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CROSS-COUNTRY REPORT ON THE DETERMINANTS OF THE SHADOW ECONOMY IN CESEE AND POLICY IMPLICATIONS

June 20, 2017

SELECTED ISSUES FOR THE 2017 ARTICLE IV CONSULTATIONS WITH THE REPUBLIC OF LATVIA AND THE REPUBLIC OF MOLDOVA

Approved By
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INTRODUCTION

1. Informality declined across Europe in recent years but remains significant, especially in Eastern Europe. As a share of formal GDP, shadow economies have fallen across much of Europe since the global financial crisis, when they reached their peaks in many countries (see Box 1 for a discussion of the definition and measurement of the shadow economy). However, the shadow economy remains, on average, equivalent to one-fifth of GDP in Western Europe and one-third of GDP in Central, Eastern and Southeastern Europe (CESEE), and is much larger in some economies.

2. Shadow economies persist for a variety of reasons. Workers and firms may opt for informality to avoid taxes and pension, or social security payments or labor and product market regulations. However, in some cases the shadow economy can serve as a source of employment and income in the absence of opportunities in the formal sector, or as a safety net during cyclical downturns (Loayza and Rigolini 2006). In this way, the shadow economy, too, can contribute to overall growth (Schneider 2004).

3. Large shadow economies tend to hold back growth and, for some CESEE countries, convergence with the rest of Europe. While the informal sector can act as a source of supplemental or otherwise unavailable income, its existence is partly a function of inefficiencies in the broader economy. The costs associated with informality include distortions in the labor market, forgone revenue due to underreporting of wages and output, suboptimal provision of public goods, and lower provision of and access to financing. Limited scale of production also tends to impede firms' productivity and innovation.

4. Given that there are significant costs associated with shadow economies, policy makers seek to understand the drivers and possible solutions. Identifying the causes and reducing the size of the shadow economy entails several challenges. First is selecting from among several methodologies to measure the shadow economy (see Box 1). Second, it can be difficult to assess the drivers of the shadow economy due to endogeneity (Schneider 2013). For instance, tax morale, enforcement, rates, and compliance all interact with each other, as well as the provision of public services and government effectiveness. Finally, once drivers are identified, policies – such as tax rates or measures to broaden the tax base – must be calibrated so that economic activity is formalized without stifling entrepreneurship or cutting off incentives to work.

5. This note seeks to examine the drivers of shadow economies in Europe, with a particular focus on CESEE, and recommend policies to increase formality. The paper finds that the primary determinants of the shadow economy in Europe are the tax burden and regulatory quality, along with several macroeconomic factors, including productivity and trade openness. Remittances are also found to be significantly negatively associated with informality, suggesting that migration and the shadow economy can be viewed as substitute activities. The determinant for the CESEE group are, similarly, regulatory quality, government effectiveness, and human capital; in a smaller subset of Eastern European countries the level of investment is also negatively associated with the size of the shadow economy.

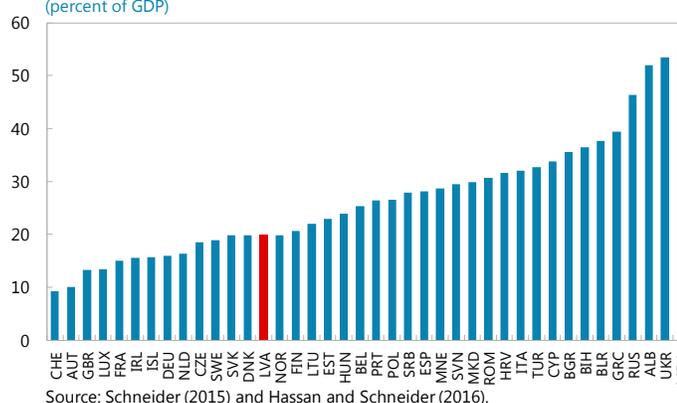
6. The remainder of this paper is organized as follows: Section B will provide an overview of the size, evolution, and costs of shadow economies in Europe; Section C will discuss the underlying causes of the shadow economy; Section D will present an empirical analysis of the determinants of the shadow economy; and Section E will discuss the policy implications and recommendations, and Section F will bring together conclusions.

SIZE, EVOLUTION, AND COSTS OF THE SHADOW ECONOMY

7. The shadow economy represents a sizeable share of GDP for many countries in Europe.

Per estimations carried out with data for 2013 by Hassan and Schneider, the share of the shadow economy in Europe ranges from about 9 to over 50 percent of GDP. On average, the share of the shadow economy for countries in Western Europe tends to be smaller at about 20 percent of GDP. Countries in Central Europe, the Balkans, and the Baltics, have higher shares of the shadow economy on average, above 25 percent of GDP. The share of the shadow economy is even higher in CIS countries, above 40 percent of GDP and higher in some cases.

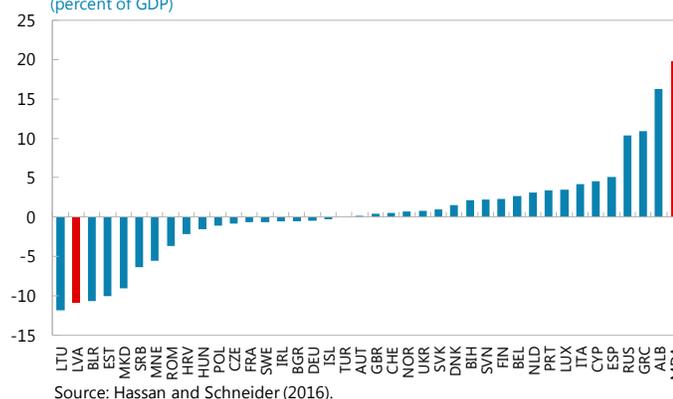
Size of Shadow Economy in European Countries, 2013
(percent of GDP)



8. While the average size of the shadow economy in Europe remained broadly the same as in 2000s, the dynamics is very heterogeneous across countries.

