A REVIEW OF THE DRIVING FORCES OF THE INFORMAL ECONOMY AND POLICY MEASURES FOR MITIGATION: AN ANALYSIS OF SIX EU COUNTRIES¹

BY

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Abstract

This study presents detailed estimates of the shadow economy's size and development in all European Union (EU) countries with particular emphasis on six specific countries (Germany, Austria, Denmark, Greece, Italy, and Romania) from 2003 to 2022. It focuses on understanding the key factors that motivate economic agents to engage in shadow economy activities within EU and particularly these countries. The estimates presented show a significant reduction in the shadow economy's size from 22.6% of GDP in 2003 to 17.3% in 2022, highlighting the effectiveness of various policy measures implemented in most EU countries with particular focus on these six countries. Despite a slight increase in the shadow economy across most EU nations due to the Coronavirus pandemic after 2020, our research identifies the main determinants of economic informality in most EU countries. Our analysis expose that weak institutional quality, ineffective government institutions, complex and burdensome tax and regulatory systems, the lack of strong legal systems, and pervasive corruption are the main determinants of economic informality in most countries of the EU. The study thoroughly reviews the driving forces behind the shadow economy and discusses the specific policy measures these six countries part of this policy analysis paper have adopted to mitigate and reduce its presence.

JEL Classification: O5, C39, C51, C82, H11, H26, U17.

Keywords: Informal economy; MIMIC model; Balkan countries; main drivers of the IE; effect of the COVID-19 on IE.

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1. Introduction

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. Academics began to take an interest in the topic of the shadow economy in the 1970s. However, during the past three decades, academic interest in ways to quantify the shadow economy has increased (see for example Schneider 2023, Dell'Anno, 2022). 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. Recent global developments, such as migration waves, climate change, trade tensions, and technological changes (such as digitalization) have triggered renewed interest in the topic of 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 (Schneider, 2022; Dell'Anno, 2022).

For the purpose of this study we define 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 (Dybka et al. (2019). Institutional reasons include corruption, poor quality political institutions, and weak rule of law. Such reasons have a strong influence on individual behaviour and create additional incentives to engage in additional shadow economy activities; for example, in a corrupt state, where a citizen might have to bribe public employees, his incentives to pay 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. Of course, all these shadow economy activities are illegal, but there is a difference in that these shadow economy activities create value added, which for classical crime activities is not the case.

Since the individuals engaging in shadow economic activities actively avoid detection, measuring the size of the shadow economy in a country can be difficult (Dell'Anno, 2023). In order to avoid paying taxes and abiding by government laws and regulations, 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 (Dell'Anno, 2022). Thus, the shadow economy may have a variety of political, social, and economic ramifications. From the perspective of fiscal policy, the larger the shadow economy 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.

The general aim of this study is threefold. The first is to present the development of the shadow economy in the EU Member States and other OECD countries between 2003 and 2022³. The second is to present case

² Compare here Schneider (2023), which provides extensive discussion about the definition of SE and its wording.

³ Here we provide the shadow economy estimates in accordance with Schneider (2022). These findings, as reported in Schneider (2022), build upon the research conducted by Medina and Schneider (2021) and serve as an extension focused on OECD countries.

studies on six chosen EU countries⁴ (Austria, Denmark, Germany, Greece, Italy and Romania) by reviewing and analysing key drivers of the shadow economy and discussing the policy measures taken to reduce such informality in each of these countries. In this context, the impact of the informal economy on tax revenues is of particular interest. Finally, the study aims to provide some policy options for countries to adopt to reduce the level of tax evasion and shadow economy in general. The goal here is to enhance the exchange of information and ideas between academic research and practical policymaking and implementation.

2. Development of the Size of the Shadow Economy in EU and other OECD Countries from 2003 to 2022

2.1. Setting the stage

Before delving into the analysis of the key factors driving the shadow economy in OECD and EU countries, particularly focusing on the six EU nations included in this study⁵, it is crucial to first present and examine existing data on the scale and evolution of the shadow economy. This examination covers the period from 2003 to 2022 and extends beyond the six specific EU countries under study to encompass all EU member states and the majority of OECD countries. This comprehensive overview sets the stage for a deeper understanding of the policies these six EU countries have implemented over the years to tackle informality within their economies.

