

The Shadow Economy Labour Force

What do we (not) know?

Friedrich Schneider

Introduction

This paper is mainly concerned with measuring the size and development of the labour force supplying undeclared work forming part of the shadow economy. Knowledge about the shadow economy and the shadow labour force is necessary to fighting tax evasion, an important policy goal in OECD countries, but this subject is not considered because too many additional aspects would be involved.¹

This paper is organised as follows. It first considers the definition and measurement of the shadow economy, which is then followed by a focus on the size and development of the shadow economy labour force and its various aspects. After that, the interaction between the shadow economy and unemployment is analysed. Then the necessary adjustments of shadow economy measures to national accounts data are presented, followed by the conclusion.

¹ See Andreoni *et al.* (1998) for the authoritative survey, Feld & Frey (2007) or Kirchler (2007) for broader interdisciplinary approaches, or the papers by Kirchler *et al.* (2003), Kastlunger *et al.* (2009), Kirchler *et al.* (2007).



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Some theoretical considerations about the shadow economy

Defining the shadow economy

It is difficult to make a precise definition of the shadow economy.² It is often defined as comprising all currently unregistered economic activities that contribute to the officially calculated gross national product.³ Smith (1994, p. 18) defines it as ‘market-based production of goods and services, legal or illegal, that escapes detection in official estimates of GDP’. One of the broadest definitions is: ‘those economic activities and the income derived from them that circumvent or otherwise avoid government regulation, taxation or observation’.⁴ To reduce the scope for misinterpretation, Table 1 provides a taxonomy that could form a reasonable consensus definition of the underground (or shadow) economy.

Table 1 shows that a broad definition of the shadow economy includes unreported income from the production of legal goods and services, either from monetary or barter transactions, and so includes all productive

Table 1: A taxonomy of types of underground economic activities*

Type of activity	Monetary transactions		Non-monetary transactions	
Illegal activities	Trade with stolen goods; drug dealing and manufacturing; prostitution; gambling; smuggling; fraud, human, drug, and weapon trafficking		Barter of drugs, stolen goods, smuggling, etc.; producing or growing drugs for own use; theft for own use	
	Tax evasion	Tax avoidance	Tax evasion	Tax avoidance
Legal activities	Unreported income from self-employment; wages, salaries and assets from unreported work related to legal services and goods	Employee discounts, fringe benefits	Barter of legal services and goods	All do-it-yourself work and neighbour help

* The structure of the table is taken from Lippert and Walker (1997, p. 5), with additional remarks

² This paper focuses on the size and development of the shadow economy for uniform countries and not for specific regions. Recently studies have been undertaken to measure the size of the shadow economy as well as the ‘grey’ or ‘shadow’ labour force for urban regions or states (e.g. California). See, e.g., Marcelli *et al.* (1999), Marcelli (2004), Chen (2004), Williams & Windebank (1998, 2001a, 2001b), Flaming *et al.* (2005), Alderslade *et al.* (2006), and Brück *et al.* (2006). Herwartz *et al.* (2009) and Tafenau *et al.* (2010) estimate the size of the shadow economy of 234 EU-NUTS regions for the year 2004 for the first time demonstrating a considerable regional variation in the size of the shadow economy.

³ This definition is used, e.g., by Feige (1989, 1994), Schneider (1994a, 2003, 2005), and Frey and Pommerehne (1984). Do-it-yourself activities are not included. For estimates of the shadow economy and the do-it-yourself activities for Germany see Bühn *et al.* (2009), or Karmann (1986, 1990).

⁴ This definition is taken from Dell’Anno (2003), Dell’Anno & Schneider (2004), and Feige (1989); see also Thomas (1999), Fleming *et al.* (2000), Feld & Larsen (2005, p. 25) or Feld & Schneider (2010).

economic activities that would generally be taxable were they reported to the state (tax) authorities.

This paper uses a narrower definition of the shadow economy.⁵ It includes all market-based legal production of goods and services that are deliberately concealed from public authorities for the following reasons:

- to avoid payment of income, value added or other taxes
- to avoid payment of social security contributions
- to avoid having to meet certain legal labour market standards, such as minimum wages, maximum working hours, safety standards, etc.
- to avoid complying with certain administrative obligations, such as completing statistical questionnaires or other administrative forms.

