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TAX EVASION IN EUROPE

THE SHADOW ECONOMY AND TAX EVASION: WHAT DO WE (NOT) KNOW?

FRIEDRICH SCHNEIDER*

Introduction

Fighting tax evasion and the shadow economy have been important policy goals in OECD countries in recent decades. Achieving these goals requires information on the size and development of the shadow economy, and on the reasons why people are engaged in shadow economy activities. This contribution therefore focuses on the size and development of the shadow economy, black activities, undeclared work and tax evasion.¹

The article is structured as follows: the second section presents theoretical considerations about the definition and measurement of the shadow economy and also discusses the main factors determining its size. The third section discusses the empirical results of the size and development of the shadow economy and the final section presents some conclusions.

Some theoretical considerations about the shadow economy

Defining the Shadow Economy

Most authors trying to measure the shadow economy still face the difficulty of finding a precise definition of the shadow economy. According to one commonly used definition, it comprises all currently unregistered economic activities that contribute to the officially

calculated gross national product. Smith (1994, 18) defines it as “market-based production of goods and services, whether legal or illegal, that escapes detection in the official estimates of GDP”. Put differently, one of the broadest definitions of the shadow economy is ‘those economic activities and the income derived from them that circumvent or otherwise avoid government regulation, taxation or observation’.²

In this paper the following more narrow definition of the shadow economy is used. The shadow economy includes all market-based legal production of goods and services that is deliberately concealed from public authorities for the following reasons:

1. To avoid payment of income, value added or other taxes,
2. To avoid payment of social security contributions,
3. To avoid compliance with certain legal labour market standards, such as minimum wages, maximum working hours, safety standards, etc., and
4. To avoid compliance with certain administrative obligations, such as completing statistical questionnaires or other administrative forms.

The article does not cover typically illegal underground economic activities that share the characteristics of classical crimes like burglary, robbery, drug dealing, etc. It also excludes the informal household economy, which consists of all household services and production.

*Measuring the shadow economy*³

The definition of the shadow economy plays an important role in assessing its size. A clear definition can rule out a number of ambiguities and controversies. My analysis focuses on productive economic activities that would normally be included in the national accounts, but which remain underground due to tax or regulatory burdens. Although such legal activities contribute to a country’s added value, they are not captured in the national accounts because



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¹ The tax evasion literature is not extensively handled in this paper, see Andreoni, Erard and Feinstein (1998) for the authoritative survey; Feld and Frey (2007) or Kirchler (2007) for broader interdisciplinary approaches; or the papers by Kirchler, Maciejovsky and Schneider (2003); Kastlunger, Kirchler, Mittore and Pitters (2009); Kirchler, Hoelzl and Wahl (2007).

² These definitions are used by Feige (1989 and 1994), Schneider (2003 and 2005); Frey and Pommerehne (1984); Del’Anno (2003); and Del’Anno and Schneider (2003) – see also Fleming, Roman and Farrell (2000) or Feld and Larsen (2005) for example.

³ Compare also Feld and Schneider (2010), and Schneider (2011).

they are produced in illicit ways. From an economic and social perspective, soft forms of illicit employment like moonlighting (e.g. construction work in private homes) and its contribution to aggregate added value can be assessed rather positively.

Although the issue of the shadow economy has been investigated for a long time, the discussion regarding the 'appropriate' methodology to assess its scope has not come to an end yet.⁴ There are three methods of assessment:

- (1) Direct procedures at a micro level that aim to determine the size of the shadow economy at a particular point in time. An example is the survey method.
- (2) Indirect procedures that make use of macroeconomic indicators in order to proxy the development of the shadow economy over time.
- (3) Statistical models that use statistical tools to estimate the shadow economy as an 'unobserved' variable.

