares the results with our estimates provided in part 1 of this report and discussed above. As the graph shows, we can conclude that the range of the shadow economy in Germany is among the lowest in the 'old' EU and hovers between 9% and just above 17.5% - with the highest values attributed to those periods of times where economic downturn, tax rises and subsequent rise in the unemployment rate took place.

Figure 4. 3: Comparing the estimates from various studies on the size and development of the shadow economy as a % of the official GDP in Germany



Source: Own adaptation from sources as included in the graph

In summary, most recent and earlier literature, show that the average size of the shadow economy of Germany is between 10% and 18% at any given time and that the main drivers are tax burden, regulatory burden, and the level of unemployment in the country. This level of shadow economy should not only be seen as a source of criminal offences if a country is to effectively create policies to combat it. Instead, it's of paramount importance to understand that the creation of additional value for the official economy can be primarily achieved by formalising the shadow economy. This shows that the fight against the shadow economy is most effective when illegal activities are moved from the unofficial to the official sector of the economy, rather than when they are eliminated.

4.3.2. Government policies to fight informality in Germany

Relatively recent policy measures against the shadow economy in Germany are mostly focused on detection and prevention. Some do take the form of curative and fostering commitment as presented (Williams and Renooy, 2008, p.14). There is a recognised need to develop effective information and communication systems in all EU Member States to enable the collection and exchange of data that will allow the verification of the legal situation of the workers and their affiliation to social security schemes. To this effect an agreement was reached between France and Germany in May 2001, to encourage the sharing of information on unlawful work. Additionally, the governments of Belgium, France, Germany, Italy, and Romania established a European network of undeclared work to encourage the sharing of knowledge in the field[63].

Germany's policy decision in 2002 to categorise jobs and increase the number of small jobs exempted from social security, by introducing three new job categories - 400 Euros jobs, mini jobs and midi jobs – for which varying levels of social security contributions would be applicable[64] led to an initial reduction in undeclared work in the country.

[63] For more details see Resources section to access ILO, 2010, Labour Inspection in Europe: Undeclared Work, Migration, Trafficking, Labour Administration and Inspection Programme, p.22.

[64] For more details see Resources section to access: Renooy, et al., 2004, Undeclared work in an enlarged Union. An analysis of undeclared work: An in-depth study of specific items p.35.

The labour market is split into two segments due to the high costs associated with strict labour market regulation: a legal market that can bear the burden and an unregistered market where individuals and businesses choose to avoid costs either because they are too high or because they want to share the rewards of their lower operating costs.

Generally, it is quite difficult to estimate to what extent the policy measures contribute to a successful reduction of illicit employment or shadow economy in general. According to the earlier performed simulations by Schneider (2009), who analyses the impact of then new legislation, the net size of the shadow economy was reduced by 1.0 billion Euros between 2006 and 2007 in Germany. Policies implemented then by the German government, which led to increases in the size of the shadow economy during 2006 and 2007 were mainly fiscal, such as the increases in VAT from 16% to 19% in 2007, increases in the insurance fees for the 'mini jobs' from 25% to 30%, the introduction of the 45% tax on the rich, the increase on the health insurance costs. Other policies implemented during 2006 and 2007, such as the decrease in non-wage labour costs (with unemployment benefits cut), tax deductibility of building maintenance and modernisation and tax deductibility on childcare costs contributed to a reduction in the overall size of the shadow economy. Additionally, the German Mini-Job settlement (effective since 2000) has been an efficient solution to reduce the shadow economy; it means that one can (additionally) work up to 500€ per month and only pay health insurance[65].

Recent policy measures taken by Germany which can lead to a reduction in the shadow economy indirectly or directly, are mostly punitive measures such as the changes made to the criminal tax code, corrections to VAT returns and voluntary disclosures to avoid penalties and changes to the Annual Tax Act where the criminal limitation period for prosecution of tax evasion in particularly serious cases increases from 10 years to 15 years – are all likely to deter economic agents to enter the shadow economy. Other fiscal measures such as the ceiling for social security contributions (40% of wage) introduced in 2020 and 2021, the introduction of carbon pricing in transport and heating from 2021, and real estate tax valuations to be updated by 2025 are likely to have mixed results. While the former, could lead to a reduction in the shadow economy, the two later measures might lead to a positive contribution to the shadow economy.

Other measures announced by the German government in alleviating the hardship caused by the Coronavirus pandemic, might help in reducing the size of the shadow economy too indirectly, although temporarily. This is because for people and businesses to benefit from these measures, such as grant reliefs, tax reliefs and other support for businesses as well as government economic recovery plans, they would have to 'exit' the shadow economy and enter the formal economy. Such measures are incentives, for exiting the shadow economy and entering the formal economy (Kelmanson et al., 2019).

Countries around the world, including Germany, are facing high inflation rates - which tend to distort public finances and drastically reduce the purchasing power of many households. Without indexing tax systems, rising inflation results in the tax bracket being distorted and can lead to larger taxpayer tax liabilities, which raises the incentives for greater tax evasion and hence shadow economy. Governments around the world, including Germany, have put forward various policy measures in helping households with the cost of living, such as help with energy costs, and tax/social security contribution reliefs. However, high inflation and forecasted global recession for next year, are likely to offset any positive impact in fighting informality.

[65] SDI Data: https://www.sgi-network.org/2022/Germany/Economic_Policies.

With interest rates rising worldwide, in an attempt to combat inflation, government borrowing without control and solid fiscal foundations is proving to be difficult for many countries., like in this case Germany. Finally, in table 4.3.2, a summary of all policy measures, which directly or indirectly reduce the shadow economy, is provided.

Table 4.3. 2: Policy measures in Germany, which affect can directly or indirectly the size of the shadow economy

Causes	Type of Measure	Policies/Current situation
Tax Burden/Tax evasion	• Preventative • Incentives to move to the formal sector • Tax reforms • Punitive	**Amendments to the Criminal Tax Code-2021**[66] • Extension of the so-called absolute limitation period for prosecution from 20 to 25 years The regulation now to be introduced in a new Section 376 paragraph 3 of the German Fiscal Code is intended to extend the limit of this so-called absolute limitation period to two and a half times (instead of 2 times) the statutory limitation period. The absolute limitation period for prosecution would therefore in the future amount to 25 years instead of 20 • Corrections to VAT returns and voluntary disclosures to avoid penalty A correction pursuant to sec. 153 German Fiscal Code will - for reasons of prudence and risk prevention for the employees and management involved - often be structured in such a way that the requirements for a self-disclosure with exemption from punishment, pursuant to sec. 371 German Fiscal Code, are met. To proceed with a protecting voluntary self-disclosure pursuant to sec. 371 para. 1 of the German Fiscal Code, all VAT offences that have not become time-barred and at least all offences committed within the last ten calendar years, must be corrected. • A particularly serious case of tax evasion of over EUR 50,000 • New regulation through the Annual Tax Act The criminal limitation period for prosecution of tax evasion in particularly serious cases from previously 10 years to 15 years **Tax system: Reduce tax wedges on labour income and shift taxation towards less distortive taxes**[67] • Introduction of carbon pricing in transport and heating from 2021. • Real estate tax valuations are to be updated by 2025. • A ceiling for social security contributions (40% of wage) was introduced in 2020 and 2021.

[66] Link: https://www.kmlz.de/en/VAT/Newsletter_20_2021#.

[67] Link: https://www.oecd.org/economy/germany-economic-snapshot/.

Causes	Type of Measure	Policies/Current situation
		Social Security Contribution[68] • Expanding the categories of workers: Faced with a steep increase in the number of small jobs exempted from social security, Germany decided, in 2002, to introduce three new job categories - 400 Euros jobs, mini jobs and midi jobs - that introduced varying levels of social security contributions. This has led to an initial reduction in undeclared work. **Possibilities to grant tax relief worth billions of euros**[69] • The fiscal authorities can defer tax payments payable by 31 December 2020 for tax debtors who are directly and substantially affected by the outbreak and can exempt these from paying interest during the deferment period. The fiscal authorities will be instructed not to apply any strict requirements. • Adjusting tax prepayments will become easier. Once it has become clear that the taxpayer's income for the current year is likely to be lower than in the years before, advance payments on taxes will be reduced quickly and without the need for complex procedures. • Tax enforcement measures (such as the seizure of bank accounts) and late payment penalties will be suspended up until 31 December 2020, provided the tax debtor is directly and substantially affected by the impact of the coronavirus outbreak.
Labour Market DIY Activities	• Incentives to move to the formal sector • Curative • Educative • Fostering commitment# • Preventative	**Self-Employment Reduction Measures (Article in 2008)**[70] • The self-employed are the classical type of informal employment as it is known from the discussion in developing countries. However, analysis is difficult, as there are diverse forms of self-employment. One should at least distinguish own account workers (i.e. self-employed without employees) and unpaid family workers who are the clearest cases of informally employed. From 1997 to 2007, the share of the self-employed in all employed has grown slightly from 10.9% to 11.9%. This is not surprising, as German labour market politics during the last decade advocated and supported small business start-ups as one strategy to decrease unemployment.

68 Link: http://www.ilo.org/wcmsp5/groups/public/@ed_emp/@emp_policy/documents/publication/wcms_210453.pdf.
69 Link: https://ec.europa.eu/info/sites/default/files/2020-european-semester-national-reform-programme-annex-germany_en.pdf
70 Link: https://www.wiego.org/sites/default/files/publications/files/Korner_infomalisation_employment_Germany.pdf

Causes	Type of Measure	Policies/Current situation
		Education and skills: Strengthen skills to cope with technological change[71] • National Skills Strategy introduced in 2019 aligns programmes with market needs, improves training statistics, quality assurance, recognition of skills and counselling services, and expands training opportunities for individuals whose jobs are affected by structural change. • Acceleration of investment program to extend full-day primary education from 2020. **Working Hours Structure - Make it easier for parents to choose flexible working hours**[72] • Additional funding of over EUR 5 billion for 2020 to 2022 for measures to improve childcare quality, reduce fees, and adapt to local needs, as well as capacity expansion in kindergartens, day-care centres and crèches • Further, lower the tax burden on the wage income of second earners. • Increase the minimum amount of time, from the current two months, that the second parent has to take parental leave for the couple to receive the maximum leave entitlement • Strengthen legal rights to flexible working hours for all employees, including teleworking where possible. **High Degree of Wage Flexibility**[73] • A high degree of wage flexibility began already in the 1990s as a result of harmonic industrial relations and industrial accountability (Dustmann et al. 2014). The government has a toolbox of tested labour market instruments to use in protecting jobs in a crisis. In 2020, the short-time work subsidies once again played a decisive role in helping firms affected by the lockdowns to keep their employees on the payroll, despite plummeting sales. The government quickly increased replacement rates, made the scheme more accessible, expanded its duration and waved social security contributions. This helped firms effectively slash their wage costs during the most acute periods of the crisis. However, by international comparison, the German short-time work scheme is very generous in the support it provides and its

[71] Link: https://www.oecd.org/economy/growth/Germany-country-note-going-for-growth-2021.pdf.
[72] Link: https://www.oecd.org/economy/germany-economic-snapshot/.
[73] Link: https://www.sgi-network.org/2022/Germany/Economic_Policies.

Causes	Type of Measure	Policies/Current situation
		unique increasing wage replacement rate could, over time, dis-incentivise structural change and the relocation of workers (Scarpetta et al, 2020). **Agenda 2020**[74] • The Agenda 2020 reforms of the early 2020s have proved effective in increasing incentives to take on employment and reforming labour market administration. **Increase in Minimum wage to decrease underground activities**[75] • In recent years, government regulation of the labour market has increased as new restrictions for temporary employment programs have been introduced. A national minimum wage has been in effect since January 2015, with exemptions for young employees and the long-term unemployed in particular. The minimum wage has increased from initially €8.50 to €9.82 from January 2022 onward. The new government plans to further lift the minimum wage to €12 (Koalitionsvertrag 2021). The German Council of Economic Experts has not reported any detrimental macroeconomic effects, though it is difficult to assess the long-term consequences of the national minimum wage, particularly during less dynamic periods. **Reduction in Structural Unemployment**[76] • Germany's success in reducing structural unemployment since the mid-2000s has been impressive. Germany's employment increased from 41.0 million to 45.3 million between 2010 and 2019 (Destatis 2022) and features an employment rate that is far above the OECD average (OECD 2021). Before COVID-19 reached Germany, the unemployment rate decreased to 5% (2019 average, national definition, Bundesagentur für Arbeit 2021). This suggests that the labour market has successfully integrated the large influx of refugees that arrived in 2015. Employment growth has been accompanied by a decline in both temporary work and minor employment contracts ("Mini jobs") and confirms that the boom is not driven by a flight into atypical employment.

[74] Ibid.
[75] Ibid.
[76] Ibid.

Causes	Type of Measure	Policies/Current situation
Economic Policy	• Economic recovery and growth policies	**"Social-ecological market economy"**[77] • The new three-party coalition formed by the SPD, the Green Party and the liberal FDP has agreed to transform the German economic model toward a "social-ecological market economy" (Koalitionsvertrag 2021, p. 25) where each of the three partners stands for an emphasis on one of the three model dimensions (SPD for social justice, Green party for ecological sustainability, and FDP for liberal market principles). Hence, this approach appears to be consistent and credible. The German economy has performed relatively well over the medium term of the past decade and has also proved its resilience since the outbreak of the pandemic at the beginning of 2020. **Unemployment rate compared to other OECD Countries**[78] • Severely hit by the pandemic lockdowns since March 2020, the German government swiftly engineered one of the largest fiscal stabilization packages among OECD countries (International Monetary Fund 2021). The package included the activation of familiar and tested instruments such as generous short-time work schemes but also new rescue packages that effectively supported firms through grants and liquidity. Both this massive response and the underlying financial health of the German corporate sector explain a relatively mild impact of the largest global economic shock in post-war history. **GDP loss compared to other EU Nations**[79] • Real GDP declined by 4.6% in 2020, which marked a deep recession that was nonetheless milder than that seen in other euro-area countries; on average, real GDP declined by 6.4% in the euro area (European Commission 2021). However, the prospect for a full recovery is good (Sachverständigenrat 2021) and further indicators such as the low number of firm insolvencies and the mild impact of the crisis on the level of unemployment confirm an optimistic assessment of how Germany will finally cope with the pandemic crisis.

Source: Collection of policies from various sources. See footnotes.

[77] Link: https://www.sgi-network.org/2022/Germany/Economic_Policies.
[78] Ibid.
[79] Ibid.