This excludes typically illegal underground economic activities that fit the characteristics of classical crimes like burglary, robbery, drug dealing, etc., and the informal household economy consisting of all services and production. Instead this paper focuses on productive economic activities that would normally be included in national accounts but that remain underground due to tax or regulatory burdens. Although such legal activities contribute to the country's value added, they are not captured in the national accounts because they are produced in illicit ways (e.g. by people without proper qualifications or without a master craftsman's certificate).⁶

The determinants of the shadow economy

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), the benefits of tax non-compliance result from an individual's marginal tax rate and true individual income. The individual's marginal tax rate is obtained by calculating the overall marginal tax burden from indirect and direct taxes including social security contributions. Individual income generated in the shadow economy is usually labour income rather than capital income. The expected costs of non-compliance

⁵ See also the excellent discussion of the definition of the shadow economy in Pedersen (2003, pp. 13–19) and Kazemier (2005), who use a similar one.

⁶ However, compare Chapter 6, where it is shown that shadow economy activities are partly captured in the official statistics in some countries.

derive from the deterrence efforts of the state. Tax non-compliance thus depends on the state's auditing activities, which raises the probability of detection and the fines individuals face when they are caught. Additional costs beyond pure punishment by the tax administration can take the form of psychic costs like shame or regret, but also additional pecuniary costs from loss of reputation.

Kanniainen *et al.* (2004), looking at labour supply decisions, hypothesise that tax hikes unambiguously increase the shadow economy, while 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 is the neglected endogeneity of tax morale and good governance. In contrast, Feld and Frey (2007) argue that tax compliance is the result of a complicated interaction between tax morale and deterrence measures. Tax payers need to know the rules of the game since deterrence measures signal the tax morale a society wants to elicit (Posner 2000a, 2000b), but deterrence can also impact on the intrinsic motivation to pay taxes. Tax morale is increased if tax payers perceive that the public goods received in exchange for their tax payments are valuable, but it also increases if political decisions follow fair procedures or if the treatment

Tax morale is influenced by deterrence, the quality of state institutions and by constitutional differences among states.

of tax payers 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 by constitutional differences among states.

The above analysis suggests a rich set of variables that might influence the size of the shadow economy, but, as labour supply decisions are also involved, labour and product market regulations are additionally important. Recent theoretical approaches thus suggest following a differentiated policy to contain the shadow economy's expansion.

Summary of the main causes of the shadow economy

In Table 2 an overview of a number of empirical studies summarises the various factors influencing the shadow economy. The overview is based on the studies in which the size of the shadow economy is measured by the MIMIC or currency demand approach. The MIMIC procedure assumes that the shadow economy remains an unobserved phenomenon (latent

Table 2: Main causes of the increase of the shadow economy

Factors influencing the shadow economy	Influence on the shadow economy (in %)	
	(a)	(b)
1. Increase of the tax and social security contribution burdens	35–38	45–52
2. Quality of state institutions	10–12	12–17
3. Transfers	5–7	7–9
4. Specific labour market regulations	7–9	7–9
5. Public-sector services	5–7	7–9
6. Tax morale	22–25	–
Influence of all factors	84–98	78–96

(a) Average values of 12 studies

(b) Average values of empirical results of 22 studies

Source: Schneider (2009)

variable) that 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. The MIMIC procedure, unfortunately, produces only relative estimates of the size and the development of the shadow economy.⁷ Thus, the currency demand method⁸ is used to calibrate relative into absolute estimates by using two or three absolute values of the size of the shadow economy.

As there is no evidence on deterrence using these approaches – at least with respect to the broad panel database on which this table draws – the most central policy variable does not show up. This is an obvious shortcoming of the studies, but one that cannot be coped with easily due to the lack of internationally comparable deterrence data. In Table 2, two columns are presented, showing the various factors influencing the shadow economy with and without the independent variable, ‘tax morale’. This table clearly

⁷ These methods are presented in detail in Schneider (1994a, 1994b, 1994c, 2005), Feld & Schneider (2010), and Schneider & Enste (2000, 2002, 2006). Furthermore, these studies discuss the advantages and disadvantages of the MIMIC- and money demand methods, as well as other estimation methods for assessing the size of illicit employment; for a detailed discussion see also Feld & Larsen (2005) and Feld & Schneider (2010).