Since 1999, in some countries the shadow economy shrunk significantly (e.g. by over 10 percent of GDP in Baltic countries), while in others, including some advanced economies, it increased substantially (e.g., by 11 percent in Greece and by 20 percent in Moldova). The shadow economies increased on average during 2008–10 and then declined to around pre-crisis levels.

Change of the Size of Shadow Economy, 1999 to 2013
(percent of GDP)



Box 1. Defining and Measuring the Shadow Economy

Defining shadow economy. Alternative concepts of the shadow economy encompass very different phenomena. Some definitions focus on hidden output (Gerxhani 2004), others on hidden employment (Husmanns 2004, Perry 2007). While unregistered firms hide all their output, registered firms may choose to hide a fraction of their output to reduce their tax liability. Schneider and his coauthors (Hassan & Schneider 2016, Schneider & Williams 2013, Schneider 2014) define the shadow economy as mostly the legal economic and productive activities that are deliberately hidden from official authorities and that, if recorded, would contribute to GDP (excluding illegal or criminal activities, and do-it-yourself, charitable or household activities).

Measuring shadow economy. The hidden nature of informal activity makes it challenging to measure accurately. Several methods have been employed to measure the size of the shadow economy.

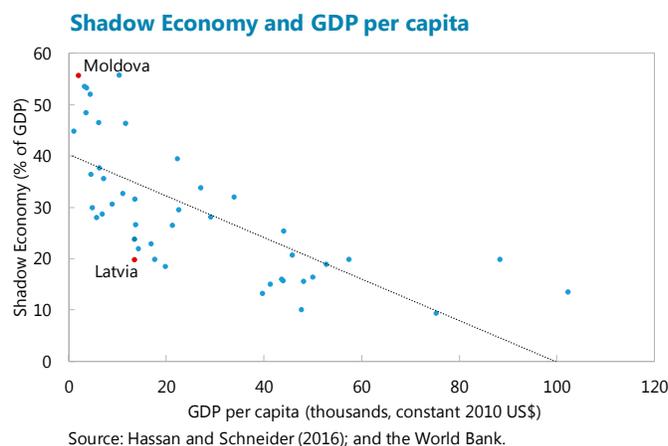
- Direct approaches are based on surveys, tax auditing and other compliance methods. Such methods allow to gather detailed information about the shadow economy structure. However, the obtained information may not be representative and may not be consistent across countries.
- Indirect approaches include (i) the discrepancy between income and expenditure measures of GDP, (ii) the difference between GDP growth and electricity consumption growth, and (iii) the difference between the estimated money demand and actual amount of currency circulated in the economy. These measures are sensitive to the underlying assumptions (elasticity, velocity of money, base year of the estimation, etc).
- A model approach is based on the MIMIC (Multiple Indicator, Multiple Causes) model, pioneered by Frey and Week-Hannemann (1984) and further expanded by Schneider and his coauthors (2010, 2013, 2014, 2016). In the model, the size of shadow economy is represented by a latent variable (an index), with both its causes and indicators observed and measured. This latent variable is used in a system of two equations: (i) as the dependent variable with its causes as the explanatory variables and (ii) as the explanatory variable for the indicators of informality. The equations simultaneously estimated and the fitted values of the latent variable are used to compute an estimate of the size of the shadow economy as a share of GDP. The shortcomings of this method include sensitivity to changes in data and specifications, the sample used, calibration procedures, and starting values (Breusch 2005).

There is no ideal or leading method, all of them have some conceptual or practical strengths and weaknesses. The choice of the methodology can be governed by data availability or the research objectives. Multiple methods can be employed to improve accuracy of the estimations.

For our analysis, we use the estimates of the shadow economy from Schneider and Hassan (2016), that covers a set of 157 countries. The output of the MIMIC model is an estimation of the underlying causes of the shadow economy resulting in a common set of causal (government spending as a percent of GDP, unemployment rate, self-employment rate, Economic and Business Freedom Indices from the Heritage Foundation) and indicator variables (M1/M2 and labor force participation rate). While the MIMIC estimates of the shadow economy can be subject to criticism, the advantages are its broad coverage, along with the internal consistency of the dataset, which are useful for comparability of shadow economy estimates across countries and for the panel data analysis.

9. The size of the shadow economy is smaller in more developed countries, both as the share of GDP and share of employment.

The share of shadow economy is strongly negatively correlated with income per capita across different country samples and time periods. In more advanced economies, the shadow economy is dominated by tax evasion and undeclared labor in registered firms (Schneider and Buehn 2012). In contrast, developing economies tend to have a relatively higher share of self-employed workers, reflecting a lack of opportunity in the formal sector (Oviedo 2009). As the economy develops, informal firms are more likely to be replaced by new or existing registered firms rather than transition into the formal sector (Porta and Shleifer 2008).