4.4. Case study 4: Greece

4.4.1. Determinants of the shadow economy

Independent of the estimating methods, sample sizes and the time frame used, all estimates of the size of the shadow economy in Greece indicate that they account for a significant portion of the country's official GDP. As far as the EU is concerned, Greece's shadow economy is amongst the highest. Our recent estimates show that the average shadow economy in Greece between 1999 and 2017 amounts to 27% of the official GDP. The development of the shadow economy in Greece between 2003 and 2022 is presented in table 2.1 (from part 1 of this study). Our results presented in this table show that the trend of the shadow economy in Greece is also declining year on year. Greece's shadow economy is estimated to have been around 28.2% in 2003, and by 2019 it fell to 19.23%. In 2020, just like for most other EU countries, our results show an increase in the shadow economy to over 20% levels. Forecasts for 2022, also show a slight increase from the 2021 level.

The main drivers contributing to a high degree of informality in Greece have been presented in table 4.4.1 below. We can conclude that for Greece the main driving causes of the shadow economy are the high level of self-employment, followed by indirect taxation, the rate of unemployment in the country, tax morale, personal income tax and regulatory burden (measured by the business freedom index). The high level of self-employment in the country contributes to explaining the existence of the shadow economy in the country by 37.6%. These conclusions can be supported by various literature, such as Hassan and Schneider (2016), Medina and Schneider (2018, 2019), Almenar et al. (2020) and Davidescu and Schneider (2022).

Table 4.4.1: Average relative impact (in %) of the shadow economy determinants in Greece (1999:2017)

Country	The average size of the shadow economy	Personal income tax	Indirect taxes	Tax morale	Unemployment	Self-employment	GDP growth	Business freedom
Austria	8.8	18.5	27.4	11.6	12.1	20.5	0.8	9.1
Denmark	16.3	34.6	33.5	4.0	9.5	9.9	0.3	8.2
Germany	15.7	16.6	24.2	8.3	24.3	16.9	0.6	9.1
Greece	**27.0**	**5.8**	**21.8**	**10.4**	**18.0**	**37.6**	**0.7**	**5.7**
Italy	26.9	15.6	18.9	9.0	18.6	31.0	0.1	6.8
Romania	33.2	4.2	24.5	14.2	13.1	37.7	1.1	5.2

Source: Our results from part 1 of this study. Note: The average size of the shadow economy is expressed as a ratio of GDP (in %).

For Greece, we notice a higher relative impact on average as a percentage of the shadow economy from tax morale. Low tax morale (distrust in public institutions) is still a major cause for the inability of fiscal authorities to meet projected tax receipts goals (Kaplanoglou and Rapanos, 2013). However, references are also made to another dimension of tax morale in Greece that is not related to trust in public institutions. This form of tax morale, which has been frequently termed by the Greek media

as the "sport of tax evasion", describes the norm of evading taxes for personal gain, and can be understood through the absence of the "social norm" of tax compliance (Alm and Torgler, 2011).

Further support to the theory around why shadow economies arise and which supports are findings in part 1, is given by Almenar et al. (2020). In this study, the analysis is based on a panel of peripheral EMU countries (Portugal, Italy, Greece and Spain) over the period 1965-2015. Their estimates, contrary to other recent studies (where Italy is used as part of the larger sample) indicate that the shadow economy in these four countries grew steadily relative to measured GDP between 1965 and 2015. These time series estimates also capture differences between these four countries. Portugal and Spain evolved similarly, whereas Italy, and especially Greece, had higher values and a steeper upward trend. The main driving forces of informality in these countries were identified to be the tax and social security payment burden, particularly the self-employment rate, closely followed by the status of the official economy. Unemployment was also a key cause of shadow economic activity, especially in Greece.

In a relatively recent study by Kelmanson et al (2019), the shadow economy in Greece has been estimated to be between 26% and 28% for 2016 depending on the model used. Their estimates are generally consistent with those of Hassan and Schneider (2016); however, they are less volatile due to a stronger contribution from institutional factors and the economy's structure (such as trade openness and a percentage of agriculture), which tend to alter with a lag and gradually over time. Hassan and Schneider (2016) show that the average size of the shadow economy in Greece between 1999 and 2013 is around 32.5% and that its size from 1999 to 2013 has drastically fluctuated. They estimate that the size of the shadow economy of Greece in 1999 was around 28.5%, growing steadily to over 43% by 2012, then declining slightly under 40% in 2013. This huge increase can be attributed to the country's severe debt crises that prevailed almost immediately after the global financial crisis of 2008. Key determinants raised by both Kelmanson et al (2019) and Hassan and Schneider (2016) are the already established drivers of the shadow economy – the huge tax burden increase, the regulatory burden, level of unemployment and self-employment in the country, quality of institutions and government effectiveness. For countries like Greece, tax morale is also considered a significant driver of informality.

Both studies are relatively in line with the earlier literature, such as Schneider and Buehn (2012; 2013) and Schneider, Buehn and Montenegro (2010). Schneider and Buehn (2013) show that the estimated size of the shadow economy in Greece is about 27% of the official GDP on average between 1999 and 2010. They also show a declining trend for the same years. The main drivers of such a level of the shadow economy in Greece have been identified to be self-employment, indirect taxes, the ease of doing business (business freedom used as a proxy), low tax morale, GDP growth level, unemployment rate and the personal income tax, respectively. These results are to a large degree consistent with the work of Schneider and Buehn (2012), with some revised figures, but a similar trend (see Table 3) above.

In general, the simulation results from Schneider and Buehn (2013) demonstrate that the determinants of the shadow economy are not equally important across countries. Schneider and Buehn (2013), estimating the average relative influence (in %) of the causal variables on the size and development of the shadow economies for all 39 OECD countries between 1999 and 2010, find that Self-employment is on average most important in Greece (18.7%) than all other OECD countries; and that the relative impact of indirect taxes concerning the shadow economy's evolution is also largest in Greece (16.1%).

The studies above confirm an earlier study by Schneider, Buehn and Montenegro (2010) who estimate that the shadow economy for Greece was around 27.5% between 1999 to 2007 and find that an increased burden of taxation (direct and indirect ones), combined with (labour market) regulations and the quality of public goods and services as well as the state of the 'official' economy are the driving forces of the shadow economy of all the countries part of their sample, including Greece.

Similar conclusions on the drivers of informality are found in Medina and Schneider (2018; 2019) too. Medina and Schneider (2019) provide a slightly lower size of the shadow economy for Greece between 1991 and 2017. They show that the average size of the shadow economy as a percentage of the GDP is just under 25% and that the trend was generally negative until 2009, then the trend changes to positive from 2009 onwards, where the size of the shadow economy exhibits increases almost year-on-year, hovering between 23 and over 25% by the end of 2016. This is mainly attributed to the state of the official economy, where Greece was hit hard by the global financial crisis of 2008/2009 and the subsequent sovereign debt crises. Concerning their findings on the main drivers of this level of the shadow economy for Greece, conclusions from Medina and Schneider (2018; 2019) are in full consensus with the existing literature discussed above.

The latest estimates for Greece have been provided by Schneider (2022) and Davidescu and Schneider (2022). Schneider (2022) estimates the size of the shadow economy for 27 EU countries and UK from 2003 to 2022. Schneider (2022) shows that the size of the shadow economy as a percentage of the official GDP in Greece stands at around 22.03% on average (between 2003 and 2022). They also show that Greece experienced a gradual, but almost year-on-year, decline in the size of the shadow economy, with exception of a very slight increase during 2009 and 2010. The shadow economy shrank from 28.2% in 2003 to the lowest ever recorded by end of 2019 (19.23%). The main drivers of informality for EU countries used in the MIMIC model, and that were statistically significant showing correct causality with shadow economy, are tax burden (both direct and indirect), level of unemployment, GDP growth rate as well as the economic and business freedom (proxies for regulatory burden and ease of doing business).

For the year 2020, Schneider (2022), finds that due to the coronavirus pandemic resulting in the 'Great Lockdown' and the subsequent economic downturn as well as a strong increase in the unemployment rate in Greece and worldwide, the shadow economy of Greece increased by 20.9% (this is almost a 9% increase year on year from 2019). Schneider (2022) also forecasts estimates for 2021 and 2022 and predicts that the shadow economy will decline slightly, and then increase again to the 2020 level by 2022, respectively. During economic contractions, shadow economic activities increase, as people try to compensate for their official income loss with increased shadow economy activities.

Davidescu and Schneider (2022) present similar drivers of the shadow economy in most countries, including Greece, but also highlight that in countries with lower levels of economic development, lower qualities of government, a high level of corruption, a lower level of the happy planet index, a lower level of social progress, smaller levels of ALMP expenditures, lower level of social expenditures and less effective redistribution via social transfers, high unemployment and self-employment levels or low level of tax morale, salary under-reporting and the shadow economy, in general, is more prevalent.

The literature discussed above are studies that estimate the size of the shadow economy in Greece as part of a larger sample. On the other hand, literature that focuses mainly on the Greek shadow economy can be extensive, but the following studies identify and discuss the main drivers of

informality in this country (such as Ballas and Tsoukas, 1998; Kaplanoglou and Rapanos, 2013; Vlachos et al., 2015; Manolas et al., 2013; Koufopoulou et al., 2021, etc)

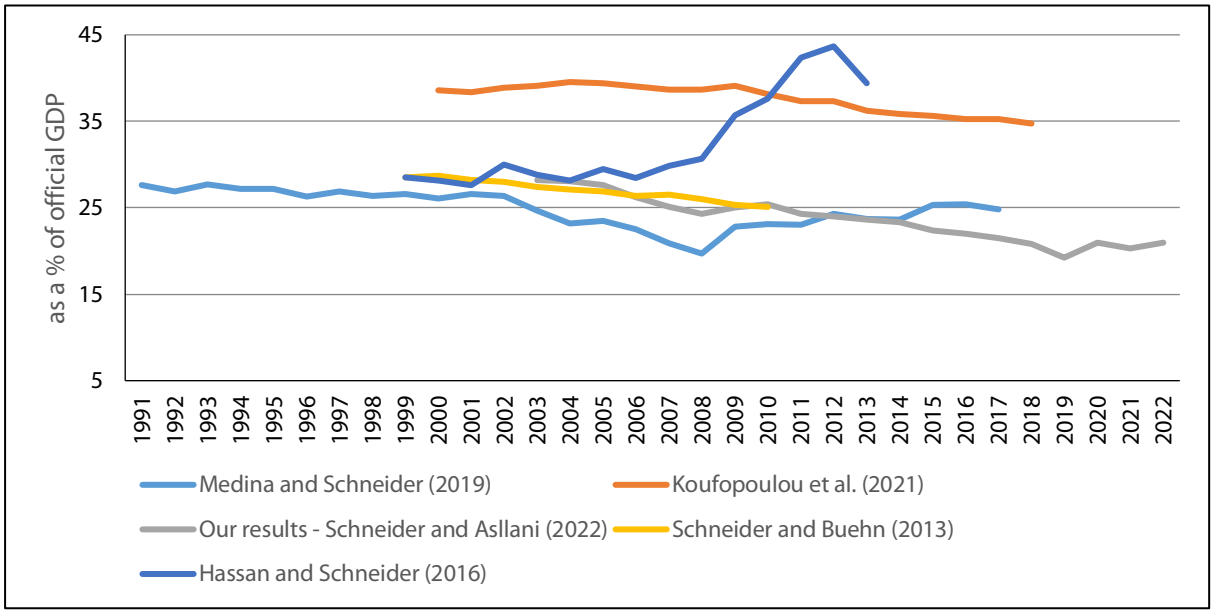
Most studies that are exclusively looking into the shadow economy in Greece, are referring to tax evasion. According to an earlier study on the factors that influence tax evasion in Greece, the long-standing mistrust between the country's population and the government is a major contributing factor to the prevalent practise (Ballas and Tsoukas, 1998; Vlachos et al., 2015). Even by today's standards, with the reforms that have taken place in conjunction with other EU countries, a low tax morale (distrust in public institutions) is still a major cause for the inability of fiscal authorities to meet projected tax receipts goals as citizens purposefully evade taxes for personal gain (Kaplanoglou and Rapanos, 2013; Alm and Torgler, 2011).

Despite being one of the developed economies, Katsios (2016) contends that Greece's economy has many characteristics of a transition economy that is more prone to higher levels of shadow activity. "High levels of regulation leading to a much greater incidence of bribery, high effective taxes on official operations, and a vast discretionary framework of regulations leading to a large shadow economy" are some examples of these indicators (Katsios, 2006).

Koufopoulou et al. (2021) estimate the size of the shadow economy in Greece using a MIMIC approach with time series data from 2000 to 2018. Although their drivers are similar to other studies, their estimates show a higher shadow economy in Greece compared to other studies. They find that the average size of the shadow economy in Greece was 37.6% for 18 years. Their estimates show a constantly high level of the shadow economy (over 38%) between 2000 and 2010, and then it only started to decline in 2011, ending up at 34.7% by 2018. The authors also forecast the shadow economy from 2018 to 2028, and although the projected trend is negative, the shadow economy continues to remain high – above 32%. They find that the key driving forces are the high tax burden, poor institutional quality and delivery of public goods and services, low tax morale and mistrust in public institutions, high levels of unemployment, and the continued use of cash as the main payment method, respectively. For each of these drivers, the authors provide brief recommendations on how government can tackle this significant size of the shadow economy. These findings on the main drivers of the shadow economy in Greece confirm an earlier study by Manolas et al. (2013)

Figure 4.4 below shows the size and development of the shadow economy of Greece as a percentage of the official GDP from 1991 to 2022 from three main studies discussed here and compares the results with our estimates provided in part 1 of this report and discussed above. As the graph shows, we can conclude that the range of the shadow economy in Greece is among the highest in the EU and hovers between 20% and just above 43% - with the highest values attributed to those periods of times where economic downturn coupled with sovereign debt crises, tax rises, austerity measures and subsequent rise in the unemployment rate took place.

Figure 4. 4: Comparing the estimates from various studies on the size and development of the shadow economy as a % of official GDP in Greece



Source: Own adaptation from sources as included in the graph

The level of shadow economy discussed above along with the primary causes or drivers of such informality, in a country like Greece that has been struggling with debt sustainability issues and where fiscal adjustment is generally acknowledged as its primary objective, makes the need to adopt policy measures towards reducing these shadow activities in the economy an imperative task.