This study will not discuss the various methods or procedures to measure the shadow economy.⁶ The following sub-sections (2.2 and 2.3) focus predominantly on the latest empirical findings and their explanations.

2.2. Shadow Economy estimates for all EU Countries in 2020⁷

In 2020, the worldwide coronavirus pandemic (also referred to as the COVID-19 pandemic) occurred and triggered severe recession in almost all countries as repeated lockdowns were imposed in most EU countries 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 official GDP) of the 28 EU countries. Compared to 2019 this average increase is remarkably high, with 1.69 percentage points or a 9.8% increase from the previous year, and it is the highest in the past 20 years! In such a recession, 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 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 weakest (0.92) occurred in Denmark, from 8.92% to 9.84% (of GDP).

⁴ These EU countries were selected to include both small and large countries and to provide a somewhat balanced distribution between North and South as well as East to West.

⁵ Countries part of this study are: Germany, Austria, Romania, Denmark, Italy and Greece.

⁶ Several studies provide thorough discussion on the main methods used to measure or estimate the size of the shadow economy. See, for example, Feld and Schneider (2010), Medina and Schneider (2018, 2021) and Schneider (2023).

⁷ Shadow Economy values from 2003 to 2021 are taken from Schneider (2022). These estimations employ the methodology established by Buehn and Schneider (2012, 2013).

2.3. Estimates for 2021 and 2022 for all EU Countries

With the help of projections for some countries, the authors calculated 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 in the shadow economy of the EU countries would 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 led to sizable 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 were effectively laid off temporarily (see IMF, 2021). But workers stayed on the payroll of the firm so that firm-specific human capital was effectively 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 the shadow economy. In summary, global recovery of the most important economies took place and led to this modest decline in the shadow economy in 2021 for most countries⁸.

In 2022, but only to the end of March, 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, as shown in Table A1 in appendix, revealing that the average size of the shadow economy of the 27 EU Countries (+ the UK) would decline from 17.42% (in the year 2021) to 17.29% in 2022. A decline would happen in 15 EU Countries and an increase in 12 EU Countries. These shadow economy predictions were made in January 2022, but in February 2022, Russia launched a military offensive in Ukraine leading to war between the two countries. Consequently, by the fall of 2022, most EU countries were experiencing significantly high inflation rates of about 10.0% and a severe (fossil energy, e.g. gas) energy shortage. Due to these events, the projected decline in 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 Table A1 in appendix and Figure 2.1.

⁸ Compare a similar interesting study by Williams and Kayaoglu (2020).



Figure 2.1: Size of the Shadow Economy of 31 European Countries in 2022 (in % of official GDP).

Source: Shadow Economy values from 2003 to 2021 are taken from Schneider (2022).

3. Driving Forces of the Shadow Economy

3.1. General Findings

The findings presented in section 2 are in line with those found in most literature on the shadow economy.⁹ There is now general consensus in the literature that weak institutional quality, ineffective government institutions, complex and burdensome tax and regulatory systems, the lack of a strong legal systems, and pervasive corruption are the main determinants of economic informality in most countries. Subsequently, these factors could lead to lower tax morale, which in turn increases incentives to work in the shadow economy.

Examining the shadow economies of the six chosen EU Member States, there is a general 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 EU countries with the highest shadow economy) 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 EU Member States started to increase, because of the pandemic in 2020 and 2021.

The coronavirus pandemic caused severe recession in almost all EU countries in 2020 but to a lower extent in 2021. These recessions caused strong rises in unemployment and sharp declines 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. Table A1 in appendix presents the size and development of the shadow economies of 27 EU countries (plus United Kingdom) over the period 2003–2022.¹⁰ These estimates

⁹ Compare e.g Oviedo (2009), Alm and Embaye (2013), Schneider (2021, 2023), Williams et al. (2017, 2018, 2020), and Zhanabekov (2022).