10. Shadow economies create inefficiencies and hold back growth and development across a number of dimensions:

- *Public revenue and services:* Shadow economy activity goes untaxed and so weakens public revenues. This, in turn, leads to fewer and/or weaker public goods and services. Weaker public services – such as education, social support, or training programs – can on their own weaken growth prospects and efforts to reduce poverty. But it can also have a dynamic effect, as weaker public services negatively influence public perceptions of government effectiveness, thus increasing citizens' incentive, or willingness, to avoid taxes, increasing informality and further weakening public revenues and services (see, for instance, Schneider 2004).
- *Innovation and productivity:* Operating informally tend to limit the enterprise growth below the efficient scale of production. Tax and regulatory pressures that spur firms to stay informal mean that firms also tend to stay smaller, engage in less research and development and innovation, and hire fewer workers (Bobbio 2016). This skews resource allocation away from efficiency, reduces human and physical capital accumulation and technological innovation, and weakens productivity and potential output.
- *Labor markets:* A large shadow economy can also mean high and persistent unemployment rates and low labor force participation (Schneider 2013). While this is partly a reflection of a smaller labor force due to high informal employment, informal labor can also be lower-paying (Vargas 2015), less secure, and offer weaker working conditions (Williams 2015). A large number of workers in the informal sector also makes it more difficult to target effective labor policies.
- *Financial access:* Banks tend to avoid lending or lend less to unregistered firms and borrowers without formal jobs or declared income. This can stymie financial deepening (Gobbi and Zizza 2007, Messenot and Straub 2016) and the funding needed for capital investment, private sector expansion, and innovation.

- *Data and surveillance*: Large shadow economies can also distort national accounts, employment, income, and other data. This makes it more difficult to analyze a country's overall macroeconomy and could lead to misdiagnoses and skewed policy choices.

DETERMINANTS OF THE SHADOW ECONOMY

11. Correlations between the shadow economy and economic indicators are broadly consistent with expectations (see Figure 1). For example, the data illustrates a positive relationship between the shadow economy and unemployment, corruption, and agriculture. At the same time, the relationship between the shadow economy and GDP per capita, credit to the private sector, the revenue burden, human development, and regulation is negative (see Figure 1 and Figure 2). In addition, both the negative and positive relationships are relatively stable over time for the whole sample.

12. In seeking to understand the dynamics around the shadow economy, we find it useful to group determinants into two broad categories: (i) "exit" and (ii) "exclusion" (Perry' 2007, Oviedo 2009). "Exit" factors tend to lead to voluntary informal employment, with shadow workers typically earning similar or higher incomes relative to comparable formal workers, and enjoying greater employment flexibility. In contrast, "exclusion" factors tend to result in forced informal employment, when informal workers are unable to find formal work. The difference mostly depends on whether, as a result, workers are better off with a formal, compared to an informal job. In most countries, both sets of factors are present to a varying degree.

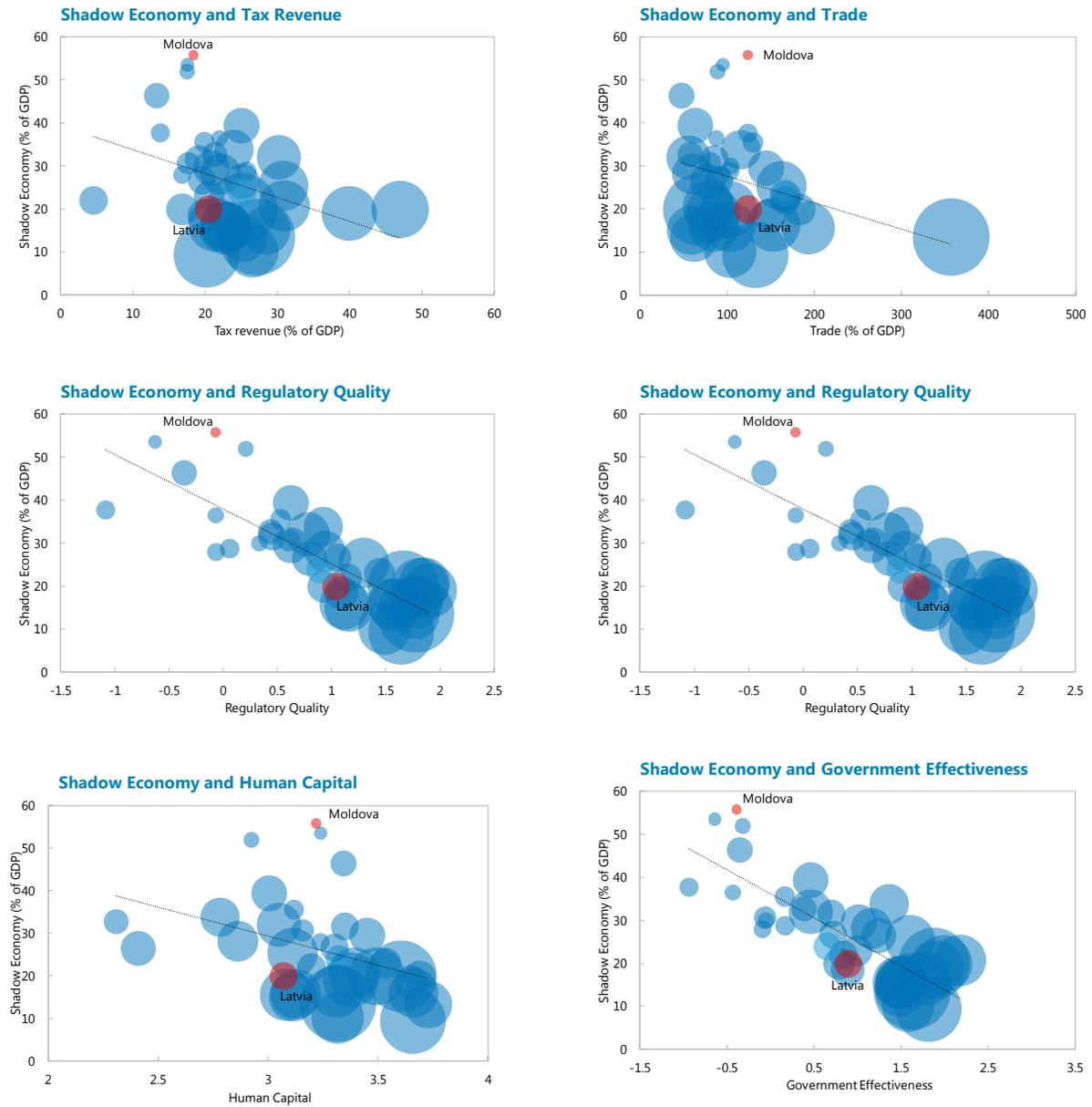
i. *Exit* factors include:

- Burdensome and costly regulation, including high entry costs, trade barriers
- Complex and excessive taxation and poor tax administration,
- Administrative barriers, including excessive paperwork, corruption
- Low monitoring and enforcement
- Low benefits of being formally employed or formally registered,
- Low quality of public goods and services (infrastructure, social protection)
- Individual preference for self-employment

ii. *Exclusion* factors include:

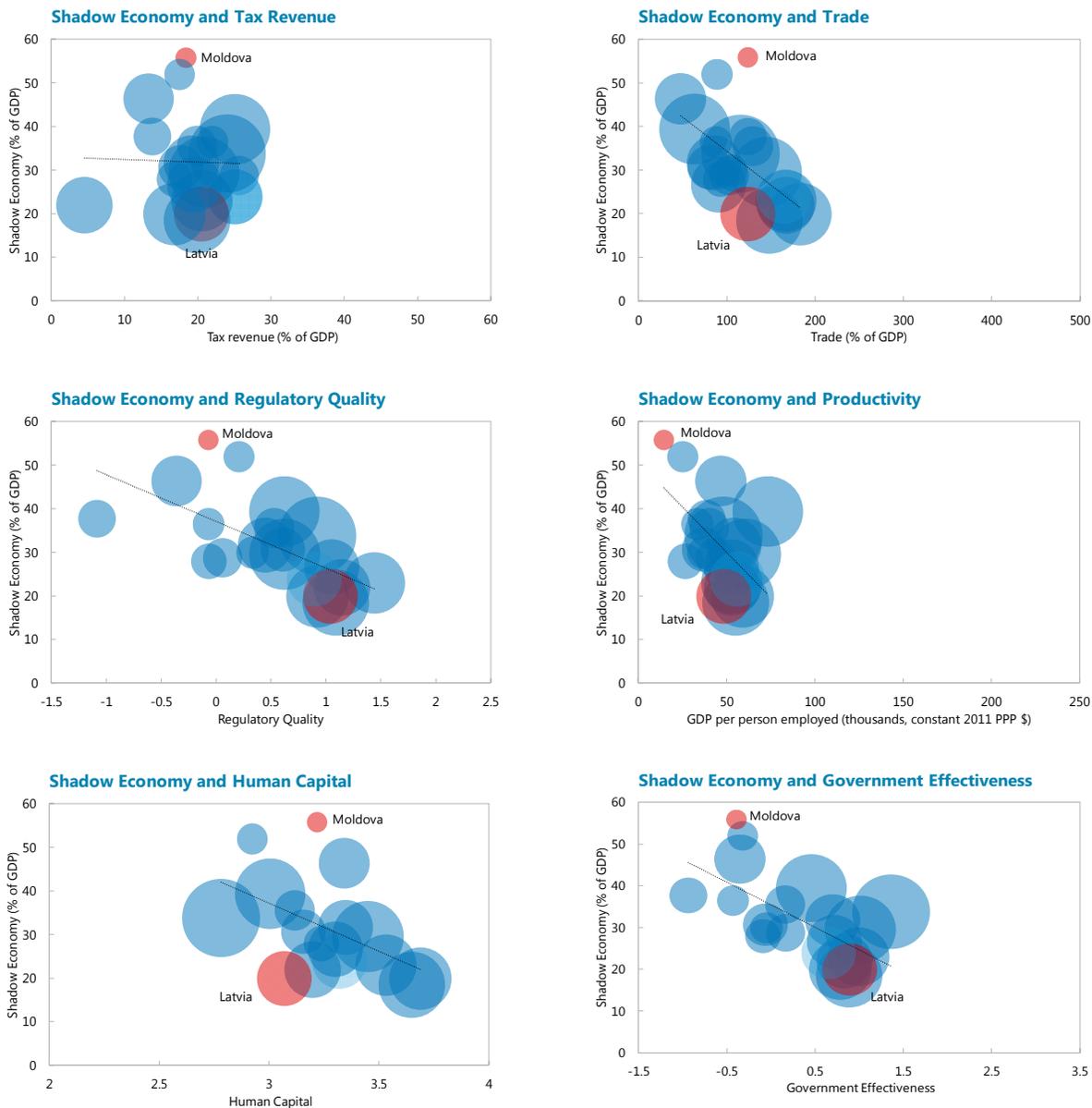
- Burdensome and costly regulation, including high entry costs, trade barriers
- Lack of opportunities in the formal sector, especially for certain demographic (e.g., young or old workers) or ethnic groups
- Low productivity
- Low skills and low human capital

Figure 1. Shadow Economy in Europe



Sources: Hassan and Schneider (2016), Penn World Table, and the World Bank.

Figure 2. Shadow Economy in Non-Western Europe



Sources: Hassan and Schneider (2016), Penn World Table, and the World Bank.