4.4.2. Government policies to fight informality in Greece

Greece has a reputation for having a large sized shadow economy with one of the highest rates of tax evasion in Europe. For decades, successive governments in Greece have attempted to address this issue of tax evasion and shadow economy by enacting laws that specifically target tax evaders and amending other existing laws in an attempt to raise more money in dealing with significant government debt as a percentage of GDP. However, tax evasion in Greece remains very high, complex and inefficient (Katsios, 2006) due to the existence of an ineffective control mechanism and high levels of corruption (Vousinas, 2017). While Greek tax policy has evolved to become more business-friendly, it is nevertheless prone to erratic and frequent changes. Policy adjustments, therefore, cannot merely be ones that burden individuals who are already paying more or make the taxing process more difficult. To find a solution, significant institutional reform that emphasises improved effectiveness, simplification, and minimal government involvement in the tax system is necessary (Katsios, 2006).

Since the 1990s, the Greek government has tried to reform three different categories of laws and regulations to combat tax evasion in particular and the shadow economy in general. First, the government made an effort to establish enforcement organisations that would have more control over financial crimes that occur in both the legal and shadow sectors of the economy. Second, to improve cross-checking and detection capabilities, the government made an effort to modernise its database and auditing technology. Finally, the government regularly tried to modify the tax laws governing personal, corporate, and self-employed income. For instance, the Independent Public Revenue Authority has achieved organisational and functional independence from the Ministry of Finance as of January 2017. To prevent tax evasion, Greek authorities have also frequently implemented primary and secondary legislation. The result was an increase in Greece's tax-to-GDP ratio from 36.6% in 2015 to 38.8% in 2021[80] (OECD average: 33.5%). However, their efforts have been significantly affected by the global financial crisis of 2008 and the subsequent government debt crisis, which meant that they had to increase the tax burden and decrease spending thereby lowering the quality and quantity of public goods and services.

Efforts to overhaul the tax system in recent years and the level of tax burden have been a heated political debate in Greece. The top marginal tax rate on personal income is now 44% (it was 45% in 2019), the rate on business income is now 24% (it was 28% under the previous administration, which was overthrown in 2019), and the sales tax rate is now 24%. The social security contributions made by employees and employers decreased by 14 and 23% since 2019, respectively. The rate of property tax (ENFIA) also decreased by 22%. Additionally, the government has committed to making greater cuts in the coming years. It has suspended the "solidarity tax" for the private sector for a year during the pandemic. Due to rampant tax evasion and the small tax base in the nation, even if personal and business taxes are considered to be relatively still high, direct taxes in 2019 only made up 9.9% of total revenue (the EU average in 2018 and 2019 was 13.2% and 13.3%, respectively) (SGI Data, 2022[81]).

However, the effect of such policies has been constrained by the Coronavirus pandemic which reversed the moderate recovery that the Greek economy had achieved in 2019 as the economy experienced a significant downturn in 2020. Although the unemployment rate, a major driver of the shadow economy in Greece, is slowly declining, it reached 16.3% in 2020 (down from 19.3% in 2018)

[80] SGI Data, 2022, https://www.sgi-network.org/2017/Greece/Economic_Policies

[81] SDI Data: https://www.sgi-network.org/2017/Greece/Economic_Policies

and had fallen to 13.3% by September 2021 (EU average: 6.7%). The rise in part-time employment, expansion in the tourism industry and an increase in emigration are all responsible for the observed success in reducing total unemployment (among both skilled and unskilled workers). Though the total unemployment rate remains the highest in the EU, Greece has made substantial progress, given that it stood at 28% in 2013 and 25% in 2015 (SGI Data, 2022[82]). However, Greece is among the OECD countries with the highest long-term unemployment and youth unemployment rates. The youth unemployment rate is twice as high as total employment (33% in October 2021).

Self-employment is a major driver of the shadow economy of Greece. Greece is known to have the highest percentage of self-employed people in the EU28 at a rate of more than 32% (14% in the EU-28)[83]. Policies to address this should be implemented in an attempt to attract economic agents to formalise. The increase in emigration has led to a slight decrease in the level of self-employment and unemployment rate in the country, however, the emigration of young and skilled labour to other EU countries is leading to a brain drain for Greece.

In 2021, the government introduced a new labour law, which increases the flexibility of the eight-hour workday by allowing employees to work up to 10 hours on one day and fewer on another or take time off, and gives workers the right to disconnect outside of the office hours. Further, it introduced a "digital work card" to monitor employees working hours in real-time as well as increase legal overtime to 150 hours a year.

The government has also undertaken several preventive and detective measures. They introduced the "ERGANI" Information System (Article 55 of Law 6 4310/2014) intending to record (in real time) all employment flows in the private sector of the economy. This will also aim to record any illegal migrant workers who usually constitute the largest group of people working in the shadow economy. A further detective measure in Greece, as indicated in Greece's recovery and resilience plan[84], is their commitment to modernise and digitalise public administration including improving the tax administration and justice systems, promoting the innovation capacity, digital uptake and resilience of key economic sectors, and upgrade health care, education, and active labour market policies.

To monitor economic activity and payments, Greece has set a limit above which cash payments are prohibited or must be reported to authorities. However, because cash payments typically occur in lesser-value transactions, the threshold is frequently set at a level that has little bearing on lowering them. The appropriate amount would vary between nations and depend on a range of elements, including the use of payment cards, financial inclusion, and the state of the payment infrastructure.

Another important development in helping reduce the shadow economy in Greece is the Manpower Employment Organization (OAED). OAED is responsible for information on the labour force and the unemployed, for the professional orientation of the labour force, the delivery of technical education and training, facilitating the link between labour demand and supply, and the payment of benefits such as unemployment benefits, maternity benefits etc.

Finally, in addition to the above, to create an environment for the growth of the official economy, the Greek government should enhance the quality of its institutions and public services while boosting the rule of law and reducing corruption. The benefit of the functioning of the legal systemhould be promoted by education and awareness-raising programmes, in which public

82 SDI Data: https://www.sgi-network.org/2017/Greece/Economic_Policies.

83 Eurobarometer Data: https://www.gesis.org/en/eurobarometer-data-service/home.

84 European Commission – Greece's recovery and resilient plan: https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility/greeces-recovery-and-resilience-plan_en.

authorities should devise taxation procedures, thereby leading to improvements in tax morale. The government should also develop a plan to combat unemployment, boost the number of official agriculture jobs to spur regional growth, and streamline labour and tax rules for the self-employed to combat tax evasion. Additionally, it is necessary to discourage the use of cash and encourage the use of debit and credit cards. In addition, a new digital system with no suspense should be developed to catch offenders before they enter the shadow economy in combination with tougher Penal Code sanctions.

Finally, in table 4.4.2, a summary of all policy measures, which directly or indirectly reduce the shadow economy, is provided.

Table 4.4. 2: Policy measures in Greece, which can affect directly or indirectly the size of the shadow economy

Causes	Type of Measure	Policies/Current situation
Tax Policy And reforms	• Monitoring • Detection • Preventive • Tax burden reduction • Digital payments	**Tax collection improvements** • Since January 2017, the Independent Public Revenue Authority has become organizationally and functionally independent vis-à-vis the Ministry of Finance. • In addition, Greek authorities have repeatedly passed primary and secondary legislation to combat tax evasion. • Consequently, the tax-to-GDP ratio in Greece increased from 36.6% in 2015 to 38.8% in 2021 (OECD average: 33.5%)[85]. **Tax burden reduction** • The top marginal tax rate on personal income is now 44% (it was 45% in 2019), the rate on business income is now 24% (it was 28% under the previous administration, which was overthrown in 2019), and the sales tax rate is also now 24%. • Reduction of the property tax (ENFIA) rate by 22% in 2019. • During the pandemic, it abolished the "solidarity tax" for the private sector for one year (2020) **Social Security Contributions** • The new government has reduced employees' and employers' social security contributions by 14% and 23%, respectively. The government has pledged further reductions for the following years. **Digital Transformation of the Tax and Customs Administration**[86] • The project's objective is to achieve the digital transformation of revenue administration and services, which is expected to strengthen the capacity of the independent revenue authority and enhance its overall performance. It consists of the upgrade and interoperability of relevant systems, as well as further digitalisation and automation of processes. The project aims to enhance

[85] Link: https://www.sgi-network.org/2017/Greece/Economic_Policies.

[86] Link: https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility/greeces-recovery-and-resilience-plan_en#economic-and-social-resilience.

Causes	Type of Measure	Policies/Current situation
		the quality of services provided to individuals and enterprises, and ultimately make taxes more growth-friendly, thus improving tax administration and tax collection.
State of the economy	• Fiscal and economic policies • Incentives	**Fiscal sustainability** • Greece made progress in the area of fiscal sustainability before the onset of the pandemic, reporting budget surpluses every year between 2016 and 2019. However, in 2020 and 2021, the government was obliged to effect budget deficits to counter the negative economic and social impact of the pandemic. **Unemployment rate** • The rate of unemployment is slowly declining in Greece, it reached 16.3% in 2020 (down from 19.3% in 2018) and had fallen to 13.3% by September 2021 (EU average: 6.7%). • Greece is among the OECD countries with the highest long-term unemployment and youth unemployment rates. The youth unemployment rate is twice as high as total employment (33% in October 2021). **Official GDP** • The impact of the coronavirus pandemic reversed the moderate recovery that the Greek economy had achieved in 2019 and the economy experienced a significant downturn in 2020.
Labour Market	• Incentives • Monitoring	**Self-Employment**[87] • Greece also has the highest percentage of self-employed people in the EU28 at a rate of more than 32% (14% in the EU-28). • According to the 2013 Eurobarometer survey, of all undeclared work in Greece, 67.3% was waged employment (with 13.3% wholly undeclared waged employment and 54% under-declared employment), 10.2% was undeclared self-employment and 22.5% was paid favours for close social relations.

[87] Link: https://www.sepe.gov.gr/en/labour-relations/undeclared-work/features-and-policy-measures/.

Causes	Type of Measure	Policies/Current situation
		Women Empowerment[88] • Increasing childcare: supporting the creation of more than 53,000 new early childcare places to facilitate the participation of women in the labour market. **Supporting employment and social inclusion**[89] • Redesigning and strengthening active labour market policies to increase full-time employment, including for long-term unemployed and disadvantaged people, including refugees and Roma. **New Labour Law**[90] • In 2021, the government introduced a new labour law, which increases the flexibility of the eight-hour workday by allowing employees to work up to 10 hours on one day and fewer on another or take time off, and gives workers the right to disconnect outside of the office hours (e.g., refuse any work on off-days or to check emails). • Further, it introduced a "digital work card" to monitor employees working hours in real-time as well as increase legal overtime to 150 hours a year. **Tackling unemployment** • The rate of unemployment is slowly declining in Greece, it reached 16.3% in 2020 (down from 19.3% in 2018) and had fallen to 13.3% by September 2021 (EU average: 6.7%). • However, a large contribution to this reduction is the level of emigration of young and skilled labour to other EU countries, leading to a brain drain for Greece.

[88] Ibid.
[89] Ibid.
[90] Link: https://www.sgi-network.org/2017/Greece/Economic_Policies

Causes	Type of Measure	Policies/Current situation
		ERGANI System[91] • Law 4225/2014 is aimed at improving the situation concerning the prevention of undeclared and uninsured employment. It provides: a) a significant increase in fines in case of work declared only to the Ministry of Labour but not to the competent social security organization, b) the responsibility of social security authorities to check within 30 days whether the stated social security contributions were paid by the companies, and c) the immediate registration of any change in employees' work hours through "ERGANI" Information System (Article 55 of Law 6 4310/2014). **Manpower Employment Organization (OAED)**[92] • This is the public body responsible for the implementation of employment policy and services. In particular, OAED is responsible for information on the labour force and the unemployed, for the professional orientation of the labour force, the delivery of technical education and training, facilitating the link between labour demand and supply, and the payment of benefits such as unemployment benefits, maternity benefits etc.

Source: Collection of policies from various sources. See footnotes. 85 to 90

[91] Link: https://ec.europa.eu/social/ajax/BlobServlet?docId=18164&langId=en.

[92] Link: https://ec.europa.eu/social/ajax/BlobServlet?docId=18164&langId=en.

4.5. Case study 5: Italy

4.5.1. Determinants of the shadow economy

Italy's shadow economy is amongst the highest in the 'old' EU countries. Most existing studies provide estimates of the Italian shadow economy and indicate that it reaches average levels of around (and in some cases above) 20% of official GDP at any point it time (depending on the method used to estimate it). Europe's economic crisis, caused by the global financial crisis of 2008, reduced formal economic activity and regular employment in Italy, while at the same time increasing the shadow economy. The shadow economy is a serious challenge for Italy even today, as it limits the government's ability to reduce its deficit and improve its budgetary situation. However, at the same time, shadow activities are helping many mitigate the effects of recessions and the rising cost of living and therefore are staving off the potential widespread social unrest that was seen in other Eurozone peripheral countries like Greece during 2009-2015.

Schneider (2022) provides the most recent estimates for most EU and OECD countries. For Italy, Schneider (2022) estimates that the size of the shadow economy stood at 26.1% of the official GDP in 2003, and followed a declining trend year on year, declining to about 18.66% in 2019. For 2020, the same study shows that the shadow economy increased to 20.4%, slightly falling to 20.15% in 2021. The study also forecasts that the shadow economy will increase to 20.3% by the end of 2022. The main reason for the increase is the worldwide Coronavirus pandemic and the resulting severe recession, which affected most countries. The main drivers leading to this level of informality in Italy, according to this study, are the unemployment rate, the share of direct and indirect taxation burden, tax morale, the share of the social security burden, regulatory burden, and quality of government institutions. A high degree of tax and regulatory burden, followed by low tax morale, lower GDP per capita, high unemployment rate, and a high share of social security contributions, act as incentives for people to enter the shadow economy so that they can escape these regulatory and tax burdens. Such findings are also in line with most other literature, in which Italy's shadow economy is also estimated (see for example Dell'Anno and Schneider, 2003; Buehn and Schneider, 2012; Schneider and Williams, 2013; Hassan and Schneider, 2016; Medina and Schneider 2018, 2019; etc).

The study by Hassan and Schneider (2016) estimates that the shadow economy in Italy was on average at 28.56% of the official GDP between 1999 and 2013. When the authors include self-employment in their estimates, the size of the show economy is revised upwards slightly. The main driving causes of this degree of the shadow economy in the country are attributed to the tax burden, regulatory burden, unemployment rate and self-employment rate. The self-employment rate is one of the most important drivers of informality.

Further support for the theory of why shadow economies arise, is given by Almenar et al. (2020). In this study, the analysis is based on a panel of peripheral EMU countries (Portugal, Italy, Greece and Spain) over the period 1965-2015. Their estimates, contrary to other recent studies (where Italy is used as part of the larger sample) indicate that the shadow economy in these four countries grew steadily relative to measured GDP between 1965 and 2015. These time series estimates also capture differences between these four countries. Portugal and Spain evolved similarly, whereas Italy, and especially Greece, had higher values and a steeper upward trend. The main driving forces of informality in these countries were identified to be the tax and social security payment burden, particularly the self-employment rate, closely followed by the status of the official economy. Unemployment was also a key cause of shadow economic activity.