¹⁰ Calculation of the size and development of the shadow economy is done with the MIMIC (Multiple Indicators and Multiple Causes) estimation procedure. The MIMIC estimation procedure provides only relative values and one needs other methods, like the

indicate that the shadow economy in 2003 was 22.6% (of 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, there was a general negative trend in the size of the shadow economies of 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. The year 2020 shows an increase for all countries, likely due to the impact of the COVID-19 pandemic, which may have driven more economic activities into the shadow economy due to lockdowns and restrictions on formal businesses. Post-2020, the trend appears to resume its decline or stabilize, except for Romania, which shows a continued increase in 2021 and 2022.

Figure 3.1 presents the size and development of the shadow economy of these six countries up to 2022, while figure 3.2 provides the average size of the shadow economy in these six EU countries. As depicted in this figure, these estimates show that Austria exhibited a consistent decrease from 10.8% in 2003 to 6.6% in 2022, with a slight increase in 2020. Denmark also showed a consistent decrease, with a notable reduction from 17.4% in 2003 to 9.7% in 2022. The increase in 2020 is relatively small compared to other countries. Germany's shadow economy size reduced from 16.7% in 2003 to 8.8% in 2022. The increase in 2020 is slightly more pronounced but follows with a decrease in 2021 and 2022. Greece started with the highest shadow economy percentage of 28.2% in 2003 and ended with 20.9% in 2022. Greece shows a significant increase in 2020 and a slight decrease afterward. Italy's shadow economy decreased from 26.1% in 2003 to 20.3% in 2022, with a small increase during the pandemic year. Finally, Romania stands out with an increase in the shadow economy from 2019 to 2022, reversing the previous downward trend.



Figure 3.1: The size and development of the shadow economy in six EU countries between 1999 and 2022.

*28 EU countries average (unweighted)

Source: Shadow Economy values from 2003 to 2021 are taken from Schneider (2022).

currency demand approach or the income discrepancy method, to calibrate MIMIC values into absolute values. For a detailed explanation of these calculation methods, see Schneider (2011, 2021), Schneider and Williams (2013), and Williams and Schneider (2016), as well as Medina and Schneider (2018, 2021). More recent literature on the application of the MIMIC approach to estimate the shadow economy is given by Dybka et al. (2019) and Dell'Anno (2022, 2023).



Figure 3.2: The average size of the shadow economy in six EU countries between 1999 and 2022

*28 EU countries average (unweighted)

Source: Shadow Economy values from 2003 to 2021 are taken from Schneider (2022). Shadow Economy values prior to 2003 (from 1999) are taken from Medina and Schneider (2021).

Table 3.1 shows the estimates of the average size of the informal economy as a percentage of GDP in the six EU countries part of this study and the main drivers or determinant's average relative impact (in %) of the shadow economy in these countries. These estimations draw upon the research by Schneider (2022) presenting the estimates from 2003 to 2021 and from Medina and Schneider (2021) presenting the estimates prior to 2003, which employ the methodology established by Buehn and Schneider (2012, 2013).

Table 3.1: Average relative impact (in %) of shadow economy determinants in six EU countries part of this study (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
Austria	8.80	18.50	27.40	11.60	12.10	20.50	0.80	9.10
Denmark	16.30	34.60	33.50	4.00	9.50	9.90	0.30	8.20
Germany	15.70	16.60	24.20	8.30	24.30	16.90	0.60	9.10
Greece	27.00	5.80	21.80	10.40	18.00	37.60	0.70	5.70
Italy	26.90	15.60	18.90	9.00	18.60	31.00	0.10	6.80
Romania	33.20	4.20	24.50	14.20	13.10	37.70	1.10	5.20
Average*	19.40	13.10	29.40	9.50	16.90	22.20	0.90	8.10
Average**	20.3	12.6	30.2	10.3	17.9	20.2	0.9	7.9

* Average relative impact (in %) of shadow economy determinants in 38 OECD countries (period 1999 to 2017)
** Average relative impact (in %) of shadow economy determinants in 28 EU countries (period 1999 to 2017)
Source: Estimates are based on Buehn and Schneider (2012, 2013) methodology. Shadow Economy values from 2003 to 2021 are taken from Schneider (2022). Shadow Economy values prior to 2003 (from 1999) are taken from Medina and Schneider (2021)¹¹.
Note: The average size of the shadow economy is expressed as a ratio of GDP (in %).