In recent years estimation of the shadow economy has been based upon a combination of the MIMIC procedure and upon the currency demand method; or the use of the currency demand method only. The MIMIC procedure assumes that the shadow economy remains an unobserved phenomenon (latent variable), which can be estimated using quantitatively measurable causes of illicit employment (e.g. tax burden and regulation intensity), and indicators reflecting illicit activities (e.g. currency demand, official GDP and official working time). A disadvantage of the MIMIC procedure is the fact that it produces only relative estimates of the size and the development of the shadow economy. Thus, the currency demand method is used to calibrate the relative into absolute estimates by using two or three absolute values of the absolute size of the shadow economy.⁵

⁴ For the strengths and weaknesses of the various methods see Bhattacharyya (1999); Breusch (2005a and 2005b); Dell'Anno and Schneider (2009); Dixon (1999); Feige (1989); Feld and Larsen (2005); Feld and Schneider (2010); Giles (1999a, 1999b and 1999c); Schneider (1986, 2001, 2003, 2005, 2006 and 2011); Schneider and Enste (2000a, 2000b, 2002 and 2006); Tanzi (1999); Thomas (1999).

⁵ This indirect approach is based on the assumption that cash is used to make transactions within the shadow economy. By using this method one econometrically estimates a currency demand function including independent variables like tax burden, regulation etc. which 'drive' the shadow economy. This equation is used to make simulations of the amount of money that would be necessary to generate the official GDP. This amount is then compared with the actual money demand and the difference is treated as an indicator for the development of the shadow economy. On this basis the calculated difference is multiplied by the velocity of money of the official economy and one gets a value added figure for the shadow economy – see footnote 10 for references that critically discuss this method.

In addition, the size of the shadow economy is estimated by using survey methods (Feld and Larsen 2005, 2008 and 2009). In order to minimize the number of respondents dishonestly replying or totally declining answers to the sensitive questions, structured interviews are undertaken (usually face-to-face) in which the respondents slowly get accustomed to the main purpose of the survey. As with the contingent valuation method (CVM) in environmental economics (Kopp *et al.* 1997), a first part of the questionnaire aims to shape respondents' perception as to the issue at hand. In a second part, questions about respondents' activities in the shadow economy are asked, and the third part contains the usual socio-demographic questions. In addition to the studies by Merz and Wolff (1993), Feld and Larsen (2005, 2008 and 2009), Haigner *et al.* (2011) and Enste and Schneider (2006) for Germany, the survey method has been applied in the Nordic countries and Britain (Isachsen and Strøm 1985; Pedersen 2003), as well as in the Netherlands (van Eck and Kazemier 1988; Kazemier 2006). These two sets of approaches are most broadly used in empirical research. Although each has its drawbacks, and although biases in the estimates of the shadow economy almost certainly prevail, no better data is currently available.

In tax compliance research, the most interesting data stem from actual tax audits by the US Internal Revenue Service (IRS). In the Taxpayer Compliance Measurement Program (TCMP), the actual compliance behaviour of taxpayers is observed and is used for empirical analysis (Andreoni, Erard and Feinstein 1998). The approach of the IRS is broader in a certain sense as tax evasion from all sources of income is considered, while the two methods discussed above aim to capture the shadow economy or undeclared work, and thus mainly measure tax evasion from labour income. Even the data obtained from the TCMP is biased, however, because detected tax non-compliance may only be the tip of the iceberg. Although perfect data on tax non-compliance does not therefore exist, imperfect data in this area can still provide interesting insights regarding the size, the development and the determinants of the shadow economy and of the shadow economy labour force.

Main causes determining the shadow economy and tax evasion

A useful starting point for a theoretical discussion of tax non-compliance is the paper by Allingham and Sandmo (1972) on income tax evasion. While the

shadow economy and tax evasion are not congruent, activities in the shadow economy in most cases imply the evasion of direct or indirect taxes, such that the factors affecting tax evasion will most certainly also affect the shadow economy. According to Allingham and Sandmo (1972) tax compliance depends on its expected costs and benefits. The benefits of tax non-compliance result from the individual marginal tax rate and the true individual income. In the case of the shadow economy the individual marginal tax rate is obtained by calculating the overall marginal tax burden from indirect and direct taxes, including social security contributions. The individual income generated in the shadow economy is usually categorized as labour income and less probably as capital income. The expected costs of non-compliance derive from deterrence enacted by the state. Tax non-compliance thus depends on the state's auditing activities, raising the probability of detection and the fines that individuals face when they are caught. As individual morality also plays a role for compliance, additional costs could pertain beyond pure punishment by the tax administration in the form of psychic costs like shame or regret, but also additional pecuniary costs if reputation loss results, for example.