Similar driving causes of the large shadow economy in countries like Italy have also been empirically confirmed by Davidescu and Schneider (2022), who measure the driving forces of the shadow economy in 28 EU countries (including the UK) in 2016. Their empirical results revealed that the main determinants of EU member states' shadow economy are tax revenues, unemployment rate, low active labour market expenditures, social expenditures and the quality of institutions. Their empirical results highlighted Greece, Cyprus, Bulgaria, Italy, Spain and Romania as the countries with the highest size of the shadow economy, while on the opposite side there are the United Kingdom, Luxembourg and Austria.

Numerous studies demonstrate the significance of the shadow economy in shaping the patterns of migrant flows to nations in Europe, particularly southern Europe, like Italy. Migration and remittances play a dual function concerning the shadow economy, according to Kelmanson et al. (2019). Similar to informal labourers, migrants also frequently live in rural regions, have less education, and have more labour-intensive (i.e., less productive) jobs than their counterparts in the formal economy. Similar to migration, the shadow economy also reduces poverty by giving the poor a safety net. The two phenomena might thus be seen as substitute actions and are hence adversely connected. The Italian shadow economy employs a large number of workers who were born outside of Italy (Talani, 2018). However, Talani (2018) contends that immigrants in no way are to blame for the country's large informal sector. The study argues that the reverse is true. Despite the challenges of obtaining formal immigration status, there is a substantial incentive for migrants to enter southern European countries, particularly Italy because the shadow economy offers a variety of employment options for them.

Medina and Schneider (2019) estimate the size of the shadow economy of Italy and 156 other countries over a period from 1991 to 2017. They show that Italy's shadow economy was on average 21.8% over the same period, with a standard deviation of just 2.2. Their annual results from 1991 to 2015 show an almost year-on-year negative trend in the size of the shadow economy. Exceptions can be made in 2009 and 2010 when the Italian official economy was hit hard by the global financial crisis of 2008. After 2010, the shadow economy as a percentage of the official GDP remained at just under or just over 20% until 2017. The main driving forces for such a high degree of the shadow economy in Italy and elsewhere have been identified to be the theoretically accepted causes of informality such as tax burden or government distortionary policies, labour market rigidities, lack of institutional quality, and product and financial market rigidities. Their empirical analysis yielded statistically significant results from the variables applied in the MIMIC model such as trade openness, GDP per capita, unemployment, size of government, fiscal freedom, rule of law, control of corruption and government stability – which all have the theoretically expected signs.

Finally, our estimates (presented in part 1 of this study) agree with most of the literature review discussed above. The results reveal that the average size of the shadow economy in Italy is among the highest within the EU. The results of this study show that the shadow economy of Italy as a percentage of the official GDP followed a declining trend year on year from 2003 and 2019, which is similar to most other EU countries. Our results show a slight increase in 2009, however, but then immediately the trend started to decline until 2019. The shadow economy of Italy as a percentage of the official GDP was just over 25% in 2003, and this fell to 18.7% by 2019. Italy was one of the first European countries to be severely impacted by the Coronavirus pandemic in 2020. The economic downturn in the country was significant, with a loss of productivity because of lockdowns. Our estimate for 2020 shows an increase in the size of the shadow economy in the country from 18.66% in 2019 to 20.42% of GDP in 2020. This is an increase of around 9.4% and can be considered the highest increase year on year since 2003.

In a separate analysis based on the work of Schneider and Buehn (2013), presented in table 4.5.1 below (table 3.1 from part 1 of this study) we analysed the driving forces of the development and size of the shadow economy in 39 OECD countries and found that for Italy, the number of self-employed, indirect taxes, unemployment rate and personal income tax are among the main driving causes of the shadow economy, respectively. Contrary to Germany, Austria and Denmark, the level of self-employment in Italy is the key driver contributing to the existence of the shadow economy by over 30%.

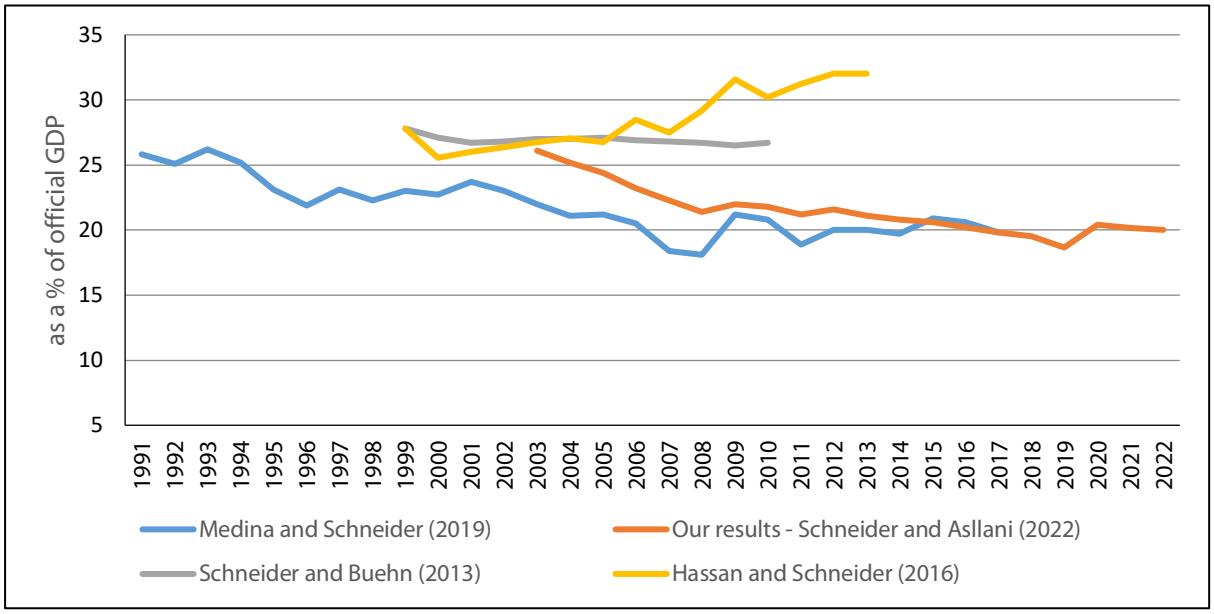
Table 4.5. 1: Average relative impact (in %) of the shadow economy determinants in Italy (1999:2017)

Country	The average size of the shadow economy	Personal income tax	Indirect taxes	Tax morale	Unemployment	Self-employment	GDP growth	Business freedom
Austria	8.8	18.5	27.4	11.6	12.1	20.5	0.8	9.1
Denmark	16.3	34.6	33.5	4.0	9.5	9.9	0.3	8.2
Germany	15.7	16.6	24.2	8.3	24.3	16.9	0.6	9.1
Greece	27.0	5.8	21.8	10.4	18.0	37.6	0.7	5.7
Italy	**26.9**	**15.6**	**18.9**	**9.0**	**18.6**	**31.0**	**0.1**	**6.8**
Romania	33.2	4.2	24.5	14.2	13.1	37.7	1.1	5.2

Source: Our results from part 1 of this study. Note: The average size of the shadow economy is expressed as a ratio of GDP (in %).

Figure 4.5 below shows the size and development of the shadow economy of Italy as a percentage of the official GDP from 1991 to 2022 from three main studies discussed here and compares the results with our estimates provided in part 1 of this report and discussed above. As the graph shows, we can conclude that the range of the shadow economy in Italy is also among the highest in the 'old' EU and fluctuates between 18% and just above 32% - with the highest values attributed to those periods of times where economic downturn coupled with sovereign debt crises, tax rises, austerity measures and subsequent rise in the unemployment rate took place.

Figure 4. 5: Comparing the estimates from various studies on the size and development of the shadow economy as a % of official GDP in Italy



Source: Own adaptation from sources as included in the graph

In summary, we can conclude that the shadow economy of Italy is quite high when compared with most other EU and OECD countries and that the main drivers of such informality are the level of self-employment, the high rate of unemployment in many parts of the country, the level of tax and regulatory burden, tax moral indicating the mistrust in institutions, and to some degree the level of immigration in the country.

4.5.2. Determinants of the shadow economy

Various policy measures have been taken by Italy over the past few years to reduce the level of tax evasion and the shadow economy in general. Such measures were mainly to monitor, detect and prevent households and businesses to enter the shadow economy activities. Also, measures to incentivise economic agents to exit the shadow economy and enter the formal sector have been implemented through various tax and regulatory reforms.

The necessity to maintain the combined weight of high public spending and interest on the enormous public debt accumulated over previous decades has continued to put a strain on the Italian tax system. In addition, the tax system is characterised by its inability to considerably lower the extent of the shadow economy or the extremely high levels of tax evasion. Due to this, the level of fiscal pressure has been consistently high over time, and the level of the tax burden can be considered unfair in Italy. Financial pressure is quite high on people and firms that pay taxes on time, but it is very minimal for anyone who can and does evade taxes (e.g., many businesses and large numbers of independent contractors and self-employed professionals).

Furthermore, the tax policy in Italy did not favour families with children. There are also high taxes on business and labour, which reduces the number of new companies and new job opportunities. The restricted incentives and lack of a strong motivation to report revenues and earnings can be considered a direct result of Italian tax legislation.

However, Italy has attempted in recent years to reduce the tax burden on households and businesses. The Ministry of Economy and Finance announced several measures taken by the Italian government to alleviate the hardship that households and businesses were facing during the pandemic.

These measures, predominantly fiscal, were targeted during 2020-2022 to reduce to postpone or provide certain tax reliefs, social security reliefs, help for families, etc. To stimulate business growth and employment in disadvantaged areas following the coronavirus pandemic, with a particular focus on southern Italy in 2020, The August Decree (2020) introduced a 30% relief on the pension contributions that companies must pay for all employees, for the period between October and December 2020.

Since 2020, the government has also introduced more generous child allowance from 2022 to replace tax deductions and improve fairness. In addition, in 2020, the government introduced a 30% relief on the pension contributions that companies must pay for all employees, for the period between October and December 2020. Although these measures can alleviate some of the hardship for most households and businesses affected by the coronavirus pandemic, they are unlikely to have a very lasting impact on the level of the shadow economy and tax evasion in the country.

Key measures to reinforce Italy's economic and social resilience[93] are in the areas of increasing the supply of childcare facilities, reforming the teaching profession, improving active labour market policies as well as women's and youth participation in the labour market and reinforcing vocational training, investing in the apprenticeship system and various other measures from making public administration and the legal system more effective and efficient to removing barriers to competition for businesses.

The government has also implemented several monitoring and compliance policies in detecting illicit behaviour and tax evasion. Such policies are the Pre-filled tax returns and early communications which are being expanded to raise compliance. The government has also been pushing for measures that encourage digital payments rather than cash payments, in an attempt to reduce the size of the shadow economy. The recent budget introduced sanctions for retailers and service providers that do not accept credit cards. These measures are announced under Cashless Plan in late 2020 to incentivise the move away from cash to digital payments. Many countries, for example, Bulgaria, Greece and Italy, have put in place a threshold above which cash payments are not allowed or must be flagged to authorities. However, the threshold is often set at a relatively high level, which has a limited impact on reducing cash payments as they normally occur in lower-value transactions. The correct level would be different between countries and depend on several factors, such as payment card usage, financial inclusion and payment infrastructure development.

The digitalisation of other services such as the compulsory digital invoicing extended and advanced taxpayer profiling to raise compliance introduced in 2019. The most recent recovery and resilient plan[94] of Italy have dedicated significant investment in supporting the digital transition with investments notably for digitalising public administration.

There is also a move to monitor business transactions and revenues. As of 1 January, 2017 VAT traders must transmit all input/output invoice data to the Revenue Agency. This data can also be acquired directly by the Revenue Agency where private parties use the "Exchange System" for exchanging invoices.

Despite these policies implemented over the years, governments all around the world, including Italy, are struggling greatly with the cost of living. High inflation harms many households' purchasing power and tends to skew governmental finances. Without indexing tax systems, increasing inflation distorts the tax bracket and may result in higher tax liabilities for taxpayers,

[93] See https://ec.europa.eu/info/system/files/italy-recovery-resilience-factsheet_en.pdf.

[94] See https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility/italys-recovery-and-resilience-plan_en#digital-transition.

which increases the incentives for increased tax evasion and, consequently, the shadow economy. Just like other governments in the EU, Italy has announced various economic packages to help the most disadvantaged in society alleviate the problems caused by rising inflation. These are likely to deter people to enter shadow economy activities in the interim, but cannot be regarded as long-term strategies. Instead, various policy measures should be implemented as has been addressed in section 5 of part 2.

Finally, in table 4.5.2, a summary of all policy measures, which directly or indirectly reduce the shadow economy, is provided.

Table 4.5. 2: Policy measures in Italy, which affect can directly or indirectly the size of the shadow economy

Causes	Type of Measure	Policies/Current situation
Tax burden and fiscal policies	• Reducing tax burden • Monitoring • Detecting • Preventative	**Tax system: Improve the efficiency and equity of the tax structure**[95] • Compulsory digital invoicing extended and advanced taxpayer profiling to raise compliance was introduced in 2019. • A tax rebate lowering labour tax wedge raised from 80 to EUR 100 in 2020. • Re-introduction of allowance for corporate equity in the 2020 Budget, to improve fairness in corporate structures proposed in the adjusted budget. • Introduction of more generous child allowance from 2022 to replace tax deductions, to improve fairness. • Pre-filled tax returns and early communications are being expanded to raise compliance. • Introduction of the Cashless Plan in late 2020 to incentivise the move away from cash to digital payments. **Pension contributions**[96] • The August Decree introduced a 30% relief on the pension contributions that companies must pay for all employees, for the period between October and December 2020 **Digitalisation of services** • In Italy, as of 1 January, 2017 VAT traders must transmit all input/output invoice data to the Revenue Agency. This data can also be acquired directly by the Revenue Agency where private parties use the "Exchange System" for exchanging invoices.

[95] Link: https://www.oecd.org/economy/growth/Italy-country-note-going-for-growth-2021.pdf.

[96] Link: https://www.mef.gov.it/en/covid-19/The-measures-introduced-by-the-Italian-government-to-support-work/.