⁸ 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 note 10 for references discussing critically this method.

demonstrates that the increase of tax and social security contribution burdens is by far most important single contributor to the increase of the shadow economy. This factor does explain some 35–38% or 45–52% of the variance of the shadow economy with and without including the variable ‘tax morale’. The variable tax morale accounts for some 22–25% of the variance of the shadow economy;⁹ there is a third factor, ‘quality of state institutions’, accounting for 10–12% and a fourth factor, ‘intensity of state regulation’ (mostly for the labour market), for 7–9%. In general, Table 2 shows that the independent variables tax and social security burden, followed by variables tax morale and intensity of state regulations are the three major driving forces of the shadow economy.

Shadow economy labour force and labour market

Shadow economy labour market

This paper focuses on the ‘shadow labour market’ since, by definition every activity in the shadow economy involves a ‘shadow labour market’ to some extent.¹⁰ The ‘shadow labour market’ includes all cases, where the employees or the employers, or both, occupy a ‘shadow economy position’. It is recognised that, within the official labour market, there is a tight relationship and ‘social network’ with people who are also active in the shadow economy.¹¹

Illicit work can take many forms. The underground use of labour may consist of a second job after (or even during) regular working hours. A second form is shadow economy work by individuals who do not participate in the official labour market. A third component is the employment of people (e.g. clandestine or illegal immigrants) who are not allowed to work in the official economy. Empirical research on the shadow economy labour market is difficult since one has very little knowledge about how many hours an average ‘shadow economy worker’ is actually working (from full-time to a few hours only); hence it is not easy to provide empirical facts.¹²

⁹ The importance of this variable with respect to theory and empirical relevance is also shown in Frey (1997), Feld & Frey (2002a, 2002b, 2007), Torgler & Schneider (2009) and Feld & Schneider (2010).

¹⁰ Compare also one of the latest OECD reports, with the title *Is Informal Normal: Toward More and Better Jobs* (OECD 2009a).

¹¹ Pioneering work in this area has been done by L. Frey (1972, 1975, 1978, 1980), Cappiello (1986), Lubell (1991), Pozo (1996), Bartlett (1998) and Tanzi (1999).

¹² For developing countries some literature about the shadow labour market exists: Dallago (1990), Pozo (1996), Loayza (1996), Chickering & Salahdine (1991) and OECD (2009a, 2009b).

Why do people work in the shadow economy? In the official labour market, the costs firms (and individuals) have to pay when ‘officially’ hiring someone are increased enormously by the burden of tax and social contributions on wages, as well as by the legal administrative regulation to control economic activity. In various OECD countries, these costs are greater than the wage effectively earned by the worker – providing a strong incentive to work in the shadow economy. More detailed theoretical information on the labour supply decision in the underground economy is given by Lemieux *et al.* (1994), who use micro data from a survey conducted in Quebec City (Canada). In particular, their study provides some economic insights regarding the size of the distortion caused by income taxation and the welfare system. The results of this study suggest that hours worked in the shadow economy are quite responsive to changes in the net wage in the regular (official) sector. Their empirical results attribute this to a (mis-) allocation of work from the official to the informal sector, where it is not taxed. In this case, the substitution between labour market activities in the two sectors is quite high. Their findings indicate that ‘participation rates and hours worked in the underground sector also tend to be inversely related to the number of hours worked in the regular sector’¹³ These results demonstrate a large negative elasticity of hours worked in the shadow economy with respect both to the wage rate in the regular sector as well as to a high mobility between sectors. A study by Kucera and Roncolato (2008, p. 321) also deals with informal employment. They address two issues of crucial importance to labour market policy: (i) intensive labour market regulations as one (major) cause of informal employment, and (ii) so-called ‘voluntary’ informal employment. Kucera and Roncolato also give a theoretical overview on both issues and also a survey of a number of empirical studies that analyse mainly the effect of official labour market regulations on informal employment, where they find a significant and quantitatively important influence.

The shadow economy labour force

Worldwide aspects: latest results

The following results on the extent of the shadow economy labour force are based on the OECD and World Bank database on informal

¹³ Lemieux *et al.* (1994, p. 235).

employment in major cities and in rural areas, as well as on other sources mentioned in the notes to this paper. The values of the shadow economy labour force are calculated in absolute terms, and as a percentage of the official labour force, under the assumption that the shadow economy in rural areas is at least as high as in the cities. This is a conservative assumption, since in reality it is likely to be even larger.¹⁴ Survey techniques and, for some countries, the MIMIC-method and the method of the discrepancy between the official and actual labour force are used for estimation.