Kanniainen, Pääkönen and Schneider (2004) incorporate many of these insights into their model of the shadow economy by also considering labour supply decisions. They hypothesize that tax hikes unambiguously increase the shadow economy, while the effect of public goods financed by those taxes depends on the ability to access public goods. Morality is also included in this analysis. But the costs for individual non-compliers resulting from moral norms appear to be mainly captured by state punishment, although self-esteem also plays a role.

A shortcoming of these analyses is the neglected endogeneity of tax morale and good governance, as Feld and Frey (2007) argue that tax compliance is the result of a complicated interaction between tax morale and deterrence measures. While the rules of the game must be clear to taxpayers, and as deterrence measures serve as signals for the tax morale a society wants to elicit (Posner 2000a and 2000b), deterrence could also crowd out the intrinsic motivation to pay taxes. Moreover, tax morale is not only increased if taxpayers perceive the public goods received in exchange for their tax payments worth it. It also increases if political decisions for public activities are perceived to follow fair procedures or if the treatment of taxpayers by the tax authorities is perceived to be

friendly and fair. Tax morale is thus not exogenously given, but is influenced by deterrence, the quality of state institutions and the constitutional differences among states.

(a) Deterrence⁶

Although the traditional economic theory of tax non-compliance derives unambiguous predictions as to their impact only for deterrence measures and despite the strong focus on deterrence in policies fighting the shadow economy, there is surprisingly little known about the effects of deterrence from empirical studies. In their survey on tax compliance, Andreoni, Erard and Feinstein (1998) report that deterrence matters for tax evasion, but that the reported effects are rather small. Blackwell (2009) finds strong deterrence effects of fines and audits in experimental tax evasion. There is, however, little evidence on the shadow economy.

This is due to the fact that data on the legal background and the frequency of audits are not available on an international basis. Such data would also be difficult to collect, even for the OECD member countries. A recent study by Feld, Schmidt and Schneider (2007) demonstrates this for the case of Germany. The legal background is quite complicated in terms of differentiating fines and punishment according to the severity of the offense, establishing the true income of the non-complier, but also regionally given different directives on sentences by the courts in different Länder. Moreover, the tax authorities at a state level do not reveal how intensively auditing is taking place. With the available data on fines and audits, Feld, Schmidt and Schneider (2007) conduct a time series analysis using the estimates of the shadow economy obtained by the MIMIC approach. According to their results, deterrence does not have a consistent effect on the German shadow economy. Conducting Granger causality tests, the direction of causation (in the sense of precedence) is ambiguous, leaving room for the impact of the shadow economy on deterrence, instead of deterrence on the shadow economy.

Feld and Larsen (2005, 2008 and 2009) follow a different approach by using individual survey data for Germany. First replicating Pedersen (2003), who reports a negative impact of the subjectively perceived risk of detection by state audits on the probability of working in the shadows for the year 2001, they then extend it by adding subjectively perceived measures of

⁶ This part is taken from Feld and Schneider (2010, 115–116).

finances and punishment. Fines and punishment do not exert a negative influence on the shadow economy in any of the annual waves of surveys, nor in the pooled regressions for the years 2004–2007 (about 8000 observations overall). The subjectively perceived risk of detection has a robust and significant negative impact in individual years only for women. In the pooled sample for 2004–2007, which minimizes sampling problems, the probability of detection has also a significantly negative effect on the probability of working in the shadow economy for men (while retaining its impact on women) and is robust across different specifications.⁷