Regulatory burden	• Reducing red tape • Lowering bureaucracies • Incentives to exit the shadow economy	**Governance and rule of law: Improve the efficiency and effectiveness of the public administration**[97] • The simplification decree requires public services to be available on smartphones by 28 February 2021. The system, based on a unique digital identity for citizens, allows self-certifications, applications and payments, as well as digital notifications from multiple state agencies. • The simplification decree reformed the penalties for abuse of office to ensure fear of prosecution even without wrongdoing does not hamper decision-making. • Law no. 3 of 2019 introduced additional measures to strengthen the fight against corruption
Labour Market	• Detective • Preventative • Incentives	**Labour market: Ready the workforce with improved education, public employment and labour market activation services**[98] • Tax incentives introduced in 2019 to encourage new hiring of youth and women, were bolstered with additional measures in the 2021 Budget law. • The 2019 Citizen's income has legislated a link to the outcomes of job search functionality. • The post-secondary vocational education and training system (ITS) was expanded in 2019. **On 10 May 2017, the Parliament approved Act No. 81/2017**[99] • The act targets self-employed workers who fall within two groups – 'professionals' and 'those performing activities coordinated by the client. • The first group comprises workers with a VAT number who perform intellectual tasks. As a rule, registration for a VAT number is compulsory for all those who carry out autonomous work (work performed outside the direction of an employer) regularly.

[97] Link: https://www.oecd.org/economy/growth/Italy-country-note-going-for-growth-2021.pdf.

[98] Link: https://www.oecd.org/economy/growth/Italy-country-note-going-for-growth-2021.pdf.

[99] Link: https://www.eurofound.europa.eu/publications/article/2017/italy-new-rules-to-protect-self-employed-workers-and-regulate-ict-based-mobile-work.

		• The second group comprises self-employed people who have an employment contract entailing coordination by their client for 'continuous activity', although workers are autonomous in their work organisation. • Act No. 81/2017 introduces the concept of 'smart working' (Lavoro agile) as a working modality bound to targets or steps rather than to pre-set working time and space, one that is intended to boost competitiveness and promote work-life reconciliation. • Self-employed, total (% of total employment) (modelled ILO estimate) in Italy was reported at 22.91 % in 2020, according to the World Bank collection of development indicators. **Active Labour Market Policies** • The National Agency for Active Labour Market Policies has a key role in encouraging cooperation between the stakeholders, leading the development of new tools and methodologies and thus supporting the local employment offices to implement the new service model.
Provision of qualitative public goods and services		**Improve implementation, management and prioritisation of quality public investment**[100] • Public investment increased in 2019 and 2020 • The so-called simplification decree introduced interventions and simplified processes for certain types of investment in 2020. • The simplification decree eased public procurement procedures, including raising thresholds for competitive bids.

Source: Collection of policies from various sources. See footnotes.

[100] Ibid.

4.6. Case study 6: Romania

4.6.1. Determinants of the shadow economy

Following the fall of the Berlin Wall, countries in Central and Eastern Europe saw a complete political and economic transformation. During this period, a huge political and economic transformation took place in Romania too. Countries in transition are known to have the largest size of shadow economy as a percentage of GDP.

Romania's shadow economy has received a lot of attention from scholars over the past two decades. Several studies have attempted to estimate the size of the Romanian shadow economy using various methods over different periods. In most studies, Romania has been used in a larger sample to estimate the size of the shadow economy, although there are studies with an exclusive focus on the size and determinants of the shadow economy in the country. From the studies that use a large sample of countries in their estimation and analysis, Schneider, Buehn and Montenegro (2010), Schneider and Buehn (2012), Hassan and Schneider (2016), Medina and Schneider (2018, 2019) etc, have also looked into Romania.

Schneider and Buehn (2012) provide estimates of the shadow economy of 38 OECD countries from 1999 to 2010. From this larger sample, they estimate that the average size of the shadow economy in Romania is around 32.2%. The main drivers of the shadow economy in Romania are the labour market characteristics such as the high degree of self-employment, followed by the level of indirect taxation rates in the country, the tax morale and the level of unemployment in the country, respectively (Schneider and Buehn, 2012). The business freedom index in this study is used as a proxy for the intensity of regulations, and for Romania, this only contributes by around 5% in explaining the existence of a higher level of the shadow economy concerning our other 5 EU member states.

A recent estimate of the size of the shadow economy in the country was conducted by Medina and Schneider (2019). Using panel data from 157 countries from 1991 to 2017, they find that the shadow economy of Romania is around 28.9% of the official GDP, with a standard deviation of just 3.7. The main determinants discussed in this paper for all countries and Romania are in line with the other studies discussed above. They conclude that a decline in the shadow economy will only increase the total welfare in every country if the policymaker succeeds in transferring a shadow economic activity into the official economy (Medina and Schneider, 2019; 2018; Schneider and Williams, 2013). Therefore, a policymaker has to favour and choose such policy measures that strongly increase the incentives to transfer production from the shadow to the official sector.

Bayar et al. (2018) used panel co-integration and causality tests that took into account heterogeneity and cross-sectional dependence to examine the impact of corruption and the rule of law on the shadow economy in 11 transition economies in Central and Eastern Europe from 2003 to 2015. The co-integration coefficients showed a positive interaction between corruption and the extent of the shadow economy. Additionally, all of the cross-section units showed a bilateral causative relationship between the shadow economy and corruption control, according to the causality analysis. However, only in Bulgaria, the Czech Republic, Poland, and Romania did rule of law and the shadow economy exhibit a two-way causal relationship. Their findings support prior literature on the relationship between the shadow economy and corruption. The relationship may be replaced if the presence of a shadow economy reduces the propensity of public personnel to solicit bribes (Dreher & Schneider, 2010). However, the relationship can also take a complimentary form when taxpayers pay officials a bribe in exchange for understating their tax obligations and corruption is

seen as a form of regulation and taxes (Johnson et al., 1998; Hindriks et al., 1999). Therefore, in theory, it is envisaged that corruption and the shadow economy will interact bilaterally.

Another recent re-estimation of the size of the shadow economy worldwide, which confirms previous findings of Schneider, Buehn and Montenegro (2010) was provided by Hassan and Schneider (2016), who estimated the shadow economies of 157 countries between 1999 and 2013 using the MIMIC model. This reveals that the average size of the shadow economy (as a percentage of official GDP) of the 157 countries averaged from 1999 to 2013 is 33.77%. For the 28 European countries, the average size of the shadow economy was 23.1% with Romania exhibiting one of the highest shadow economies amongst EU member states for 2013. The study showed that in 2013 Romania registered 30.7% of the shadow economy.

Another potential key driver of the shadow economy for Romania, but also for the majority of EU transition economies, is argued by many[101] to be the developments in information and communication technologies (ICTs). Since settlements in shadow markets are frequently made in cash, it can be assumed that the proliferation of modern ICT-based payment systems restricts access to cash as the most desirable method of payment (see for example; USAID, 2013; AT Kearney and Schneider, 2013). On the other hand, informal activities can be promoted by demand generation, which reduces cash turnover and increases access to cash. For instance, informal providers can reach a huge audience of potential customers by using ICT networks, and consumers can share information on where, from whom, and how much specific products might be purchased.

A study by Remeikiene et al. (2021) explores the short and long-run influence of ICTs on the shadow economy in 11 post-transition EU members over the 1996-2015 period through second-generation panel co-integration and causality tests regarding the cross-sectional dependence. The economic analyses disclosed that ICT indicators and human development had significant effects on the size of the shadow economy in both the short and long run. It was found that growing ICTs lead to a reduction in the size of the shadow economy; in addition, human capital improvement policies serve as an important factor when tackling the shadow economy.

The most recent study on estimating the shadow economies worldwide, including Romania, in the wake of the Coronavirus pandemic, is the study by Schneider (2022). In this study, we see that the shadow economy in Romania declined significantly year on year between 2003 and 2022. The shadow economy of Romania in 2003 was around 33.6%, then in almost all subsequent years, its size declined year on year reaching the level of 26.9% by 2019. Then in 2020, the shadow economy increased to 29.33%, and the subsequent slight decline in 2021. For 2022 the author forecasted that the size of the shadow economy in Romania will remain just above 29% of the official GDP. The main drivers behind this increase since 2020 are discussed to be the macroeconomic indicators such as the level of unemployment and GDP per capita. It is forecasted that the huge public spending on infrastructure, subsidies to enterprises and special transfers to individuals which led to sizeable GDP growth combined with a decline in unemployment will help in reducing the size of the shadow economy in most of the European and OECD countries in the coming years.

Literature that focuses mainly on the Romanian shadow economy can be extensive, but the following studies identify and discuss the main drivers of informality in this country. Alexandru (2013) calculated the extent of the shadow economy in Romania using the cash-based technique

[101] The bidirectional effects of ICT on the shadow economy are supported by literature such as Bhattacharaya, 2019; Chacaltana et al., 2018; Chandra, 2017; Garcia-Murillo & Velez-Ospina, 2014, 2017; Ilavarasan, 2019; Masiero, 2017; Rangaswamy, 2019 (cited in Remeikiene et al., 2021) and more recently by Remeikiene et al., 2021.

and then examined how the unemployment rate affected it using the Granger and ECM causality tests. Their empirical findings showed a long-term positive association and a short-term negative relationship between the unemployment rate and the extent of the underground sector. Stancu et al. (2020) analyse the tax evasion phenomenon as a main component of the underground economy in Romania. Their findings showed that the share of tax evasion identified in the official GDP is very small, compared to unidentified tax evasion.

Popescu et al. (2018) estimate the size and development of the shadow economy in Romania and discuss the implications for the UN's sustainable development goals. Their findings on the size of the shadow economy as a percentage of the official GDP in the country show a declining trend from 2000 (around 34%) to 2016 (just under 28%). They also show that the shadow economy did increase quite significantly in 2009 and 2010, and then increased again in 2017 to reach the level of 28.6%. Their results are relatively in line with other studies such as that of Medina and Schneider (2018) and Schneider (2016). They conclude that the key driving forces in Romania's shadow economy are the self-employment rate, the unemployment rate, the part-time employment rate, and government effectiveness, respectively. They also highlight that from the perspective of Romanian entrepreneurs, the lack of trust in public officials, the poor quality of business legislation, the government's tax policy, and government support for entrepreneurs, accompanied by relatively high social contributions, corruption, political instability, high tax rates, and uncertainty about regulation policies, have all helped to increase shadow economic activity in the country. The main reasons for the increase in the level of the shadow economy in Romania in 2009 and 2010 this study blames the start of economic crises in the country. In 2017 the authors argue that changes made to the Labour Code and Fiscal Code as well as political instability led to a mistrust of citizens in government institutions and hence an increase in the shadow economy.

Davidescu and Schneider (2017) using a MIMIC model estimate the size of the shadow economy in Romania using quarterly data for the period 2000-2015. Their aim here was to analyse the impact of the proposed increase in the minimum wage in Romania in early May 2016. Their results estimated that the Romanian shadow economy followed a decreasing trend until 2008 to a value of approximately 27.8% of the official GDP from over 33% in 2000. During the economic crisis, a slow increase in the shadow economy occurred, whereas, towards the end of 2014 and 2015, a slow decrease was estimated. Their analysis showed that the level of unemployment, self-employment, indirect taxation and a lack of trust in the government are considered the main causes of the shadow economy in Romania. For a country which has a relatively high degree of unemployment, increases in the minimum wage can lead to a further increase in structural unemployment, as such an increase in the minimum wage can be considered a long-term supporting factor for the shadow economy because it increases informal economic activities, as firms will seek alternative methods of circumventing authorities. However, their empirical results did not support any effects of an increase in the minimum wage in the short run, as this usually has a lagged effect.

Packard, Koettl, Montenegro (2012) and Hazans (2011) noted that the manner in which the minimum wage affects informal work is very different among EU countries. For new member states and southern economies, the effect is positive and leads to an increase in the proportion of workers without contracts. For the older EU countries, the effect is negative, and an increase in the minimum wage leads to a decrease in employment without a contract, with the minimum wage having the role of an "efficiency wage", which entices employees back to formal jobs.

Putnin et al. (2018) estimates indicate that the size of the shadow economy in Romania was 33.3% of GDP in 2016 – this is a decrease compared to 2015 by 2.3%. According to the authors, this contraction was mainly driven by a small decrease in underreporting of business income, which is

the largest component of the shadow economy in Romania. The study also discusses in detail other main determinants of informality in the country and concluded that the level of unemployment, self-employment rate, tax morale, effective enforcement and preventive policies (low probability of getting caught) as well as the quality of institutions are among the most important drivers.

Correlations between the shadow economy and main macroeconomic indicators are broadly consistent with expectations. The most important driver of the shadow economy from the main macroeconomic indicators tends to be the level of unemployment in the country. GDP growth, although statistically significant (at different levels, depending on the methodology applied) is not the main driver of the shadow economy in most countries as a result of growing income inequality. The reason for this has been given by Yap et al. (2018), who used unbalanced panel data of 154 countries from 2000 to 2007, they concluded that income inequality and shadow economy show an inverted-U relationship, similar to the original Kuznets hypothesis. For Romania, GDP growth only helps to explain just over 1% of the shadow economy (Schneider and Buehn, 2012).

Our recent estimates show that Romania's shadow economy declined between 2003 and 2019. The shadow economy as a percentage of Romania's official GDP decreased from 33.6% in 2003 to just under 27% in 2019. This is a significant decrease, although there were some fluctuations along the way, notably in 2009 and 2010, these changes were very small. This decline in the trend of Romania's shadow economy could be attributed to various tax and labour market policies over the years and the migration of many citizens to other EU member states. However, our study reveals that the size of the shadow economy in Romania has increased markedly in 2020 from 26.9% in 2019 to 29.33% in 2020. This is just over a 9% increase. It fell slightly in 2021, but our estimates forecast a slight increase for 2022. Supported by the recent study by Schneider (2022).

The main driving forces identified by our study and estimated based on the methodology used by Schneider and Buehn (2013) show that the Romanian shadow economy is mainly driven by the level of self-employment in the country, indirect taxes, tax morale and unemployment rate. Other drivers like the regulatory burden, personal income tax and GDP growth are also statistically significant in our model but help less in explaining the existence of the shadow economy in the country. Unlike in most other EU countries, the high degree of self-employment in Romania is a major cause of the shadow economy. From table 4.6.1 (table 3.1 from part 1) we can see that the relative average impact of self-employment is 37.7% of the shadow economy.