The factors considered in the above table are personal income tax, indirect taxes, tax morale, unemployment, self-employment, GDP growth, and business freedom index. It appears that there is no single factor that uniformly affects the size of the shadow economy across all these countries. However, some common observations can be drawn. The first most important driver of the level of shadow economy in these countries is the level of self-employment relative to the overall employment level, which is estimated to contribute by 25.6% towards shadow economy. Dell'Anno et al. (2007), Buehn and Schneider (2013) and various other studies have suggested that the higher the level of self-employment, the higher the participation rate in the shadow economy tends to be. From Table 3.1, it can be seen that self-employment's average relative impact (in %) on the shadow economy is over 22%. Equally so, the other most significant driver of the level of shadow economy in these countries can be attributed to indirect and personal income tax, where the average relative impact (in %) on the shadow economy amounts to just over 25%. Other important drivers, with relatively higher average relative impact (in %) of the shadow economy, are the unemployment rate in a country¹², tax morale and the level of business freedom, which is used as a proxy to indicate the level of bureaucracy and stringent laws/regulations in conducting economic activities in the formal sector. When these results are compared to the 28 EU countries and 38 OECD countries averages, the results change slightly making the level of direct and indirect taxes the most contributing factor of informality.

The relative impact of each determinant differs slightly when one considers countries individually in Table 3.1. In examining the shadow economy of the six EU countries, the impact of determinants differs between Germany, Austria and Denmark on one hand, and Italy, Romania and Greece on the other. 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 levels of self-employment, unemployment and tax morale as well as indirect taxes, respectively, are the most important determinants of the shadow economy in our six selected countries. It is imperative to acknowledge that the labour market dynamics, represented by the unemployment and self-employment rates, play a pivotal role in influencing the size and evolution of the shadow economy within these six countries. As extensively analysed in sections 3 and 4, the primary policy reforms implemented across these nations have, in various ways, targeted the reduction of informality by aligning with the unique characteristics of their labour markets. These policies are designed to directly address the labour market structures that contribute to the existence and persistence of the shadow economy.

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)). The results in Figure 3.1 (table A1 in appendix) 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

¹¹ The estimates on Shadow Economy provided here are the values taken from Schneider (2022). Shadow Economy values prior to 2003 (from 1999) are taken from Medina and Schneider (2021). Their estimates and calculations are based on the MIMIC model approach to calculate the shadow economy as a latent variable. Their methodology mainly follows that of Buehn and Schneider (2012, 2013) in estimating the values of the shadow economy using the MIMIC approach, while taking into account limitations of such method discussed in various literature, such as that from Breusch (2016) and Fiege (2016a, 2016b).

¹² Compare here Gaspareniene et.al. (2022).

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 Table 3.1.

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 compared to other causal factors like the tax burden. 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.

3.3. Country Study: Denmark

The shadow economy in Denmark also followed a year-on-year declining trend from 2003 to 2019. The level of the shadow economy in 2003 was 17.4% of 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, a slight increase in the size of the shadow economy is forecast from the previous year.

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

3.4. Country Study: Germany

The results in Figure 3.1 (table A1 in appendix) 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 prepandemic 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 table 3.1, which shows 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 (Schneider, 2022; Medina and Schneider, 2018; 2019).

The driving force of the GDP growth rate as a cause of the shadow economy in Germany is less important than other countries. This is supported by the literature review discussed more extensively in section 3 and 4 of this study. The impact of the coronavirus pandemic led to a significant economic downturn in the country, resulting in higher unemployment levels, predominantly in 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. Recent estimates show that the average shadow economy in Greece between 1999 and 2017 amounted to 27% of the official GDP. The development of the shadow economy in Greece between 2003 and 2022 is presented in Figure 3.1 (table A1 in appendix). The

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 had fallen to 19.23%. In 2020, like for most other EU countries, the results show an increase in the shadow economy to over 20%. 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. 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) support these conclusions.

For Greece, there is 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 a "social norm" of tax compliance (Alm and Torgler, 2011).

3.6. Country Study: Italy

The estimates reveal that the average size of the shadow economy in Italy is among the highest within the "old" EU. This study shows that the shadow economy of Italy, as a percentage of official GDP, followed a declining trend year on year from 2003 to 2019, which is similar to most other EU countries. However, the 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 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. The 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.