Pedersen (2003) reports the negative effects of the subjectively perceived risk of detection on the probability of conducting undeclared work in the shadows for men in Denmark in 2001 (marginally significant),⁸ for men in Norway in 1998/2002 (highly significant), for men and women in Sweden in 1998 (highly significant in the first and marginally significant in the second case), and no significant effect for Britain in 2000. Moreover, van Eck and Kazemier (1988) report the significant negative effect of a high perceived probability of detection on participation in the hidden labour market for the Netherlands in 1982/1983. None of these studies includes perceived fines and punishments as explanatory variables. The large scale survey study of Germany by Feld and Larsen (2005 and 2009) thus appears to be the most careful analysis of deterrence effects on undeclared work to date.

Overall, there is little convincing evidence on the proper working of deterrence as it is always the combination of audits and fines that matters according to theoretical analysis, but also to pure plausibility arguments. The reasons for the unconvincing evidence of deterrence effects are discussed in the tax compliance literature by Andreoni, Erard and Feinstein (1998), Kirchlner (2007) or Feld and Frey (2007). They range from interactions between tax morale and deterrence, thus the possibility that deterrence crowds out tax morale, to more mundane arguments like misperceptions of taxpayers. Likewise, these reasons could be important for the evidence on the deterrence effects at work in the shadow economy. As the latter mainly stem from survey studies, the insignificant findings for fines and punishment may also result from shortcomings in the survey design.

⁷ An earlier study by Merz and Wolff (1993) does not analyse the impact of deterrence on undeclared work.

⁸ The earlier study by Isachsen and Strøm (1985) for Norway does also not properly analyse the impact of deterrence on undeclared work.

(b) Tax and social security contribution burdens

In contrast to deterrence, almost all studies ascertain that the tax and social security contribution burdens are among the main causes for the existence of the shadow economy.⁹ Since taxes affect labour-leisure choices and stimulate labour supply in the shadow economy, the distortion of the overall tax burden is a major concern. The bigger the difference between the total labour cost in the official economy and after-tax earnings (from work), the greater the incentive to reduce the tax wedge and work in the shadow economy. Since the tax wedge depends on the level and increase of the social security burden/payments and the overall tax burden, they are key features of the existence and the increase in the shadow economy.

(c) Intensity of regulations

Increased intensity of regulations, for example labour market regulations, trade barriers, and labour restrictions for immigrants, is another important factor that reduces the freedom (of choice) for individuals engaged in the official economy. Johnson, Kaufmann, and Zoido-Lobaton (1998b) find significant empirical evidence of the influence of (labour) regulations on the shadow economy; and the impact is clearly described and theoretically derived in other studies, e.g. for Germany *Deregulierungskommission/Deregulation Commission* (1991).¹⁰ Regulations lead to a substantial increase in labour costs in the official economy. However, since most of these costs can be shifted to employees, regulations provide for another incentive to work in the shadow economy where they can be avoided. Johnson, Kaufmann and Shleifer (1997) report empirical evidence supporting their model, which predicts that countries with higher general regulation of their economies tend to have a higher share of the unofficial economy in total GDP. They conclude that it is the enforcement of regulation that is the key factor for the burden levied on firms and individuals, and not the overall extent of regulation – mostly not enforced – which drives firms into the shadow economy. Friedman, Johnson, Kaufmann and Zoido-Lobaton (2000) arrive at a similar conclusion. In their study every available measure of regulation is significantly correlated with the share of the

⁹ See Schneider (2000, 2003, 2005, 2009 and 2011); Johnson, Kaufmann and Zoido-Lobaton (1998a and 1998b); Tanzi (1999); Giles (1999a); Mummert and Schneider (2001); Giles and Tedds (2002) and Dell'Anno (2003); Feld and Schneider (2010).