13. There is a broad literature related to the drivers of the shadow economy. The literature suggests a wide range of factors can drive the evolution of the shadow economy, including:

- a. **Weak institutional quality**, is found to be a key determinant across the literature. Excessive regulatory burden, inefficiency of government institutions, weak rule of law, widespread corruption can prevent formal firms from hiring workers and encourage informal activities.
 - **Regulatory burden** is the most robust cause of informality, it suppresses entrepreneurial freedom, imposes higher entry costs, results in more bureaucracy (Johnson, Kaufman, and Schieffer 1997, Dabla-Norris, Gradstein, and Inchauste 2008).
 - **Weak governance**, including **corruption** and **weak judicial system** also play an important role in determining the size of shadow economy, especially in interaction with regulation and other variables. The impact of regulation and financial constraints on informality is stronger with a better rule of law (Dabla-Norris, Gradstein, and Inchauste 2008) and when governance levels above the certain threshold (Oviedo 2009).
- b. **Tax burden and tax administration** are also crucial factors that explain the size of the shadow economy. The higher overall tax burden and/or lower monitoring and enforcement, the stronger incentive for tax evasion and underreporting of wages (Schneider and Williams 2013, Hassan and Schneider 2016).
- c. **Trade openness** is also found to be negatively associated with the size of shadow economy (Torgler and Schneider 2007). Trade is relatively transparent and easier to tax and, therefore, more difficult to conceal for tax and other purposes.

14. Where informal activity is driven more by “exclusion” factors, workers tend to rely on their jobs to provide their income subsistence. Those workers typically have fewer skills, less education, and are less productive.

- a. Countries with higher **productivity** (GDP per worker) typically have a better allocation of resources within the economy and so smaller informal sectors (Porta and Shleifer 2008). Productivity could also act as a proxy for a country’s level of development, which is generally correlated with taxation capacity and demand for public goods and services. As with the income level, the relationship between productivity and the size of shadow economy is endogenous, with causation going both ways.
- b. Shadow economies are associated with lower **human capital**, with informal workers having less skills and a lower education level (Porta and Shleifer 2008, Dabla-Norris, Gradstein, and Inchauste 2008). Human capital accumulation and entrepreneurial talent are held back by lower levels of innovation and productivity that occur in countries with larger shadow economies.
- c. The “exclusion” factors tend to explain the prevalence of informal work in **agriculture** and related sectors (along with lower enforcement), with the size of agricultural sector positively contributing to the shadow economy (Vuletin 2008, Schneider 2014).

15. Migration and remittances play a dual role with respect to the shadow economy.

Migrant workers, similarly to informal workers, tend to reside in rural areas, have less education, and are employed more in labor-intensive activities (less productive) compared to workers in the formal sector. The shadow economy and migration also play a similar poverty reducing role, providing a safety net for the poor. As a result, the two phenomena can be viewed as substitute activities, and are therefore negatively related. On the other hand, remittances can encourage informality by providing the capital to start a new business or become self-employed or by providing a safety net to encourage remittance recipients to choose less secure informal work (Ivlevs 2016). For example, in Moldova some women and young people in families with household member(s) working abroad choose self-employment over a formal job (Gunta 2012). In this case, remittances positively contribute to the size of the shadow economy. The ultimate sign of the relationship between the two phenomena depend on which of these two effects is stronger.

EMPIRICAL RESULTS

16. Our analysis seeks to identify the determinants of the shadow economy in Europe. To determine the shadow economy drivers specific to Europe, we use estimates for European shadow economies derived by Schneider and Hassan (2016)¹ as the dependent variable in a Europe-focused model. For independent variables, we use macroeconomic indicators and institutional indices² that are consistent with the literature and relevant to our smaller country set. We begin with a panel of 40 European countries over 2000–13 and then examine panels of smaller country samples –on “Non-Western” European (NWE) countries³ and New Member States (NMS)⁴—over shorter time periods. Narrowing the country focus allows us to examine European countries with larger shadow economies and so to better refine our policy recommendations. Overall results are presented in Table 1 below.

17. A combination of macroeconomic, microeconomic, and institutional factors drive shadow economies in Europe. For our full sample, we use a fixed effects panel regression to control for heterogeneity across this broad set of countries. The benchmark specification used is:

$$ShadowEconomy_{i,t} = \alpha_i + \beta X_{it} + \delta_t Time_t + u_{i,t}$$

¹ Schneider and Hassan (2016) estimates are based on a common set of causal variables for the entire global country set.

² We use several indices (World Bank’s Regulatory Quality, Heritage Foundation’s Fiscal Freedom, World Bank’s Government Effectiveness) in our estimations, the selection of indicators follows the literature. The empirical results are broadly robust to the choice of an indicator.

³ “Non-Western Europe” country set includes: CESEE (Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Turkey, and Ukraine), except for Kosovo, and also Greece and Cyprus.

⁴ “New Member States” country set includes: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia.

where *Shadow Economy*_{*i,t*} represents the size of the shadow economy as a share of GDP; α_i are country fixed effects; $X_{i,t}$ is a vector of macroeconomic variables and institutional indicators; $Time_t$ is time fixed effects, which we include to control for unexpected year-related variation and special events; and $u_{i,t}$ is the error term. We start with a group of macroeconomic variables and institutional indicators found in the literature to influence the shadow economy. We find the following to be statistically significant and negatively associated with the size of the shadow economy as a share of GDP (see Table 1, regressions 1 and 2), broadly in line with the literature:

- *Regulatory quality*: Using the World Bank’s regulatory quality index⁵, we find a negative relationship between regulatory quality and the size of a shadow economy.
- *Tax burden*: Using the Heritage Foundation’s Fiscal Freedom index⁶, which encompasses marginal personal and corporate tax rates and the total tax burden as a share of GDP, we find a negative (if weak) relationship between fiscal freedom and the shadow economy.
- *Productivity (GDP per worker)*: We find a negative relationship between productivity and the size of the shadow economy, as expected.
- *Trade openness (trade volume/GDP)*: Similar to the literature, we find a negative relationship in Europe.
- *Remittances (per GDP)*: We find a negative relationship between remittances received and the size of the shadow economy. This is likely due to the common determinants of both the shadow economy and remittances: weak institutional factors, low human capital, and low productivity. Imposing country fixed effects, as we do, significantly reduces the explanatory power of these variables since most of them do not exhibit strong time variation (Table 1, regressions 1, 2, and 5). Thus, when we control for institutional factors, countries that are more dependent on remittances (and, correspondingly, have higher levels of migration) have smaller shadow economies. This suggests that migration and informality can be viewed as substitutes.
- *Agriculture value-added per GDP*: We find a negative relationship between agriculture’s share of GDP and the shadow economy in Europe, contrary to some literature findings. However, the literature focuses predominantly on developing countries. Since about half of this sample is comprised of advanced economies with more developed institutions, including taxation systems, this result could be a function of more efficient – and formalized – agriculture sectors in advanced Europe dominating the sample. In this case, larger agricultural sector offers more employment opportunities, and we would expect a negative relationship with the size of the shadow economy.

⁵ Regulatory Quality Index captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Estimate gives the country’s score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5. The score indicates better regulatory quality.

⁶ “Fiscal Freedom Index is a (reverse) measure of the tax burden imposed by government. It includes direct taxes, in terms of the top marginal tax rates on individual and corporate incomes, and overall taxes, including all forms of direct and indirect taxation at all levels of government, as a percentage of GDP. Thus, the fiscal freedom component is composed of three quantitative factors: (i) the top marginal tax rate on individual income; (ii) the top marginal tax rate on corporate income, and (iii) the total tax burden as a percentage of GDP. The higher index indicates less tax burden.

18. The full country set is quite heterogeneous, encompassing high-income advanced countries with relatively small shadow economies and low-to-middle income transition countries with some of the largest shadow economies in the world. As such, we split the sample to focus more closely on those countries with larger shadow economies.

19. NWE countries see their shadow economies more clearly driven by institutional factors. For the smaller, more homogenous sets of countries we use a random effects model. The benchmark specification is:

$$ShadowEconomy_{i,t} = \alpha_i + \beta X_{it} + \delta_t Time_t + v_i + \epsilon_{i,t}$$

which is similar to the fixed effects specification above, but where v_i is the unit-specific error term and $\epsilon_{i,t}$ is the within-entity error term. Our NWE country set includes 23 countries over 2005–13. We find that the shadow economy is again negatively associated with productivity, remittances, and regulatory quality (see Table 1, regressions 3 and 4). However, our results also show two other important drivers of the shadow economy in NWE countries:

- *Government effectiveness*: Using a World Bank index⁷ that measures the perception and quality of public services – as discussed, an important influence on tax morale – we find a negative relationship between government effectiveness and the size of the shadow economy, as expected.
- *Human capital*: Using an index from the Penn World tables that measures human capital based on years of schooling and returns to education, we find a negative relationship with the size of the shadow economy.

20. NMS countries show similar, but distinct results. With a much smaller set of 10 countries, but using the same model specification as for the NWE countries above, the results differ somewhat from the larger NWE set of countries. While government effectiveness remains negatively associated with the size of the shadow economy, the other variables drop as significant drivers of the shadow economy (see Table 1, regression 6). This may be because some variables – such as *human capital* and *remittances* – are less important to these as more-developed countries than other CESEE countries, such as some Balkans and CIS countries. Alternately, the much smaller sample size may be skewing our results. However, *investment*, as measured by gross capital formation as a share of GDP, becomes an important driver for the NMS countries, with a negative relationship. We would expect this given that lower levels of investment should be correlated with weaker productivity, less innovation, and weaker human capital.

⁷ Government Effectiveness Index captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5. The higher score indicates better quality.

Table 1. Summary of Empirical Results

	All EUR		Non-Western Europe			NMS
	Dependent Variable: Shadow Economy per GDP					
	1	2	3	4	5	6
Productivity (GDP/worker)		-.221**	-.266***	-.271***	-.421**	
Trade Openness	-.276***	-.286***			-.259***	
Remittances	-.038***		-.056**	-.022***	-.072***	
Agriculture VA/GDP	-.125***	-.150***				
Minimum Wage		-.011				
GCF						-.335***
Regulatory Quality	-.149***			-.148**		
Fiscal Freedom		-.001**				
Government Effectiveness			-.162**			-.0177***
Human Capital			-.805***	-.782***		
Estimation	FE	FE	FE	FE	FE	FE
R-square	0.317	0.334	0.710	0.776	0.906	0.522
Observations	509	289	205	205	257	130
Countries	40	28	23	23	29	10
Years	2000-13	2004-13	2005-13	2005-13	2005-2013	2000-13

***p<0.01, **p<0.05, *p<0.1

21. Including non-European CIS countries with our overall sample appears to confirm these results. Adding CIS countries from the Caucasus and Central Asia⁸ to our original set of European countries (which includes European CIS countries), we again see that the shadow economy is negatively associated with productivity and remittances. Moreover, these results show an even stronger importance of institutional factors – specifically, *government effectiveness, human capital, rule of law*, and, to a lesser extent, *corruption and ease of paying taxes* (see Appendix 1). We would expect this given the addition of more countries with large shadow economies and institutional challenges, and in fact this is in line with the literature that has focused on these regions (Abdih and Medina 2013).