Analysing the driving forces of the SE, 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. In contrast 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, this study reveals that the size of the shadow economy in Romania increased markedly, 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 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 such as regulatory burden, personal income tax and GDP growth are also important in this 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 one 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) support these findings on the drivers of informality in Romania.

3.8. Summary of the key drivers

In summary using the ceteris paribus condition, we can conclude that:

- 1. An increase in tax burden increases the shadow economy;
- 2. The more a country is regulated, the greater the incentives 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 the level of freedom, the smaller the size of the shadow economy.

4. Policy Options to Reduce the Shadow Economy (SE)

4.1. General Remarks

A combination of policies should be employed to reduce the SE in any particular EU 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.¹³ This section only provides some general and brief remarks about the policy options, for space reasons.

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 bring firms and workers out of the shadows and promote more inclusive growth.

¹³ Compare here Davidescu (2014, 2016 and 2017) and Williams and Horodnic (2017).

In the following sub-sections, the key case study results from country reports are briefly summarized, to offer the reader some insight into 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 attempting to reduce the level of the shadow economy. An early policy measure in Austria was the Social Fraud Bill,¹⁴ 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 organized tax and social fraud. Before this legislation, operators of "pseudo-companies" had only been threatened with administrative fines. Since March 2005, they have faced 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 organized recruitment, placement, and hiring out of workers without registering them.¹⁵ 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 unregistered, non-educated and low-skilled CEE citizens. The city of Vienna has offered, for example, short-term employment to homeless CEE migrants as a step towards inclusion since 2015. Such policy measures are aimed at incentivizing workers to enter the formal sector or exit the shadow sector.

By mid-2007, the General Social Security Act¹⁶ 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 reduced 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 repeat offenders from €3,630 to €5,000 for each case of illegal employment.¹⁷

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.¹⁸ It is argued that the Austrian tax policy is characterized by significant bias,¹⁹ 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.

¹⁴ Social Fraud Act – SozBeG (2004).

¹⁵ For more details, see Williams and Renooy (2008).

¹⁶ General Social Security Act (Allgemeines Sozialversicherungsgesetz, ASVG).

¹⁷ More details are provided in the databases of Eurofound (2023) and the report of Eurofound (2013).

¹⁸ For more details see ILO, 2010, Labour Inspection in Europe: Undeclared Work, Migration, Trafficking, Labour Administration and Inspection Programme p.10.

¹⁹ See Sustainable Governance Indicators for Austria (n.d.).

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, albeit temporarily. These measures are for alleviating the hardship caused by the coronavirus pandemic and might indirectly help in reducing the size of the shadow economy.²⁰ This is because for people and businesses to benefit from these measures, such as grants, tax relief 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 to exit the shadow economy and enter the formal economy (Kelmanson et al., 2019).

Without indexing tax systems, rising inflation results in tax brackets being distorted and can lead to larger taxpayer tax liabilities, which raises incentives for tax evasion and hence shadow economy. In this respect, the Austrian government abolished to a large extent "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 the Austrian government does not additionally tax every inflation-based wage increase. Governments around the world, including Austria, have put forward various policy measures to help households with the cost of living, such as helping with energy costs, and tax/social security contribution relief – policies that are likely to have a temporary impact on the shadow economy but may not last.

4.3. Government policies to fight informality in Denmark

The most important 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 implemented penalties for employers failing to register employees, which could reduce the size of the shadow economy by deterring people from undertaking informal activities. Denmark is characterized by a high degree of the tax burden. The sizable welfare state in Denmark is financed predominantly through taxes, which make up around 50% of its 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 fell from 45.5% in 1999 to 40.3% in 2016. For high-income earners, the reduction was 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).²¹ 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 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 receive income from undeclared work or criminal activities.

The level of unemployment in Denmark is low thanks to the state of its economy and active labour market policies, which at times cause shortages of labour in some sectors (Andersen, 2020). A tripartite agreement with social partners and the Local Government of Denmark (KL), in October 2021, seeks to reduce labour shortages by encouraging more workers to enter the labour market in the short term. These efforts target especially four areas: matching unemployed workers and businesses, tightening 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, the agreement encourages people to start working

²⁰ See Stimulus packages – Government and institution measures in response to COVID-19 from KPMG (2020).