¹⁰ The importance of regulation on the official and unofficial (shadow) economy is more recently investigated by Loayza, Oviedo and Servén (2005a and 2005b). Kucera and Roncolato (2008) extensively analyze the impact of labor market regulation on the shadow economy.

unofficial economy and the estimated sign of the relationship is unambiguous: more regulation is correlated with a larger shadow economy.

(d) Public sector services

An increase of the shadow economy can lead to reduced state revenues, which in turn reduce the quality and quantity of publicly provided goods and services. Ultimately, this can lead to an increase in the tax rates for firms and individuals in the official sector, quite often combined with a deterioration in the quality of the public goods (such as the public infrastructure) and of the administration, resulting in even stronger incentives to participate in the shadow economy. Johnson, Kaufmann and Zoido-Lobaton (1998a and 1998b) present a simple model of this relationship. According to their findings smaller shadow economies occur in countries with higher tax revenues achieved by lower tax rates, fewer laws and regulations and less bribery facing enterprises. Countries with a better rule of law, which is financed by tax revenues, also have smaller shadow economies. Transition countries have higher levels of regulation leading to a significantly higher incidence of bribery, higher effective taxes on official activities and a large discretionary framework of regulations and consequently a higher shadow economy. Their overall conclusion is that “wealthier countries of the OECD, as well as some in Eastern Europe, find themselves in the ‘good equilibrium’ of a relatively low tax and regulatory burden, sizeable revenue mobilization, good rule of law and corruption control, and a [relatively] small unofficial economy. By contrast, a number of countries in Latin American and the former Soviet Union exhibit characteristics consistent with a ‘bad equilibrium’: tax and regulatory discretion and burden on the firm are high, the rule of law is weak, and there is a high incidence of bribery and a relatively high share of activities in the unofficial economy” (Johnson, Kaufmann and Zoido-Lobaton 1998a, I).

(e) Other public institutions

Recently, various authors¹¹ have considered the quality of public institutions as another key factor in the development of the informal sector. They argue that the efficient and discretionary application of tax systems and regulations by government may play a crucial role in the decision over whether to conduct unde-

clared work, and may be even more important than the actual burden of taxes and regulations. In particular, corruption of bureaucracy and government officials seems to be associated with larger unofficial activity, while a good rule of law by securing property rights and contract enforceability, increases the benefits of being formal.

Hence, it is important to theoretically and empirically analyse the effect of political institutions like the federal political system on the shadow economy. If the development of the informal sector is considered a consequence of the failure of political institutions to promote an efficient market economy, since entrepreneurs go underground when there is inefficient public goods provision, then the effect of institutions on the individual’s incentive to operate unofficially can be assessed. In a federal system, competition among jurisdictions and the mobility of individuals act as constraints on politicians because ‘choices’ will be induced that provide incentives to adopt policies that are closer to a majority of voters’ preferences. Frequently, the efficient policies are characterized by a certain level of taxation, mostly spent on productive public services. In fact, the production in the formal sector benefits from a higher provision of the productive public services and is negatively affected by taxation, while the shadow economy reacts in the opposite way. As fiscal policy gets closer to a majority of voters’ preferences in federal systems, the size of the informal sector goes down. This leads to the hypothesis that the size of the shadow economy should be lower in a federal system than in a unitary state, *ceteris paribus*. A similar effect analysing the institution of direct democracy on the shadow economy is shown in Schneider and Teobaldelli (2012). They empirically demonstrate that the more direct institutions are used; the lower is the shadow economy, *ceteris paribus*.