22. Overall, these results point to the importance of macroeconomic and institutional factors in determining the size of the shadow economy in Europe. For the largest set of countries, macroeconomic factors appear to be more important than institutional factors. We would expect this given the more highly-developed institutions in Western European countries. For CESEE, however, institutional factors play a relatively stronger role, although productivity is also still important. We would also expect this, given that institutions in much of CESEE are less developed. This is in line with the literature, which suggests that institutional elements such as regulatory quality and government effectiveness – which, as discussed above, can have dynamic effects on tax morale,

⁸ Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyz Republic, and Tajikistan.

incentives to work formally or informally, and development strategies for small firms – are important drivers of informality.

POLICY IMPLICATIONS

23. To successfully address the shadow economy, a combination of policies should be employed, targeting the determinants most pertinent in any particular country. Reducing tax and regulatory burdens, and enhancing transparency would reduce incentives for informal activities driven by “exit” factors, while improving the operation of the labor market and promoting human capital help to address informality caused by “exclusion” factors. In this section, we provide policy recommendations drawing on successful country experiences of some European countries in reducing the size of the shadow economy.

Taxation-related policies

24. Experience in a number of European countries shows that actions aimed at boosting revenues can also be helpful in reducing the shadow economy. The scope for improvement in tax administration varies across CESEE (REI Fall 2016), however, most countries facing challenges with low automation of processes, organizational structure and operational performance (REI Fall 2016). Successful policy actions can 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 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. Mandatory use of certified invoicing programs for SMEs, cross-checking VAT declarations with merchant point-of-sale transactions, and strengthening bodies responsible for compliance. In addition, the practice in some European countries where the tax authority consults with taxpayers regarding problematic transactions before tax returns are filled, has helped, in part by cutting the number of resource-intensive inspections. Studies have also shown that measures focused on identifying undeclared work, even though unpopular, can boost revenue through higher PIT collection. Furthermore, finding a good balance between punishing offenders and motivating people to change their behavior, can be an effective tool in curtailing the shadow economy and boosting revenues. (See Box 2 for successful policy examples in Hungary and Slovakia.)
- b. **Automating and computerizing procedures.** Efforts to minimize contact between tax officials and tax payers 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. Pre-filled tax returns can simplify compliance and reduce scope for error.
- c. **Promoting electronic payments.** This can help increase collections and reduce VAT fraud. Studies have shown that construction, manufacturing, and wholesale and retail have the highest shares of undeclared activity. The factors that contribute most to the shadow

economy in these industries are underreporting, undeclared work, and a large number of small cash-based transactions. Therefore, increasing banking inclusion and the use of electronic payments could help bring segments of the shadow economy into the formal sector, and boost revenues. Schneider and Kearney (2013) find that increasing electronic payments by an average of 10 percent annually for at least four consecutive years can shrink the size of the shadow economy by up to 5 percent.

Box 2. Examples of Successful Policies to Reduce the Shadow Economy in Eastern Europe¹

Hungary²

Fiscal measures have been successful in combating the shadow economy. Key actions included: the implementation of online cash registers, enhancement of the tax registration procedure, restriction on cash operations between businesses, and the introduction of detailed invoice summarization. The implementation of the Electronic Trade and Transport Control System (EKAER) in 2015 has been another important element of the strategy. In terms of employment and income-related measures, a flat tax rate system was introduced with the objective to reduce the marginal tax wedge on income. In addition, a lump sum tax for small business was implemented to prevent tax evasion of self-employed people. Other important measures are reducing the threshold for VAT and increasing VAT returns reporting frequency.

Additional initiatives are underway. Point of sale terminals will be introduced to more sectors of the economy to increase the number of electronic payments: the government introduced around 100,000 in 2016 and about 30,000 more were introduced in early 2017. The tax authority has started a program to improve the collection of late tax payments from corporate and household taxpayers. In addition, pre-filled tax returns will be available starting this year to simplify the process and improve compliance. Furthermore, the government is planning to introduce an online invoicing system in mid-2017, which will help combat business to business related tax fraud.

These reforms have led to an improved VAT tax compliance and revenue collection. VAT collection increased from 8.9 percent of GDP in 2013 to 9.7 percent of GDP in 2015. This improvement could be explained by the tax base and compliance, considering that no significant changes in policy in terms of rate, occurred during that period. The tax collection increase was higher than the estimated increase of the tax base, indicating that the tax administration reform was the main factor behind the increase in revenue and improved compliance (MNB, 2015). Indeed, the improvements in VAT performance coincided with the implementation of online cash registers in 2014 and its expansion in 2015 as well as with the implementation of the EKAER monitoring system in 2015 (MfNE, 2016).

Slovakia

Proactive approaches to reducing tax evasion in Slovakia have been successful in reducing the size of the shadow economy and in improving VAT collections at the same time (Golias 2013). Key enforcement measures included:

- *Negative enforcement* measures included: controls (e.g. onsite visits and tax audits, which could result in arrests and imprisonment), penalties (€2,000–€200,000 for employing unregistered workers), new regulations (e.g. identification cards for construction workers, forced use of electronic payments, ban on cash transactions over €5,000), and new technology (requirement of cash machines with fiscal memory (adopted in 2011–12) that record identification information about the user, the machine, and all transactions).

Box 2. Examples of Successful Policies to Reduce the Shadow Economy in Eastern Europe (concluded)

- *Positive, indirect enforcement* measures focused on structural incentives: simplifying the tax and social benefits systems (labor market reform in 2003; social benefits reform in 2004; pension reform in 2005), and on increasing transparency: (i) publishing all property contracts and invoices of public institutions on the internet, with the contracts not being valid unless they are published. This allowed for creation of searchable portals displaying and comparing relevant information such as who were the biggest suppliers to the state, at what prices, etc. (2011); (ii) wider use of mandatory electronic auctions when public sector institutions purchase goods, that led to rise of bids in public tenders and to 6-15% savings (2011); (iii) wider use of competition methods in public procurement (2011); (iv) publishing court rulings on internet, public selection of judges (2012).
- *Positive direct enforcement measures* included (i) introduction of vouchers or reduced VAT for household services; (ii) marketing campaigns; (iii) incentives for electronic payment systems (e.g. a popular VAT tax receipt lottery).