²¹ See Sustainable Governance Indicators for Denmark (n.d.).

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" program²² – a proposal for a new reform agenda. Based on this proposal the government and a majority of 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 social pensions related to labour income. The reforms in the package are expected to increase potential employment by around 12,000 persons between 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 program,²³ the Danish parliament agreed on strengthening the AML framework²⁴ 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 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 confirmed by these 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 modernize 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 the 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 its course, so 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 (Williams and Renooy, 2009, p.14). There is a recognized 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 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.

 ²² See the report on Denmark's National Reform Programme 2022 from the Ministry of Finance of Denmark (2022)
 ²³ Ibid.

²⁴ AML-framework - Anti money laundering framework.

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.²⁵

Germany's policy decision in 2002 to categorize 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 applicable²⁶ 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 simulations performed earlier by Schneider (2009), who analysed the impact of then new legislation, the net size of the shadow economy 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 increase in VAT from 16% to 19% in 2007, increases in insurance fees for "mini jobs" from 25% to 30%, the introduction of the 45% tax on the rich, and increases in health insurance costs. Other policies implemented during 2006 and 2007, such as the decrease in non-wage labor costs (with unemployment benefits cut), tax deductibility of building maintenance and modernization, and tax deductibility of 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.²⁷

Recent policy measures taken by Germany (which may lead to indirect or direct reductions in the shadow economy) are mostly punitive measures. Examples of such measures are changes made to the criminal tax code, corrections to VAT returns, 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 wages) 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 latter measures might lead to growth in the shadow economy. A ceiling on social security contributions could lighten tax burdens, potentially reducing the shadow economy by discouraging tax evasion. Yet, if seen as excessive or if it cuts social security benefits, it may increase informal work. Carbon pricing, though good for the environment, can raise operating costs, possibly driving some businesses and individuals into the shadow economy. However, appropriate compensation measures and a well-planned carbon pricing approach could mitigate this effect and encourage sustainable economic practices.

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 grants, tax relief 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 huge inflation rates – 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

²⁵ For more details see ILO (2010, p.22).

²⁶ For more details see Renooy, et al., (2004, p.35).

²⁷ For further information refer to Sustainable Governance Indicators for Germany (n.d.).

raises incentives for 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 relief. However, high inflation and the 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 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 laws in an attempt to raise more money to deal 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 ineffective control mechanisms 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 tried to establish enforcement organizations that would have more control over financial crimes that occur in both the legal and shadow sectors of the economy. Second, to improve the tax authorities' crosschecking and detection capabilities, the government made an effort to modernize its database and auditing technology. Finally, the government regularly tried to modify tax laws governing personal, corporate, and self-employed income. For instance, the Independent Public Revenue Authority achieved organizational 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 2021²⁸ (OECD average: 33.5%). However, their efforts were significantly affected by the global financial crisis of 2008 and the subsequent government debt crisis, which meant 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 led to 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 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 still considered to be relatively high, direct taxes in 2019 only made up 9.9% of total revenue (the EU averages in 2018 and 2019 were 13.2% and 13.3%, respectively) (SGI Data, 2022).²⁹ 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) and had fallen to 13.3% by September 2021 (EU average: 6.7%). A rise in part-time employment, expansion of 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

²⁸ SGI Data for Greece (2017).

²⁹ SDI Data for Greece (2022).

progress, given that it stood at 28% in 2013 and 25% in 2015 (SGI Data, 2022).³⁰ 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 EU-28, at a rate of more than 32% (14% in the EU-28).³¹ Policies to address this should be implemented in an attempt to attract economic agents to formalize. The increase in emigration has led to a slight decrease in the levels of self-employment and unemployment 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 eighthour 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 office hours. Further, it introduced a "digital work card" to monitor employees' working hours in real time, as well as increasing legal overtime to 150 hours a year.

The government has also undertaken several preventative 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 also aims 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,³² is their commitment to modernize and digitalize public administration including improving the tax administration and justice systems, promoting 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, the professional orientation of the labour force, the delivery of technical education and training, facilitating the link between labour demand and supply, and payment of benefits such as unemployment benefits, maternity benefits, etc.