(f) Tax morale

In addition to the incentive effects discussed before, the efficiency of the public sector has an indirect effect on the size of the shadow economy because it affects tax morale. As Feld and Frey (2007) argue, tax compliance is driven by a psychological tax contract that entails rights and obligations from taxpayers and citizens on the one hand, but also from the state and its tax authorities on the other hand. Taxpayers are more heavily inclined to pay their taxes honestly if they get valuable public services in exchange. However, taxpayers are honest even in cases when the benefit prin-

¹¹ See e.g. Johnson *et al.* (1998a and 1998b); Friedman *et al.* (2000); Dreher and Schneider (2009); Dreher, Kotsogiannis and McCorrison (2007 and 2009); Teobaldelli (2011); Schneider (2010); Buehn and Schneider (2012).

principle of taxation does not hold, i.e. for redistributive policies, if the political decisions underlying such policies follow fair procedures. Finally, the treatment of taxpayers by the tax authority plays a role. If taxpayers are treated like partners in a (tax) contract instead of subordinates in a hierarchical relationship, taxpayers will stick to their obligations of the psychological tax contract more easily. In addition to the empirical evidence on these arguments reported by Feld and Frey (2007), Kirchlner (2007) presents a comprehensive discussion of the influence of such factors on tax compliance.

Regarding the impact of tax morale on the shadow economy, there is scarce and only recent evidence. Using data on the shadow economy obtained by the MIMIC approach, Torgler and Schneider (2009) report the most convincing evidence for a negative effect of tax morale. They particularly address causality issues and establish a causal negative relation between tax morale and the size of the shadow economy. This effect is also robust to the inclusion of additional explanatory factors and specifications. These findings are also in line with earlier preliminary evidence by Körner *et al.* (2006). Using survey data, Feld and Larsen (2005 and 2009) likewise report a robust

negative effect of tax morale in particular and social norms in general on the probability of respondents conducting undeclared work.¹² Interestingly, the estimated effects of social norms are quantitatively more important than the estimated deterrence effects. Van Eck and Kazemier (1988) also report a marginally significant effect of tax morale on participation in the hidden labour market.

Size of the shadow economies in highly developed OECD countries

Development and size of the shadow economy in German-speaking countries

Existing estimates of the German shadow economy (measured in percentage of official GDP) are shown in Table 1 (see also Feld *et al.* 2007). The oldest estimate uses the survey method of the Institute for Demoscopy (IfD) in Allensbach, Germany, and shows that the shadow economy was 3.6 percent of official GDP in 1974. In a much later study, Feld and

¹² The importance of this variable with respect to theory and empirical relevance is also shown in Frey (1997), Feld and Frey (2002a, 2002b and 2007), and Torgler and Schneider (2009).

Table 1
Size of the shadow economy in Germany according to different methods (as percentage of official GDP)

Method	Shadow economy in Germany (in percentage of official GDP)								Source
	1970	1975	1980	1985	1990	1995	2000	2005	
Survey	–	3.6 ¹⁾	–	–	–	–	–	–	IfD Allensbach (1975)
	–	–	–	–	–	–	4.1 ²⁾	3.6 ²⁾	Feld and Larsen (2005, 2008)
Discrepancy between expenditure and income	11.0	10.2	13.4	–	–	–	–	–	Lippert and Walker (1997)
Discrepancy between official and actual employment	23.0	38.5	34.0	–	–	–	–	–	Langfeldt (1984a, 1984b)
Physical input method	–	–	–	14.5	14.6	–	–	–	Feld and Larsen (2005)
Transactions approach	17.2	22.3	29.3	31.4	–	–	–	–	
Currency demand approach	3.1	6.0	10.3	–	–	–	–	–	Kirchgässner (1983)
	12.1	11.8	12.6	–	–	–	–	–	Langfeldt (1984a, 1984b)
	4.5	7.8	9.2	11.3	11.8	12.5	14.7	–	Schneider and Enste (2000)
Latent (MIMIC) approach	5.8	6.1	8.2	–	–	–	–	–	Frey and Weck (1984)
	–	–	9.4	10.1	11.4	15.1	16.3	–	Pickhardt and Sarda Pons (2006)
	4.2	5.8	10.8	11.2	12.2	13.9	16.0	15.4	Schneider (2005, 2007)
Soft modelling	–	8.3	–	–	–	–	–	–	Weck-Hannemann (1983)

¹⁾ 1974. – ²⁾ 2001 and 2005; calculated using wages in the official economy.