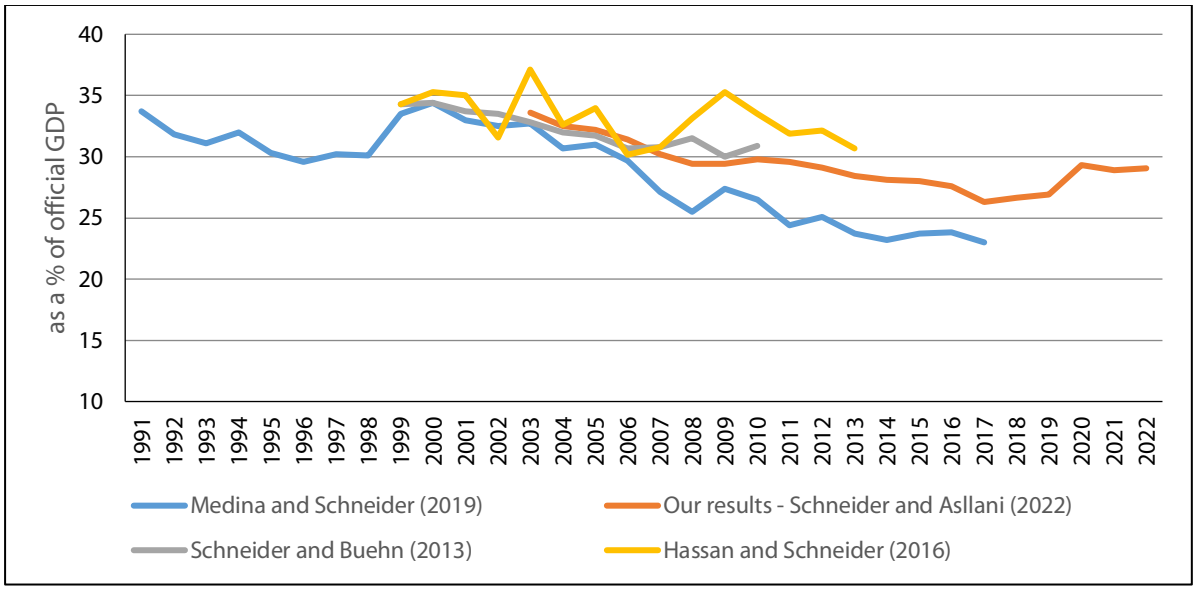
Table 4.6. 1: Average relative impact (in %) of the shadow economy determinants in Austria (1999:2017)

Country	The average size of the shadow economy	Personal income tax	Indirect taxes	Tax morale	Unemployment	Self-employment	GDP growth	Business Freedom
Austria	8.8	18.5	27.4	11.6	12.1	20.5	0.8	9.1
Denmark	16.3	34.6	33.5	4.0	9.5	9.9	0.3	8.2
Germany	15.7	16.6	24.2	8.3	24.3	16.9	0.6	9.1
Greece	27.0	5.8	21.8	10.4	18.0	37.6	0.7	5.7
Italy	26.9	15.6	18.9	9.0	18.6	31.0	0.1	6.8
Romania	**33.2**	**4.2**	**24.5**	**14.2**	**13.1**	**37.7**	**1.1**	**5.2**

Source: Our results from part 1 of this study. Note: The average size of the shadow economy is expressed as a ratio of GDP (in %).

Figure 4.5 below shows the size and development of the shadow economy of Romania as a percentage of the official GDP from 1991 to 2022 from three main studies discussed here and compares the results with our estimates provided in part 1 of this report and discussed above. As the graph shows, we can conclude that the range of the shadow economy in Romania is also among the highest EU, hovering between 23% and just above 37% - with the highest values attributed to those periods of times when economic downturns, tax rises, and subsequent rise in the unemployment rate were manifested.

Figure 4. 6: Comparing the estimates from various studies on the size and development of the shadow economy as a % of the official GDP in Romania



Source: Own adaptation from sources as included in the graph

In conclusion, from the extensive literature review, it is evident that the average size of the shadow economy of Romania hovers between 25% and 35% at any given time and that the main drivers are the level of unemployment in the country, self-employment, tax morale, tax burden (direct and indirect), regulatory burden, and quality of institutions. Some other studies (for example Bayar et al., 2018) indicate that corruption is another major factor contributing towards a higher degree of informality in the country. This level of shadow economy should not only be seen as a source of criminal offences if a country is to effectively create policies to combat it. Instead, it's of paramount importance to understand that the creation of additional value for the official economy can be primarily achieved by formalising the shadow economy. This shows that the fight against the shadow economy is most effective when illegal activities are moved from the unofficial to the official sector of the economy, rather than when they are eliminated.

4.6.2. Government policies to fight informality in Romania

Relatively recent policy measures[102] against the shadow economy in Romania have mostly focused on preventative, monitoring and detecting measures. Romania has invested a lot in setting up the framework and institutions responsible for reducing informality. Entrusted with this role there are several government agencies which attempt to curtain the size of undeclared work and the shadow economy in general. Such agencies are the Labour Inspectorate[103], as of 2015 the Labour and Social Inspectorate, subordinated to the Ministry of Labour in Romania, which has the main task of preventing and combating undeclared work as well as ensuring health and safety in work. The National Agency for Fiscal Administration (NAFA), which reports to the Ministry of Public Finances, is in charge of most areas of tax evasion. The National Agency for Employment is also involved where undeclared work is accompanied by fraud concerning unemployment benefits or the improper use of the various subsidies provided to employers as active employment measures.

As a detection measure, in 2010, a European network on undeclared work was set up between the governments of Belgium, France, Germany, Italy and Romania, seeking to promote the exchange of expertise in the domain of undeclared work. To fight undeclared work, Romania changed the Labour Code (applied in May 2011) making undeclared work above a certain level equal to a criminal offence and as such liable for prosecution, for all the companies who employ more than five workers simultaneously without a labour contract.

In terms of reducing the tax burden (both direct and indirect taxation), Romania's policies have mainly focused on VAT amendments. The successive rounds of VAT reductions implemented starting in 2013, which included first a targeted reduction of VAT for bread and bakery products from 24 % to 9 %, then extended to meat products and then generalised to all of the alimentary products as of mid-2015. This has been followed by a general reduction of VAT from 24 % to 20 % as of 2016. Social security contributions have been also reduced by 5% as of the last quarter of 2014.

The inability to collect taxes can have many other subsequent issues within the official economy. Romanian residents are taxed at a flat rate of 10% on different types of revenues, including capital gains and interest, except for dividend income, which is taxed at a flat rate of 5%.

Individuals may owe social security contributions for certain types of income, including investment income. Romania's tax-to-GDP ratio continues to stand at around 26% to 27%.

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[102] See https://ec.europa.eu/info/sites/default/files/2019-european-semester-convergence-programme-romania_ro_0.pdf.

[103] The Labour Inspectorate is organised in accordance with Law no.108/1999 (republished last as of 2012, Romanian Official Journal/Monitorul Oficial al Romaniei no.290/03.05.2012.

This is well below the EU average of 41% and one of the lowest in the European Union. Effective tax collection can improve the provision of public goods and services. In improving the provision of public goods and services, Romania can also access significant EU funds through its National Recovery and Resilience Plan, which will enable greater investment in large and important sectors such as transportation, and infrastructure to support the greater deployment of renewable energy, education, and healthcare.

A study by Popescu et al. (2018) who looked at the shadow economy of Romania at the micro and macro levels recommended several policy measures in reducing it. They made these recommendations in line with the UN's Sustainable Development Goals, in particular, Goal 8: Decent work and economic growth, and Goal 16: Peace, justice, and strong institution. They argued that policymakers in Romania should focus on building reliable and transparent institutions with a lower level of corruption, regulations, and bureaucracy, as well as attempting to regain people's confidence in public institutions. The need to elaborate effective strategies for tackling the undeclared activities that will contribute to the achievement of sustainable development goals could also improve tax morale.

Popescu et al. (2018) recommend that more needs to be done in Romania to encourage the use of electronic payments while discouraging the use of cash. The percentage of GDP that is made up of money in circulation can reach the level of 60%. This is six times higher than that of the Eurozone countries. Romania ranked last in the ranking of EU nations in 2013 with an average annual number of 4.3 electronic payments per person (excluding card payments and applications such as internet banking, home banking, mobile banking, and electronic transactions made at ATMs). This figure is roughly 18 times lower than the EU average and 11 times lower than the average in the Central and East European countries.

The Romanian government has taken several measures in this regard by announcing various policy measures to help households and businesses during the Coronavirus pandemic. However, because of the Coronavirus pandemic, many economies, including Romania, have experienced significant economic contractions. Such economic contractions led to the level of unemployment rising from under 4% in pre-pandemic levels (2019) to over 5.5% in May 2022 (SGI, Oct 2022[104]). Increases in the unemployment rate can prolong any measures and policies that the Romanian government is doing to fight shadow economic activities. To alleviate the hardship caused by the Coronavirus pandemic, the Romanian government announced several economic policy 'packages' in 2021 and 2022. These policies, although temporary measures, might help in reducing the size of the shadow economy too indirectly – since people and businesses benefit from these measures, such as grant reliefs, tax reliefs and other support for businesses as well as government economic recovery plans, they would have to 'exit' the shadow economy and enter the formal economy. Such measures are incentives, for exiting the shadow economy and entering the formal economy (Kelmanson et al., 2019).

Moreover, governments around the world, including Romania are facing a huge cost of living issues. Inflation is high, which tends to distort public finances and drastically reduces the purchasing power of many households. Without indexing tax systems, rising inflation results in the tax bracket being distorted and can lead to larger taxpayer tax liabilities, which raises the incentives for greater tax evasion and hence shadow economy (Alm and Embaye, 2013). Governments, around the world, including Romania, have put forward various policy measures in helping households with the cost of living, such as help with energy costs, VAT decreases on certain products, helping businesses employ regular staff full time, and various other support and policy changes (some listed in the table

[104] SDI Data: https://www.sgi-network.org/2022/Romania/Economic_Policies.

below). However, governments are also cautious about how much to increase government spending without properly disclosing their source of funding. With interest rates rising worldwide, in an attempt to combat inflation, government borrowing without control and solid fiscal foundations is proving to be difficult for many countries, such as the UK.

Finally, in table 4.6.2, a summary of all policy measures, which directly or indirectly reduce the shadow economy, is provided.

Table 4.6. 2: Policy measures in Romania, which can affect directly or indirectly the size of the shadow economy

Causes	Type of measures	Policies/Current situation
Effective institutions and monitoring	• Preventative • Monitoring • Punitive • Detective	**Changes to the Labour code**[105] • The measures have become more deterring in their character as of 2011 with the changes to the Labour Code (applied as of 1 May 1 2011) when undeclared work above a certain level (more than five workers simultaneously without a labour contract) has become equal to a criminal offence and as such liable for prosecution. • National Agency for Fiscal Administration's (NAFA) strategic objectives for 2019-2022[106] • Increasing voluntary compliance, reducing tax evasion and the underground economy, improving the relationship with the taxpayers, increasing collection efficiency, and modernizing the agency. **NAFA's electronic system**[107] • The cash registers are connected to the NAFA's electronic system and are functioning. The full connection of cash registers will ensure that transactions performed by cash registers are tracked and stored electronically by the NAFA. This will help address, in particular, fraud in the area of trade, by allowing the NAFA to monitor the activity of cash registers in Romania and reducing informal transactions. The higher number of transactions recorded thanks to the full connection of cash registers shall in turn contribute to reducing the VAT gap in Romania. **REVISAL system**[108] • The Labour Inspectorate has worked to enhance the system of electronic registration of all labour contracts via the REVISAL system. It has worked with the National House of Pensions as well as in cooperation with the National Labour Research Institute to create a national database for all data previously contained in the so-called labour booklets (RO: Carnet de Munca) and ensure that scanned copies of all of these booklets (in total around 9 million out of which more than 7 million have been scanned finally) were stored into a national database maintained by the National House

105 Link: https://ec.europa.eu/social/ajax/BlobServlet?docId=18175&langId=en.

106 Link: https://ec.europa.eu/info/sites/default/files/2019-european-semester-convergence-programme-romania_ro_0.pdf.

107 Link: https://ec.europa.eu/info/sites/default/files/swd2021_276_en.pdf.

108 Link: https://ec.europa.eu/social/ajax/BlobServlet?docId=18175&langId=en.

Causes	Type of measures	Policies/Current situation
		of Pensions. As such, the paper record of the labour booklet has been removed from use as of 31 December 2010.
Taxation burden and fiscal policy		**VAT reductions** • The successive rounds of VAT reductions implemented starting in 2013, which included first a targeted reduction of VAT for bread and bakery products from 24 % to 9 %, then extended to meat products and then generalised to all of the alimentary products as of mid-2015. This has been followed by a general reduction of VAT from 24 % to 20 % as of 2016. • The government has considered the elimination of the mechanism of VAT payment in instalments, according to the acquis communautaire. To support the liquidity of the private sector, the government has reimbursed RON 3.17 billion to firms. Furthermore, during the COVID-19 pandemic, VAT is no longer required for imports of medicines, PPE, and other medical and sanitary devices[109]. **Social security contributions** • Social security contributions have been also reduced by 5 pp as of the last quarter of 2014. **Romanian Fiscal Code amendments**[110] • Ludovic Orban's government (and succeeding PNL governments) amended the Romanian Fiscal Code in December 2020. Corporate taxation has been revised, particularly regarding foreign direct investment (FDI). Overall corporate income tax, according to the revised Convergence Program of 2020, is set to remain at 16%. • Tax consolidation has been made possible for corporate income tax, allowing firms to offset the tax profits and tax losses of jointly owned firms – so long as a responsible legal entity calculates, declares and pays corporate income tax for the group. The legislation clarifies that there is no obligation on a Romanian legal entity to retain, declare and pay a dividend tax.

[109] Link: https://www.sgi-network.org/2022/Romania/Economic_Policies.
[110] Link: https://www.sgi-network.org/2022/Romania/Economic_Policies.

Causes	Type of measures	Policies/Current situation
		Level of taxation in Romania[111] • Romanian residents are taxed at a flat rate of 10% on different types of revenues, including capital gains and interest, except for dividend income, which is taxed at a flat rate of 5%. Individuals may owe social security contributions for certain types of income, including investment income. Romania's tax-to-GDP ratio continues to stand at around 26% to 27%. This is well below the EU average of 41% and one of the lowest in the European Union. Moreover, the influence of Romania's tax schemes has maintained its fiscal deficit, with tax revenues continuing to trail expenditures.
Labour Market policies	• Welfare state policies • Labour market • Minimum wages • Educative	**Increase in the minimum wage** • An increase in the minimum wage will lead to an increase in informal economic activities because firms will seek alternative methods of circumventing authorities. However, in the short run, the empirical results do not indicate an effect of increasing the minimum wage. (Adriana et al. 2017) **Impact of the coronavirus pandemic on unemployment**[112] • The pandemic created the highest number of unemployed in the last two years. In March 2020, the unemployment rate reached 4.6% compared to 3.9% in the previous month. The labour market dynamics in Romania remain positive, but with only a slight uptick in the unemployment rate in 2021, from 4.2% in 2020 to 5.5% in May 2022. Moreover, labour market conditions remain tight, with labour and skills shortages persisting since 2020 because of the exacerbated decline in the labour force. **Information campaigns** • Apart from this, the Labour Inspectorate runs information campaigns that warn against the perils of undeclared work and the disadvantages and risks associated with it. It runs such initiatives both with other state bodies involved as well as in cooperation with 5 employers and unions, schools and universities. • Various Employment-related measures to alleviate consequences of the Coronavirus pandemic

[111] Link: https://www.sgi-network.org/2022/Romania/Economic_Policies.