Finally, in addition to the above, to create an environment for growth in 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 benefits of functioning on a legal basis should be promoted by education and awareness-raising programs, in which public 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. 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 tax evasion and the shadow economy in general. Such measures were mainly to monitor, detect and prevent households and businesses from commencing shadow economy activities. In addition, measures to incentivize economic agents to exit the shadow economy and enter the formal sector have been implemented through various tax and regulatory reforms.

³⁰ SDI Data for Greece (2017).

³¹ Eurobarometer Data (n.d.). Please note that the data presented in this study for the EU aggregate relate to EU-28 (i.e. current EU 27 + the UK), since the UK was an EU Member before end of January 2020.

³² European Commission – Greece's recovery and resilient plan, European Commission (2021a)

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 strain the Italian tax system. In addition, the tax system is characterized by its inability to considerably lower the extent of the shadow economy or the extremely high levels of tax evasion. Due to this, fiscal pressure has been consistently high over time, and the level of tax burden can be considered unfair in Italy. Financial pressure is quite high on people and firms that pay taxes on time, but 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, tax policy in Italy does 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 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, postpone, or provide certain tax relief, social security relief, 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 30% relief on the pension contributions that companies must pay for all employees, for the period from October to December 2020. The government also introduced a more generous child allowance from 2022 to replace tax deductions and improve fairness.

Key measures to reinforce Italy's economic and social resilience³³ are in the following areas: increasing the supply of childcare facilities; 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 for detecting illicit behaviour and tax evasion. Such policies include pre-filled tax returns and early communications, which are being expanded to raise compliance. The government has been pushing for measures that encourage digital payments rather than cash payments, in an attempt to reduce the size of the shadow economy. A recent budget introduced sanctions for retailers and service providers that do not accept credit cards. These measures were announced under the Cashless Plan in late 2020 to incentivize 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 limited impact on reducing cash payments as they normally occur in lower-value transactions. The correct level would differ between countries and depend on several factors, such as payment card usage, financial inclusion and payment infrastructure development.

The digitalization of other services, such as compulsory digital invoicing extended and advanced taxpayer profiling to raise compliance, was introduced in 2019. Italy's most recent recovery and resilience plan³⁴ dedicated significant investment to supporting the digital transition, with notable investment in digitalizing 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.

³³ See Italy's recovery and resilience plan from European Commission (2021b)

³⁴ Ibid.

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

4.7. Government policies to fight informality in Romania

Relatively recent policy measures³⁵ 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. Several government agencies attempt to curtail undeclared work and the shadow economy in general. Such agencies are the Labour Inspectorate,³⁶ 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 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 its Labour Code (applied in May 2011), making undeclared work above a certain level equal to a criminal offense and as such liable for prosecution, for all companies that 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. Successive rounds of VAT reductions have been implemented, starting in 2013, firstly including a targeted reduction in VAT for bread and bakery products from 24% to 9%, then extended to meat products, then generalized to all edible products as of mid-2015. This was followed by a general reduction in VAT from 24% to 20% as of 2016. Social security contributions were 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 revenue, including capital gains and interest, except for dividend income, which is taxed at a flat rate of 5%. Individuals may owe social security contribution 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 important 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.

³⁵ Government of Romania (2019).

³⁶ 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.

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 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).³⁷ Increases in unemployment may prolong any measures and policies that the Romanian government is taking 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 indirectly – since people and businesses benefit from these measures, such as grants, tax relief 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 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

5.1 Summary

It is essential to begin this summary discussion by examining the developments in the shadow economy across the entire OECD, of which the six countries in this study are members of. There are broadly four different developments concerning the development of the shadow economy 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 over the past 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 (projected as of January 2022) indicate a decline in the shadow economy by roughly 0.52 percentage points, this decline may not materialize. This is a direct result of the exacerbating costs of living and the severe energy shortage, which may lead to an increase of 5–7% in the shadow economy in almost all EU countries.

These 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, there is have an increase of the size of the shadow economy from west to east. In addition, there is an increase in the size and development of the shadow economy from the north to south of Europe. On average, the southern European countries have considerably larger shadow economies than those of central and Western Europe.

³⁷ SDI Data on Romania (2022).