Larsen (2005 and 2008) undertook an extensive research project using the survey method to estimate shadow economic activities in the years 2001 to 2006.¹³ Using the officially paid wage rate, they concluded that these activities reached 4.1 percent in 2001, 3.1 percent in 2004, 3.6 percent in 2005 and 2.5 percent in 2006. Using the (much lower) shadow economy wage rate these estimates shrink, however, to 1.3 percent in 2001 and 1.0 percent in 2004, respectively. If the discrepancy method is applied, for which estimates from 1970 to 1980 are available, the German shadow economy is much larger: using the discrepancy between expenditure and income, gives approximately 11 percent for the 1970s, and using the discrepancy between official and actual employment, roughly 30 percent. The physical input methods from which estimates for the 1980s are available, ‘deliver’ values of around 15 percent for the second half of that decade. The (monetary) transaction approach developed by Feige (1989) places the shadow econo-

my at 30 percent between 1980 and 1985. Yet another monetary approach, the currency demand approach – the first person to undertake an estimation for Germany was Kirchgässner (1983 and 1984) – provides values of 3.1 percent (1970) and 10.1 percent (1980). Kirchgässner’s values are quite similar to those obtained by Schneider and Enste (2000 and 2002), who also used a currency demand approach to value the size of the shadow economy at 4.5 percent in 1970 and 14.7 percent in 2000. Finally, looking at latent MIMIC estimation procedures, the first being conducted by Frey and Weck-Hannemann (1984), and later, Schneider and others followed for Germany, again, the estimations for the 1970s are quite similar.

Thus, one can see that different estimation procedures produce different results. It is safe to say that the figures produced by the transaction and the discrepancy approaches are rather unrealistically large: the size of the shadow economy at almost one third of official GDP in the mid-1980s is most likely to be an overestimate. The figures obtained using the currency demand and hidden variable (latent) approaches, on the other hand, are relatively close together and much

¹³ In this paper there is no extensive discussion about the various methods to estimate the size and development of the shadow economy; I do also not discuss the strength and weaknesses of each method – see Schneider and Enste (2000), Schneider (2005), Feld and Larsen (2005, 2008 and 2009), Pedersen (2003), and Giles (1999a, 1999b and 1999c).

Table 2

Size of the shadow economy (as % of official GDP) in 21 OECD countries between 1989/90 and 2007 estimated using MIMIC method and currency demand approach to calibrate the MIMIC values

OECD-countries	Shadow economy (in % of official GDP)									
	Average 1989/90	Average 1994/95	Average 1997/98	Average 1999/00	Average 2001/02	2003	2004	2005	2006	2007
1. Australia	10.1	13.5	14.0	14.3	14.1	13.7	13.2	12.6	11.4	10.7
2. Belgium	19.3	21.5	22.5	22.2	22.0	21.4	20.7	20.1	19.2	18.3
3. Canada	12.8	14.8	16.2	16.0	15.8	15.3	15.1	14.3	13.2	12.6
4. Denmark	10.8	17.8	18.3	18.0	17.9	17.4	17.1	16.5	15.4	14.8
5. Germany	11.8	13.5	14.9	16.0	16.3	17.1	16.1	15.4	14.9	14.6
6. Finland	13.4	18.2	18.9	18.1	18.0	17.6	17.2	16.6	15.3	14.5
7. France	9.0	14.5	14.9	15.2	15.0	14.7	14.3	13.8	12.4	11.8
8. Greece	22.6	28.6	29.0	28.7	28.5	28.2	28.1	27.6	26.2	25.1
9. Britain	9.6	12.5	13.0	12.7	12.5	12.2	12.3	12.0	11.1	10.6
10. Ireland	11.0	15.4	16.2	15.9	15.7	15.4	15.2	14.8	13.4	12.7
11. Italy	22.8	26.0	27.3	27.1	27.0	26.1	25.2	24.4	23.2	22.3
12. Japan	8.8	10.6	11.1	11.2	11.1	11.0	10.7	10.3	9.4	9.0
13. Netherlands	11.9	13.7	13.5	13.1	13.0	12.7	12.5	12.0	10.9	10.1
14. New Zealand	9.2	11.3	11.9	12.8	12.6	12.3	12.2	11.7	10.4	9.8
15. Norway	14.8	18.2	19.6	19.1	19.0	18.6	18.2	17.6	16.1	15.4
16. Austria	6.9	8.6	9.0	9.8	10.6	10.8	11.0	10.3	9.7	9.4
17. Portugal	15.9	22.1	23.1	22.7	22.5	22.2	21.7	21.2	20.1	19.2
18. Sweden	15.8	19.5	19.9	19.2	19.1	18.6	18.1	17.5	16.2	15.6
19. Switzerland	6.7	7.8	8.1	8.6	9.4	9.5	9.4	9.0	8.5	8.2
20. Spain	16.1	22.4	23.1	22.7	22.5	22.2	21.9	21.3	20.2	19.3
21. USA	6.7	8.8	8.9	8.7	8.7	8.5	8.4	8.2	7.5	7.2
Unweight average for 21 OECD countries	12.7	16.2	16.8	16.8	16.7	16.5	16.1	15.6	14.5	13.9