[112] Link: https://www.sgi-network.org/2022/Romania/Economic_Policies

Causes	Type of measures	Policies/Current situation
		• Various measures have been implemented by the Romanian government to alleviate the negative impact of the Coronavirus pandemic. Most of these measures are temporary though. See the full list here - https://home.kpmg/xx/en/home/insights/2020/04/romania-government-and-institution-measures-in-response-to-covid.html
Regulatory burden	• Reducing red tape • Transfer payments • Preventative	**Minimum Inclusion Income Reform**[113] • The reform simplifies the Romanian social policy toolkit, by integrating three means-tested benefits that used to be independent of each other, thus bringing clarity, increasing accessibility and reducing red tape. The minimum inclusion income reform will improve social assistance and reduce poverty for the most vulnerable while creating incentives to stimulate employment and increase educational attainment.
Provision of public goods and services	• Government spending • Public goods and services	**Provision of public goods and services affected by migration**[114] • From January 2020 to January 2021, Romania's population dropped from 19.32 million to 19.18 million. Since joining the European Union in 2007, the effects of free movement on the healthcare system have been particularly pronounced. While emigration has contributed to lower unemployment levels, it has also resulted in a brain drain and shortages, particularly in the healthcare system during the pandemic. To combat the trepidations of the country's labour supply, government measures (e.g., wage subsidies and other incentives to preserve employment amounting to 5% of GDP) mitigated the labour market impact. **Effect of Labour Activation Policies and Learning Programs**[115] • Low labour force participation remains a concern, despite the minor success of labour activation policies and adult learning programs, largely due to emigration. While participation increased to 55.5% in 2020, Romania continues to struggle with labour force and skill shortage challenges. Women, people with a low education attainment rate, and vulnerable groups (e.g., Roma) disproportionately contribute to the low participation rate.

Source: Collection of policies from various sources. See footnotes.

[113] Link: https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility/recovery-and-resilience-plan-romania_en#economic-and-social-resilience

[114] Link: https://www.sgi-network.org/2022/Romania/Economic_Policies

[115] Link: https://www.sgi-network.org/2022/Romania/Economic_Policies

5. CONCLUSIONS

A comprehensive package of reforms is needed to successfully combat the shadow economy, carefully designed based on the determinants most relevant in that specific case. Measures can range from regulatory and institutional reforms, to tax policies and administration. The menu of policies most relevant for emerging economies would include: reducing regulatory and administrative burdens, promoting transparency and improving government effectiveness as well as improving tax compliance, automating procedures, and promoting electronic payments. In addition, a well-designed policy set should address incentives for informal workers to transition to the formal sector, especially in countries reliant on remittances and where the shadow economy provides a social safety net. Furthermore, policy actions focused on encouraging private-sector job creation and fostering human capital development would help to bring firms and workers out of the shadows and promote more inclusive growth.

5.1. General conclusions on policy measures to reduce the shadow economy

A combination of policies should be employed, targeting the determinants most pertinent in any particular country. The size of the shadow economy (using any of the estimation approaches) is strongly and inversely related to per capita income, and more effective institutions play a key role in achieving development goals. Furthermore, improving tax administration, reducing regulatory burdens and enhancing transparency would reduce incentives for informal activities driven by "exit" factors, while improving the operation of the labour market and promoting human capital help to address informality caused by "exclusion" factors[116]. In the following sub-sections, we provide a summary of policy measures available for governments to reduce the size of the shadow economy. These have also been addressed in part 1 of the study.

5.1.1. Improving the regulation and institutional quality

It is well-recognized that better institutions foster more equitable and sustainable growth in the long run. More effective governance serves the well-being of broader parts of society, mitigating both "exit" and "exclusion" factors (Perry, 2007; Oviedo et al., 2009). Regulatory and institutional reforms are critical to tackling bottlenecks in the business climate, strengthening the rule of law, improving government effectiveness, and combating corruption:

a) Reducing regulatory and administrative barriers will decrease the incentive for participating in the shadow economy. Examples of successful reforms include simplifying the registration and licensing process (e.g., automatic licensing in Georgia), creating "one-stop-shop" registration (Estonia), and reducing registration fees and statutory requirements;

b) Increasing transparency and engagement. Adopting measures to promote transparency (e.g. through mandatory public electronic auctions for public procurement) and public administration (e.g. by improving court system efficiency) can improve the perception of government effectiveness, and the link between revenues and expenditure, increasing voluntary compliance. Possible measures include the public identification of tax evaders and targeted public relations campaigns. Adopting industry-based strategies can also be helpful, by utilizing continued engagement with industry bodies, advisory programs, clear communications on areas

[116] Compare Davidescu, A. A.(2014, 2016 and 2017) and Williams and Horodnic (2017)

of noncompliance, follow-up audit programs and prosecution of the worst offenders; and

c) Improving governance. Many economically less advanced EU countries (such as Greece and Romania) still lag behind advanced EU countries in terms of the quality of their judicial systems and property rights, and institutional quality improvement has been uneven across countries (IMF REI Report, Nov 2017). While initial conditions (such as resource allocation) and external factors (e.g., EU accession) play an important role, reforms focused on improving the quality of public administration, transparency and accountability help to form positive feedback.

A longer-term reform agenda should include:

a) strong enforcement of competition rules that reduce monopolistic behaviour;

b) sound regulatory frameworks for infrastructure industries (telecom, transports) and finance;

c) redistributive fiscal policies, fiscal transparency, accountability of the use of public resources;

d) policies and practices that ensure transparency of ownership structures of financial institutions (see IMF REI Europe November 2017, Chapter 2);

e) measures to establish clear rules and procedures for recruiting and training civil servants; and

f) strengthened property rights through improving cadastres and the ability to register property.

Actions aimed at boosting revenues can also help reduce the shadow economy. The scope for improvement in tax administration varies across Europe; however, most countries face challenges with low automation of processes, organizational structure and operational performance. Successful policy actions (one may also call them "best practices) should include:

a) Increasing tax compliance by improving registration, audit, and collection. Registration can be strengthened by facilitating the information exchange between government agencies, e.g., in most EU countries firms and workers have a single common business ID for social security, unemployment, and tax agencies (Oviedo 2009). The tax base can be broadened by gradually eliminating existing distortionary exemptions;

b) Automating and computerizing procedures. Efforts to minimize contact between tax officials and taxpayers tend to reduce bureaucracy and corruption (USAID report 2005). Simplifying tax and social benefits systems, if not necessarily tax rates, will reduce tax compliance costs; and

c) Promoting electronic payments (like eg in Italy). This can help increase collections and reduce VAT fraud. In recent years several countries have obliged businesses to record payments and money transfers through fiscal devices. According to Schneider and Kearney 2013, increasing electronic payments by an average of 10% annually for at least four consecutive years can reduce the size of the shadow economy by up to 5%. Promoting electronic payments and limiting the use of cash would likely help with shadow activities in which one side of the transaction (typically a consumer) does not benefit from not reporting the transaction (and may not even be aware that he/she is contributing to the expansion of the shadow economy through the cash payment). The promotion of electronic payments may have a more limited impact where both sides of the transaction benefit from not reporting[117].

[117] See IMF REI "Effective Government for Stronger Growth" November 2016 for how to improve tax administration efficiency. See also EY Report (2017), Reducing the Shadow Economy through Electronic Payments, which can be additionally applied. Reference provided in part 1.

5.1.2. Labour market reforms and human capital development

In countries with high levels of migration, and where the shadow economy can act as a social safety net (like in Romania and Greece), policy actions should focus on improving incentives for informal workers to move into the formal sector. When informal activities are driven primarily by the so-called "exclusion" factors, solely focusing on enforcement and compliance, they may result in informal workers seeking employment abroad and driving shadow firms out of business. In such circumstances, encouraging private-sector job creation and fostering skill formation would help to bring firms and workers out of the shadows and promote more inclusive growth. Policy actions aimed at improving human capital will improve job-search capacity and the earnings potential of informal workers. The relevant labour market and education policies include:

a) Increasing hiring and firing flexibility (e.g., labour market reforms in Greece and Romania) in case of overly restrictive labour laws, while enforcing such laws elsewhere to maintain a level playing field across enterprises and encourage lawful behaviour;

b) Strengthening enforcement and monitoring (e.g., enforced obligation to register all new workers in most six EU countries part of this study);

c) Making the labour market more inclusive by developing and implementing customized employment and training measures for target groups which are mostly in danger of social exclusion (e.g., young people);

d) Creating a favourable employment environment for returning migrants, providing special training and recognition of the practical skills gained abroad (e.g. Denmark, Austria, and Italy, etc);

e) Making professional and vocational education and training more relevant and fostering internal cross-sector mobility (e.g. Greece); and

f) Improving the efficiency of funds allocated for education, through better prioritization, screening and monitoring of education projects.

REFERENCES

- Abdih, M. Y., and Medina, L. (2013). *Measuring the Informal Economy in the Caucasus and Central Asia* (No. 13-137). International Monetary Fund.
- Afonso, A. (2013). *Social Concertation in Times of Austerity: European Integration and the Politics of Labour Market Governance in Austria and Switzerland*. Amsterdam: Amsterdam University Press
- Alexandru, A. A. (2013). *Estimating the size of the Romanian shadow economy using Gutmann's simple currency ratio approach*. Theoretical and Applied Economics Volume XX.
- Alm, J. and Embaye, A., (2013). *Using dynamic panel methods to estimate shadow economies around the world*, 1984–2006. Public Finance Review, 41(5), pp.510-543.
- Alm, J. and Torgler, B. (2011*). "Do ethics matter? Tax compliance and morality",* Journal of Business Ethics, vol. 101, no. 4, pp. 635-651.
- Almenar, V., Sánchez, J. L., & Sapena, J. (2020). *Measuring the shadow economy and its drivers: the case of peripheral EMU countries*. Economic research-Ekonomska istraživanja, 33(1), 2904-2918.
- Andersen, T. *The Danish labour market*, 2000–2020. IZA World of Labor 2021: 404 doi: 10.15185/izawol.404.v3
- Arby, Muhammad Farooq, Muhammad Jahanzeb Malik, and Muhammad Nadim Hanif. (2012). *The size of the informal economy in Pakistan*. Finance Research, Vol1 No2, April 2012, ISSN: 2165-8226
- Azuma, Y., and Grossman, H. I. (2002). *A theory of the informal sector (No. w8823)*. National Bureau of Economic Research.
- Bajada, C. and Schneider, F., (2005). *Size, Causes and Consequences of the Underground Economy: An International Perspective*. Aldershot (GB): Ashgate Publishing Company.
- Bajada, C. and Schneider, F., (2009). *Unemployment and the Shadow Economy in the OECD*. Revue économique, 60(5), pp.1033-1067.
- Ballas, A. and Tsoukas, H. (1998). *"Consequences of distrust: The vicious circle of tax evasion in Greece"*, Journal of Accounting, Ethics & Public Policy, vol. 1, no. 4, pp. 572-596.
- Barbosa, E., Pereira, S. and Brandão, E., (2013). *The Shadow Economy in Portugal: An Analysis Using the MIMIC Model*. School of Economics and Management Working Papers, University of Porto, (514).
- Bayar, Y., Odabas, H., Sasmaz, M. U., & Ozturk, O. F. (2018). *Corruption and shadow economy in transition economies of European Union countries: a panel co-integration and causality analysis*. Economic research-Ekonomska istraživanja, 31(1), 1940-1952.
- Berens, S. (2020). *Opting for Exit: Informalization, Social Policy Discontent, and Lack of Good Governance*. Latin American Politics and Society, 62(2), 1-28. doi:10.1017/lap.2019.58
- Bjerde, Anna. *"Reforms Key to Romania's Resilient Recovery."* The World Bank, July 2021.
- Bovi, M., & Dell'Anno, R. (2010). *The changing nature of the OECD shadow economy*. Journal of Evolutionary Economics, 20(1), 19-48.
- Buehn, A. and Schneider, F., (2011). *A preliminary attempt to estimate the financial flows of transnational crime using the MIMIC method*. Research Handbook on Money Laundering, pp.172-189.
- Buehn, A. and Schneider, F., (2012). *Shadow economies around the world: novel insights, accepted knowledge, and new estimates*. International Tax and Public Finance, 19(1), pp.139-171.
- Buehn, A., & Schneider, F. (2012*). Corruption and the shadow economy: like oil and vinegar, like water and fire?* International Tax and Public Finance, 19(1), 172-194.