One of the latest studies has been undertaken by the OECD (2009a), which provides global figures. This study¹⁵ concludes that, in many parts of the world over the period 1990 to 2007, informal employment is

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the norm, not the exception. More than half of all jobs in the non-agricultural sectors of developing countries – over 900 million workers – can be considered informal. If

agricultural workers in developing countries are included, the estimate rises to roughly 2,000 million people. In some regions, including sub-Saharan Africa and South Asia, over 80% of non-agricultural jobs are informal. Most informal workers in the developing world are self-employed and work independently, or own and manage very small enterprises. According to the OECD study (2009a), informal employment is a result of both, people being excluded from official jobs and people voluntarily opting out of formal structures – e.g. in many middle-income countries incentives drive individuals and businesses out of the formal sector. The OECD concludes that 1.8 billion people work in informal jobs, compared to the 1.2 billion who benefit from formal contracts and social security protection. Informal activity, excluding the agricultural sector, accounted for three-quarters of the jobs in sub-Saharan Africa, more than two-thirds in South and Southeast Asia, half in Latin America, the Middle East and North Africa, and nearly one-quarter in transition countries. If agriculture is included, the informal share of the

¹⁴ The assumption that the shadow economy labour force is at least as great in rural areas as in major cities is a very modest one and is supported by Lubell (1991). Some authors (e.g. Lubell 1991; Pozo 1996; Chickering & Salahdine 1991) argue that the illicit labour force is nearly twice as great in the countryside as in urban areas. But since no (precise) data exist on this ratio, the assumption of an equal size may be justified arguing that such a calculation provides at least minimal figures.

¹⁵ The following results and figures are taken from OECD (2009a, executive summary).

economy in the above mentioned regions is even higher (e.g. more than 90% in South Asia). The OECD study also finds that more than 700 million informal workers 'survive' on less than US\$1.25 a day, and some 1.2 billion on less than US\$2 a day.

The study also concludes that the share of informal employment tends to increase during periods of economic turmoil. For example, during the Argentine economic crisis (1999–2002), the countries' 'official' economy shrank as by almost one-fifth, while the share of informal employment expanded from 48 to 52%. One can clearly see that, even under strong economic growth, the share of non-agricultural employment and the share of informal employment is rising strongly.

OECD countries: general results

In Table 3, the estimates for the shadow economy labour force in highly developed OECD countries (Austria, Denmark, France, Germany, Italy, Spain and Sweden) are shown.¹⁶ In Austria the shadow economy labour force is estimated at between 500,000 to 750,000, or 16% of the official labour force (mean value), in the years 1997–1998. In Denmark during the 1980s and 1990s the portion of the Danish population engaged in the shadow economy ranged from 8.3% of the total labour force (in 1980) to 15.4% in 1994 – quite a remarkable increase in the shadow economy labour force, almost doubling over 15 years.

In France (in the year 1997/98) the shadow economy labour force reached between 6% and 12% of the official labour force, or between 1.6 and 3.2 million workers. In Germany, this figure rose from 8% to 12% in 1974 to 22% (8 million) in the year 1997/98. For France and Germany this is again a very strong increase in the shadow economy labour force. In other countries the amount of the shadow economy labour force is also quite large, too: in Italy 30–48% (1997–1998), Spain 11.5–32% (1997–1998) and Sweden 19.8% (1997–1998). In the European Union about 30 million people were engaged in shadow economic activities in the years 1997–1998, and in all European OECD countries 48 million were working illicitly. These figures demonstrate that the shadow economy labour market is lively, and may provide an explanation as to why, for example in

¹⁶ The shadow economy labour force consists of estimated full-time 'black' jobs, including unregistered workers, illegal immigrants and second 'black' jobs.