Source: Own calculations.

lower than those produced by other methods (i.e. the discrepancy or transaction approaches). This similarity is not surprising given the fact that the estimates of the shadow economy using the latent (MIMIC) approach were measured by taking point estimates from the currency demand approach. The estimates from the MIMIC approach can be regarded as the upper boundary of the size of the shadow economy. For the reasons outlined in the second section, the estimates obtained from the survey approach constitute its lower boundary.

Size and development of the shadow economy in 21 OECD countries

Table 2 presents the findings for 21 OECD countries until 2007. They clearly reveal that, since the end of 1990s, the size of the shadow economy in most OECD countries has continued to decrease. The unweighted average for all countries in 1999/2000 was 16.8 percent and dropped to 13.9 percent in 2007. This means, that since 1997/98 – the year in which the shadow economy was the biggest in most OECD countries, it has continuously shrunk. In Germany, Austria and Switzerland did the growing trend last longer and was only reversed two or three years ago. The reduction of the share of the shadow economy from GDP between 1997/98 and 2007 is most pronounced in Italy (– 5.0 percent) and in Sweden (– 4.0 percent). The German shadow economy ranges in the middle of the ranking, whereas Austria and Switzerland are located at the lower end. With 20 to 26 percent, South European countries exhibit the biggest shadow economies measured as a share of official GDP. They are followed by Scandinavian countries, where the shadow economy accounts for between 15 and 16 percent of GDP. One reason for the differences in the size of the shadow economy between these OECD countries includes, among others, that there are fewer regulations in the United States, for example, compared to the OECD country Germany where everything is forbidden that is not explicitly allowed. Another reason is the large difference in the direct and indirect tax burden among the OECD countries, with the lowest in the United States and Switzerland and the highest in the Scandinavian countries.

Conclusions

This paper discusses some of the most recent developments in research on the shadow economy with respect to its driving forces. The result of the studies

report the strong effects of tax pressure, of regulation and of tax morale, but also underline the importance of tax policies and state institutions to the shadow economy.

The discussion of the recent literature shows that economic opportunities for employees, the overall situation in the labour market, and not least unemployment are crucial for an understanding of the dynamics of the shadow economy. Individuals look for ways to improve their economic situation and thus contribute productively to the aggregate income of a country. This holds regardless of their being active in the official or the unofficial economy.

Returning to the title of my paper ‘The shadow economy and tax evasion: what do we (not) know?’, it is clear that there is some knowledge about the size and development of the shadow economy. What remains unknown are the exact motives why people work in the shadow economy and what is their reaction if a government undertakes reforms in order to bring them back into the official economy. Many more micro studies are therefore needed to obtain more detailed knowledge about people’s motivation to work in either the shadow economy and/or in its official counterpart.

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