¹See REI Fall 2016 for how to improve tax administration efficiency and for country experiences in improving tax administration.

²For further details please see IMF Country Report No. 17/124.

Improving regulation and institutional quality

25. Reforms beyond the tax system are needed to combat the shadow economy in a comprehensive way. Regulatory and institutional reforms are critical to tackle the bottlenecks in improving the business climate, strengthening the rule of law, improving government effectiveness, and combating corruption.

- Reducing regulatory and administrative barriers** will lower the cost incentive for businesses and individuals to participate in the shadow economy. Similarly, improving the quality of government services would make the provision of public goods more efficient, make the environment for doing business more favorable, and remove opportunities to breed corruption. Examples of successful reforms include simplifying registration and licensing process (e.g., automatic licensing in Georgia), creating “one-stop-shop” registration (Estonia), reducing registration fees and statutory requirements (USAID Report 2005).
- Increasing transparency and engagement.** Adopting measures to promote transparency (e.g. though 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. The measures can 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 of noncompliance, follow-up audit programs and prosecution of the worst offenders.

- c. **Improving governance.** CESEE countries still lag behind advanced EU countries in terms of the quality of the judicial system and property rights, and the institutional quality improvement has been uneven across countries (REI Fall 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 loops⁹. The longer-term reform agenda can include:
- strong enforcement of competition rules that reduce monopolistic behavior;
 - sound regulatory frameworks for infrastructure industries (telecom, transports) and finance;
 - redistributive fiscal policies, fiscal transparency, accountability of the use of public resources;
 - policies and practices that ensure transparency of ownership structures of financial institutions.
 - measures to establish clear rules and procedures for recruiting and training civil servants.
 - strengthened property rights through improving cadastres and the ability to register property. Reducing court case backlogs and improving case management systems, (see for example Kosovo and Latvia), would improve the ability to settle cases and recover debts and incentivize the private sector to more fully participate in the formal sector.

Labor market reforms and human capital development

26. In countries with high levels of migration, and where the shadow economy can act as a social safety net, 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 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.

27. Policy actions aimed at improving human capital will improve job-searching capacity and the earnings potential of informal workers. The relevant labor market and education policies include:

- Increasing hiring and firing flexibility (e.g., labor market reforms in Slovakia) in case of overly restrictive labor laws.
- Strengthening enforcement and monitoring (e.g., enforced obligation to register all new workers in Bulgaria)

⁹ See REI Fall 2017 for country examples of institution building paths.

- Making the labor 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).
- Creating a favorable employment environment to returning migrants, providing special training and recognition of the practical skills gained abroad.
- Making professional and vocational education and training more relevant and fostering internal cross-sector mobility.
- Improving efficiency of funds allocated for education, through better prioritization, screening and monitoring of education projects.

Boosting Investment

28. Increased investment can also help address the shadow economy. Many new member states experienced credit-less recoveries following the global financial crisis years. Credit growth is bottoming out, or has already resumed, in most countries, and should now help to stimulate the much-needed investment that can boost actual and potential growth. A higher level of investment tends to be associated with a smaller share of the shadow economy. The relationship between investment and the shadow economy is endogenous. On one hand, shadow firms have limited or no access to banking credit. On the other hand, investment stimulates growth and job creation, thereby reducing the incentives to participate in the shadow economy. Therefore, stimulating credit growth, particularly for SMEs, and promoting an investment-friendly environment could start a virtuous circle. The implementation of programs of the European Fund for Strategic Investments could be helpful in this respect. Within this framework, more SMEs would be eligible to receive guarantees from Development Finance Institutions, such as Altum in Latvia, as well as directly from the European Investment Bank. These programs could improve the access to financing for SMEs that need a first loan, but do not have a credit history

CONCLUSION

29. 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 tax policies and administration, to regulatory and institutional reforms. The menu of policies most relevant for CESEE countries would include: improving tax compliance, automating procedures, promoting electronic payments; reducing regulatory and administrative burdens, promoting transparency and improving government effectiveness. 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.

Appendix I. Results with Non-European CIS Countries

	EUR + Central Asia + Caucasus			
	1	2	3	4
Productivity (GDP/worker)	-.324***	-.334***	-.230***	-.498***
Remittances	-.050***	-.051***	-.057***	-.057**
Government Effectiveness	-.142***	-.146***		
Rule of Law 1/			-.184***	
Human Capital	-.856***	-.805***	-.872***	-1.11***
Corruption 2/		-.002***	-.001**	
Tax Ease 3/				-.009**
Estimation	MLE	MLE	MLE	MLE
Chi-square	480.9	485.69	470.01	226.12
Observations	358	357	357	160
Countries	40	40	40	40
Years	2006-13	2006-13	2006-13	2011-13

***p<0.01, **p<0.05, *p<0.1

1/ World Bank Worldwide Governance Indicators. Gives a country score (higher indicating stronger rule of law), capturing perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.

2/ Transparency International. Ranks countries' perceived corruption on a scale from 0 (untrustworthy and badly functioning public institutions that face, for instance, bribery and misappropriation of funds) to 10 (higher degrees of press freedom, access to information on public expenditure, stronger standards for public officials, and independent judicial systems).

3/ World Bank Doing Business. Measures the taxes and mandatory contributions that a medium-sized company must pay or withhold in a given year, as well as the administrative burden of paying taxes and contributions. A higher score indicates better practice.

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