Section 3 provides an analysis of the main drivers of shadow economy in the six countries (part of the case studies). Key policies that were implemented over the years by these six EU countries in combating tax evasion, undeclared work and shadow economy in general are identified. After reviewing these policy measures for each country, the authors conclude that they were in line with the recommended policy options identified in this study and that most of them were preventative, monitoring, enforcement, deterring, incentive and fiscal policy measures.

Finally, section 4 presents several policy options for governments to reduce shadow economy. 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 bring firms and workers out of the shadows and promote growth.

In conclusion, the selected European countries have implemented a variety of policies to combat informality and reduce the shadow economy. These policies encompass a range of strategies, including legal reforms, tax adjustments, prevention, detection, and labour market measures. While each country's approach is tailored to its unique economic and social context, common themes include addressing tax evasion, increasing formal sector participation, and promoting digitalisation to monitor economic activities more effectively.

Austria has adopted a comprehensive approach with measures like the Social Fraud Bill, which imposes criminal penalties for tax and social fraud, while Germany focuses on detection, prevention, and punitive measures. Denmark employs a mix of tax reductions, active labour market policies, and regulatory reforms to reduce the shadow economy, while Greece confronts high tax evasion rates by enhancing tax enforcement and modernizing databases. Italy emphasizes monitoring, detection, and incentives for formal sector participation, and Romania primarily relies on preventive and monitoring measures, with a focus on tax reductions.

However, these efforts face challenges from economic crises, high unemployment rates, and inflation, which may undermine the effectiveness of short-term relief measures. In the long run, continued efforts to improve tax systems, enhance compliance, promote cashless transactions, reduce corruption, and bolster public services will be crucial in reducing informality and fostering formal economic growth in these European nations.

5.2 Policy Conclusions

The following two general policy conclusions focus on reducing the shadow economy:

- (1) Since 2020, all countries and their governments have needed to undertake policy measures to stimulate the official economy with strong GDP growth and a reduction of unemployment to reduce the shadow economy. The better they succeed, the stronger the shadow economy declines!
- (2) However, the crucial question is: "Is this reduction of the shadow economy a blessing or a curse?"

Our answer is as follows:

- If we assume that roughly 50%³⁸ 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 one³⁹.
- A decline in 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, policymakers need to favour and choose such policy measures that strongly increase 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.

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³⁸ There is evidence from the questionnaires questionnaires from Germany and Austria for this assumption. See Schneider (2022) for more details.

³⁹ It must be noted here that since 2000, several European National Institutes of Statistics have revised their official statistics to account for the non-observed economy. From 2016, these adjustments have been standardized across all EU member states, utilizing the Tabular Approach of Non-Exhaustiveness. This information is crucial as it impacts the outcomes of the MIMIC (Multiple Indicators Multiple Causes) model, which relies on the method of official GDP calculation. For instance, GDP growth or per capita figures, often used as a cause or indicator of the latent variable in such models, incorporate the official GDP as a key component. Specifically, the official GDP forms the denominator in the ratio defining the unobserved variable.

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APPENDIX

Table A1: 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
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
South-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

Country / Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
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
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: Shadow Economy values from 2003 to 2021 are taken from Schneider (2022).

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

Table A2: Average relative impac	t (in %) c	of shadow econon	<i>iv determinants in 38</i>	OECD countries (period 1999 to 2017)
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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

Country	The average size of the shadow economy	Personal income tax	Indirect taxes	Tax morale	Unemployment	Self-employment	GDP growth	Business freedom
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
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

Country	The average size of the shadow economy	Personal income tax	Indirect taxes	Tax morale	Unemployment	Self-employment	GDP growth	Business freedom
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: Estimates are based on Buehn and Schneider (2012, 2013) methodology. Shadow Economy values from 1999 to 2017 are taken from Medina and Schneider (2021). Note: The average size of the shadow economy is expressed as a ratio of GDP (in %).



Figure A1: Average relative impact (in %) of the shadow economy determinants in six EU countries (1999–2017)

Source: Estimates are based on Buehn and Schneider (2012, 2013) methodology. Shadow Economy values from 1999 to 2017 are taken from Medina and Schneider (2021). Note: The average size of the shadow economy is expressed as a ratio of GDP (in %).