- Buehn, A., Dell'Anno, R., & Schneider, F. (2018). *Exploring the dark side of tax policy: an analysis of the interactions between fiscal illusion and the shadow economy*. Empirical Economics, 54(4), 1609-1630.
- Chen, M. A. (2012). *The informal economy: Definitions, theories and policies* (Vol. 1, No. 26, pp. 90141-4). WIEGO Working Paper.
- Davidescu, A. A., & Schneider, F. (2017). *Nature of the relationship between minimum wage and the shadow economy size: An empirical analysis for the case of Romania* (No. 11247). IZA Discussion Papers.
- Del'Anno, R. (2003). *Estimating the Shadow Economy in Italy: a Structural Equation Approach*. School of Economics and Management, University of Aarhus, Economics Working Papers 2003-7. http://ideas.repec.org/p/aah/aarhec/2003-7.html
- Dell'Anno, R., and Schneider, F. (2003), *The Shadow Economy of Italy and other OECD Countries: What do we know?* Journal of Public Finance and Public Choice, XXI (2-3), pp. 97-120.
- Dell'Anno, R., Gómez-Antonio, M., and Pardo, A. (2007). *The shadow economy in three Mediterranean countries: France, Spain and Greece*. A MIMIC approach. Empirical Economics, 33(1), 51-84.
- Dell'Anno, R., & Halicioglu, F. (2010). *An ARDL model of unrecorded and recorded economies in Turkey*. Journal of Economic Studies.
- Dreher A., & Schneider F. (2010) *Corruption and the shadow economy: An empirical analysis*. Public Choice, 144, 215–238.
- Elshamy, H.M., (2015). *Measuring the Informal Economy in Egypt*. In conference proceedings IRC-2014 (p. 167).
- Enengel, M.-L., and U. Reeger. (2015). *Urban Implications of CEE Migration in Austrian Urban Regions. Country Report Austria*. Vienna: Austrian Academy of Sciences.
- Enste, D. H. (2018). *The shadow economy in OECD and EU accession countries–empirical evidence for the influence of institutions, liberalization, taxation and regulation. In Size, causes and consequences of the underground economy* (pp. 123-138). Routledge.
- Feld, L.P. and Schneider, F., (2010). *Survey on the shadow economy and undeclared earnings in OECD countries.* German Economic Review, 11(2), pp.109-149.
- Friedman, E., Johnson, S., Kaufmann, D., and Zoido-Lobaton, P. (2000). *Dodging the Grabbing Hand: The Determinants of Unofficial Activity in 69 Countries.* Journal of Public Economics, 76(3):459-493.
- Gerxhani, K. (2004b). *The informal sector in developed and less developed countries: a literature survey*. Public choice, 120(3-4), pp.267-300.
- Giles, David, E.A. (1997). *Testing for Asymmetry in the Measured and Underground Business Cycles in New Zealand*. The Economic Record, 73(222):225-32.
- Giles, David, E.A. (1999). *Measuring the Hidden Economy: Implications for Econometric Modelling.* The Economic Journal, 109(456): 370–380.
- Giles, David, E.A., Tedds, Lindsay, M. and Werkneh, Gugsa (2002): *The Canadian underground and measured economies*, Applied Economics, 34/4, pp.2347-2352.
- Hart, K., (2008a). *Informal Economy, The New Palgrave Dictionary of Economics*. Eds. Steven N. Durlauf and Lawrence E. Blume.
- Hassan, Mai and Schneider, Friedrich, (2016a) *Size and development of the shadow economies of 157 worldwide countries: Updated and new measures from 1999 to 2013*. Journal of Global Economics, 4(218), p.2.

- Hazans, Mihails, *Informal Workers Across Europe: Evidence from 30 Countries*. IZA Discussion Paper No. 5871, Available at SSRN: https://ssrn.com/abstract=1906174 or http://dx.doi.org/10.2139/ssrn.1906174
- Hindriks, J., Muthoo, A., & Keen, M. (1999). *Corruption, extortion and evasion*. Journal of Public Economics, 74, 395–430.
- Ihrig, J., and Moe, K. S. (2004). *Lurking in the shadows: the informal sector and government policy*. Journal of Development Economics, 73(2), 541-557.
- Johnson, S., Kaufmann, D., & Zoido-Lobaton, P. (1998a). *Corruption, public finances and the unofficial economy*. Washington, DC: The World Bank Discussion Paper.
- Johnson, S., Kaufmann, D., and Zoido-Lobaton, P. (1998). *Regulatory Discretion and the Unofficial Economy*. American Economic Review, 88(2):387-92.
- Kaplanoglou, G. and Rapanos, V. P. (2013). *'Tax and trust: The fiscal crisis in Greece'*, South European Society and Politics, vol. 18, no. 3, pp. 283-30.
- Katsios, S. (2006). *The shadow economy and corruption in Greece. South-Eastern Europe*, Journal of Economics, 4(1).
- Kazemier, B. (2003). *The Underground Economy: A Survey of Methods and Estimates.* Statistics Netherlands, Voorburg, Netherlands, IZA Discussion Paper.
- Kelmanson, M. B., Kirabaeva, K., Medina, L., Mircheva, M., & Weiss, J. (2019). *Explaining the shadow economy in Europe: size, causes and policy options*. International Monetary Fund.
- Koufopoulou, P., Williams, C. C., Vozikis, A., Souliotis, K., & Samprakos, A. (2021). *Estimating Shadow Economy Size in Greece 2000-2018: A Flexible MIMIC Approach*. SPOUDAI-Journal of Economics and Business, 71(3-4), 23-47.
- La Porta, R. and Shleifer, A., (2014). *Informality and development*. The Journal of Economic Perspectives, 28(3), pp.109-126.
- Loayza, N.V, and Rigolini, J. (2006). *Informality trends and cycles*. World Bank Policy Research Working Paper, (4078).
- Manolas, G., Rontos, K., Sfakianakis, G., & Vavouras, I. (2013). *The determinants of the shadow economy: The case of Greece*. International Journal of Criminology and Sociological Theory, 6(1).
- Medina, L., & Schneider, F. (2021). *The evolution of shadow economies through the 21st century. The Global Informal Workforce: Priorities for Inclusive Growth*, International Monetary Fund, Washington DC, 10-69.
- Medina, L., & Schneider, F. (2019). *Shedding light on the shadow economy: A global database and the interaction with the official one.* Available at SSRN 3502028.
- Medina, L., & Schneider, M. F. (2018). *Shadow economies around the world: what did we learn over the last 20 years?* International Monetary Fund.
- Medina, Leandro and Schneider, Friedrich G., *Shadow Economies Around the World: New Results for 158 Countries Over 1991-2015* (April 10, 2017). CESifo Working Paper Series No. 6430, Available at SSRN: https://ssrn.com/abstract=2965972 or http://dx.doi.org/10.2139/ssrn.2965972
- Medina, Leandro and Schneider, Friedrich G. (2019), *Shedding Light on the Shadow Economy: A Global Database and the Interaction with the Official One*. CESifo Working Paper No. 7981, Available at SSRN: https://ssrn.com/abstract=3502028 or http://dx.doi.org/10.2139/ssrn.3502028
- Mirus, R. and Smith, R.S., (1997). *Self-employment, tax evasion, and the underground economy: Micro-based estimates for Canada*. International Tax Program, Harvard Law School.

- Nikopour, H., Shah Habibullah, M. and Schneider, F., (2008). *The shadow economy Kuznets's curve panel data analysis*. Available at: https://mpra.ub.uni-muenchen.de/12956 (last accessed: 13.07.2017)
- Oviedo, A. M., Thomas, M. R., & Karakurum-zdemir, K. (2009). *Economic informality: Causes, costs, and policies a literature survey*.
- Packard, T. G., Koettl, J., & Montenegro, C. (2012). *In from the shadow: integrating Europe's informal labour*. World Bank Publications.
- Pedersen, S. (2003). *The Shadow Economy in Germany, Great Britain and Scandinavia: A Measurement Based on Questionnaire Service*. The Rockwell Foundation Research Unit, Copenhagen, Study 10.
- Perry, G. (2007). *Informality: Exit and exclusion*. World Bank Publications.
- Pommerehne, W. W., and Schneider, F. (1985). *The decline of productivity growth and the rise of the shadow economy in the US* (Vol. 9). CESifo Working Paper 85.
- Popescu, G. H., Davidescu, A. A. M., & Huidumac, C. (2018). *Researching the main causes of the Romanian shadow economy at the micro and macro levels: Implications for sustainable development*. Sustainability, 10(10), 3518.
- Pozo, S. (1996). *Exploring the underground economy: Studies of illegal and unreported activity*. Available at https://research.upjohn.org/up_press/180/ (accessed on 26.10.2022).
- Putnins, Talis J. and Sauka, Arnis and Davidescu, Adriana AnaMaria (2018). *Shadow Economy Index for Moldova and Romania 2015-2016* (May 1, 2018). Available at SSRN: https://ssrn.com/abstract=3171741 or http://dx.doi.org/10.2139/ssrn.3171741
- Remeikienė, R., Gasparėnienė, L., Bayar, Y., Ginevičius, R., & Ragaišytė, I. M. (2022). *ICT development and the shadow economy: Empirical evidence from the EU transition economies*. Economic Research-Ekonomska istraživanja, 35(1), 762-777.
- SARAÇ, M., & BAŞAR, R. (2014). *The effect of the informal economy on the European debt crisis*. Siyaset, Ekonomi ve Yönetim Araştırmaları Dergisi, 2(2), 25-37.
- Schneider, F. (2008). *Shadow economy. In Readings in public choice and constitutional political economy* (pp. 511-532). Springer, Boston, MA.
- Schneider, F. (2022). *New COVID-related results for estimating the shadow economy in the global economy in 2021 and 2022*. International Economics and Economic Policy, 19(2), 299-313.
- Schneider, F., & Buehn, A. (2018). *Shadow economy: Estimation methods, problems, results and open questions*. Open Economics, 1(1), 1-29.
- Schneider, F., & Kearney, A. T. (2013). *The shadow economy in Europe*. Johannes Kepler Universitat, Linz. Available from img2.ct24.cz/multimedia/documents/47/4657/465614.pdf (Accessed on 26.10.2022).
- Schneider, F., (1994). *Measuring the size and development of the shadow economy. Can the causes be found and the obstacles overcome?* Essays on economic psychology (pp. 193-212). Springer Berlin Heidelberg.
- Schneider, F., (1997) *The shadow economies of Western Europe*, Journal of the Institute of Economic Affairs, 17/3, pp. 42-48.
- Schneider, F., (2000). *The increase of the size of the shadow economy of 18 OECD countries: some preliminary explanations*. CESifo Working Paper Series No. 306
- Schneider, F., (2003). *The size and development of the shadow economies and shadow economy labour force of 22 transition and 21 OECD countries: what do we know? The Informal Economy in the*

EU Access Countries: Size, Scope, Trends and Challenges to the Process of EU Enlargement, Centre for Study of Democracy, pp.23-61.

- Schneider, F., (2005) *Shadow Economies around the World: What do we really know?* European Journal of Political Economy, 21/3, pp. 598-642.
- Schneider, F., (2014). *The shadow economy and shadow labour force: a survey of recent developments*. IZA Discussion Paper No. 8278
- Schneider, F., (2015). *Size and Development of the Shadow Economy of 31 European and 5 Other OECD Countries from 2003 to 2014: Different Developments?* Journal of Self-Governance and Management Economics, 3(4).
- Schneider, F., and Enste, D. (2000). *Shadow Economies: Size, causes, and consequences*, The Journal of Economic Literature, 38/1, pp. 77-114.
- Schneider, F., and Enste, D. (2002). *The Shadow Economy: Theoretical Approaches, Empirical Studies, and Political Implications,* Cambridge (UK): Cambridge University Press.
- Schneider, F., and Enste, D. (2013). *The shadow economy: An international survey*. Second Edition. Cambridge University Press.
- Schneider, F., and Neck, R. (1993). *The development of the shadow economy under changing tax systems and structures: some theoretical and empirical results for Austria*. Public Finance Analysis, 344-369.
- Schneider, F., and Savasan, F. (2007). *DYMIMIC estimates the size of the shadow economies of Turkey and her neighbouring countries*. International Research Journal of Finance and Economics, 9(5), 126-143.
- Schneider, F., Andreas Buehn, Claudio E. Montenegro (2010), *New Estimates for the Shadow Economies all over the World*, International Economic Journal, Vol. 24, No. 4, 443–461, December 2010
- Schneider, F., Buehn, A., & Montenegro, C. E. (2011). *Shadow economies all over the world: New estimates for 162 countries from 1999 to 2007. In Handbook on the shadow economy*. Edward Elgar Publishing.
- Schneider, F., Hofreither, M.F., and Neck, R. (1989). *The Consequences of a Changing Shadow Economy for the Official Economy: Some Empirical Results for Austria*. In: Boes, D. and B. Felderer (eds.), *The Political Economy of Progressive Taxation*, pp. 181–211, Heidelberg: Springer Publishing Company.
- Simona Talani, L. (2019). *Assessing the relationship between the underground economy and irregular migration in Italy*. The International Spectator, 54(2), 102-122.
- Skolka, J. (1985). *The parallel economy in Austria. In The economics of the shadow economy* (pp. 60-75). Springer, Berlin, Heidelberg.
- Stancu, S., Bodea, C. N., & Popescu, O. M. (2020). *Tax evasion in Romania as a component of the shadow economy-estimates, analysis and predictions*. Romanian Statistical Review, (2).
- Thomas, J., (1992). *Informal Economic Activity*. In: LSE, Handbooks in Economics, London: Harvester Wheatsheaf.
- USAID. (2013). *Informal economy. Regional agricultural trade environment (RATE) summary*. Available at https://www.usaid.gov/sites/default/files/documents/1861/RATE%20Summary.pdf (accessed 26.10.2022).
- Vlachos, V., Bitzenis, A., & Kontakos, P. (2015). *Shadow Economy And Corruption In Greece: Recommendations For A Microeconomic Survey*. Global Business & Economics Anthology, 1.

- Vo, D.H. and Ly, T.H., (2014). *Measuring the shadow economy in the ASEAN nations: The MIMIC approach*. International Journal of Economics and Finance, 6(10), p.139.
- Vousinas, G. L. (2017). *Shadow economy and tax evasion. The Achilles heel of the Greek economy. Determinants, effects and policy proposals*. Journal of Money Laundering Control.
- Vuletin, G. J. (2008). *Measuring the informal economy in Latin America and the Caribbean* (No. 8-102). International Monetary Fund. ISBN/ISSN: 9781451869637/1018-5941
- Williams, C. C., & Renooy, P. (2009). *Measures to tackle undeclared work in the European Union*. Available at https://policycommons.net/artifacts/1835820/measures-to-tackle-undeclared-work-in-the-european-union/2577593/ (last accessed on 26.10.2022)
- Williams, C. C., & Schneider, F. (2013). *The shadow economy*. London: Institute of Economic Affairs.
- Williams, C. C., & Schneider, F. (2016). *Measuring the Global Shadow Economy: the prevalence of informal work and labour*. Edward Elgar Publishing.
- Williams, C.C. (2005). *The undeclared sector, self-employment and public policy*. International Journal of Entrepreneurial Behaviour and Research, 11(4), pp.244-257.
- Yap, W.W., Sarmidi, T., Shaari, A.H. and Said, F.F. (2018), *"Income inequality and the shadow economy: a nonparametric and semiparametric analysis"*, Journal of Economic Studies, Vol. 45 No. 1, pp. 2-13. https://doi.org/10.1108/JES-07-2016-0137
- Zelano, Karin (2018) *Balancing informality and need – policy responses to informal East-West migration in Austria, the Netherlands and Sweden*, Policy Studies, 39:5, 535-559, DOI: 10.1080/01442872.2018.1487051

This study provides estimates of the size and development of the shadow economy in the EU up to 2022 and analyses the main factors that drive economic agents to enter the shadow economy activities (part 1). Moreover, the study reviews and elaborates on the main driving forces and the policy measures implemented to reduce the shadow economy in six EU countries (Germany, Austria, Italy, Denmark, Romania and Greece) (part 2).

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