Table 3: Estimates of the size of the 'shadow economy labour force' in some OECD countries 1974–1998

Countries	Year	Official GDP per capita in US\$*	Total economy (shadow economy plus official GDP per capita in US\$)	Size of the shadow economy (in % of official GDP)		Shadow economy labour force in 1000 people****	Shadow economy participants in % of official labour force*****	Sources of shadow economy labour force
				currency demand approach**	approach***			
Austria	1990–91	20 636	25 382	5.47	8.93	300–380	9.6	Schneider (1998a, 1998b) and own calculations
	1997–98	25 874	29 630			500–750	16.0	
Denmark	1980	13 233	18 658	8.6		250	8.3	Mogensen <i>et al.</i> (1995) and own calculations
	1986	18 496	26 356	9.8		390	13.0	
	1991	25 946	36 558	11.2		410	14.3	
	1994	34 441	48 562	17.6		420	15.4	
France	1975–82	12 539	17 542	6.9		800–1 500	3.0–6.0	De Grazia (1983) and own calculations
	1997–98	24 363	34 379	14.9		1 400–3 200	6.0–12.0	
Germany	1974–82	11 940	17 911	10.6		3 000–4 000	8.0–12.0	De Grazia (1983), F. Schneider (1998a, 1998b) and own calculations
	1997–98	26 080	39 634	14.7		7 000–9 000	19.0–23.0	
Italy	1979	8 040	11 736	16.7		4 000–7 000	20.0–35.0	Gaetani & d'Aragona (1979) and own calculations
	1997–98	20 361	29 425	27.3		6 500–11 400	30.0–48.0	
Spain	1979–80	5 640	7 868	19.0		1 250–3 500	9.6–26.5	Ruesga (1984) and own calculations
	1997–98	13 791	19 927	23.1		1 500–4 200	11.5–32.3	
Sweden	1978	15 107	21 981	13.0		750	13.0–14.0	De Grazia (1983) and own calculations
	1997–98	25 685	37 331	19.8		1 150	19.8	
European Union	1978	9 930	14 458	14.5		15 000	–	De Grazia (1983) and own calculations
	1997–98	22 179	32 226	19.6		30 000	–	
OECD (Europe)	1978	9 576	14 162	15.0		26 000	–	De Grazia (1983) and own calculations
	1997–98	22 880	33 176	20.2		48 000	–	

* Source: OECD, Paris, various years

** Source: Own calculations from Schneider (2000, 2001)

*** Estimated full-time jobs, including unregistered workers, illegal immigrants and second jobs

**** In percentage of the population aged 20–59, survey method

Germany, one could observe such a high and persistent level of unemployment up to the year 2007.

Additionally, Table 3 contains a preliminary calculation of the total GDP per capita (including the official and the shadow economy GDP per capita) in US\$ as a result of shadow labour market activities. In all of the countries investigated, total GDP per capita was much higher – on average in all countries around 40% greater than official data implied. This clearly shows that the productivity in the shadow economy is roughly as high as in the official economy – a clear indication that the work effort (i.e. the incentive to work effectively) is as strong in the shadow economy as in the official one. In general these results demonstrate that the shadow economy labour force has reached a remarkable size in the developing countries as well as in highly developed OECD countries, even though the calculation still might have many errors.

Data about the share of the shadow economy labour force in highly developed countries is scarce. For three countries (compare Table 4), we have some data. These are Austria, Germany and Switzerland, where we have a shadow economy labour force calculated in terms of the number of full-time shadow economy workers.¹⁷ If we consider Germany, full-time shadow economy workers numbered about 7 million in 1995, increasing to 9.4 million in 2004 and decreasing again to 8.2 million in 2009. If we consider the illegal foreign shadow economy of full-time workers in Germany, they are roughly one-twelfth of the full-time German or legal resident shadow workers. In 1995 they were 878,000, increasing to 1.2 million in 2002 and decreasing again to 968,000 in 2009. In Austria, the full-time shadow economy workers numbered 575,000 in 1995, increased to 798,000 in 2004 and have decreased since to 713,000 in 2009. Table 4 clearly shows that the figures for the shadow economy workforce in these highly developed countries – Austria, Germany and Switzerland – are much smaller than those for developing countries.

¹⁷ These numbers of full-time shadow economy workers are a 'fiction', because most people in these three countries are 'part-time' shadow economy workers. They are only calculated here to make the figure comparable to the workforce in the official economy. Let me repeat, these full-time shadow economy workers do not exist for Germany, Austria and Switzerland.

Table 4: Development of 'full-time shadow economy workers' and of illegal foreign workers per 1,000 people in Germany, Austria and Switzerland over the period 1995 to 2009*

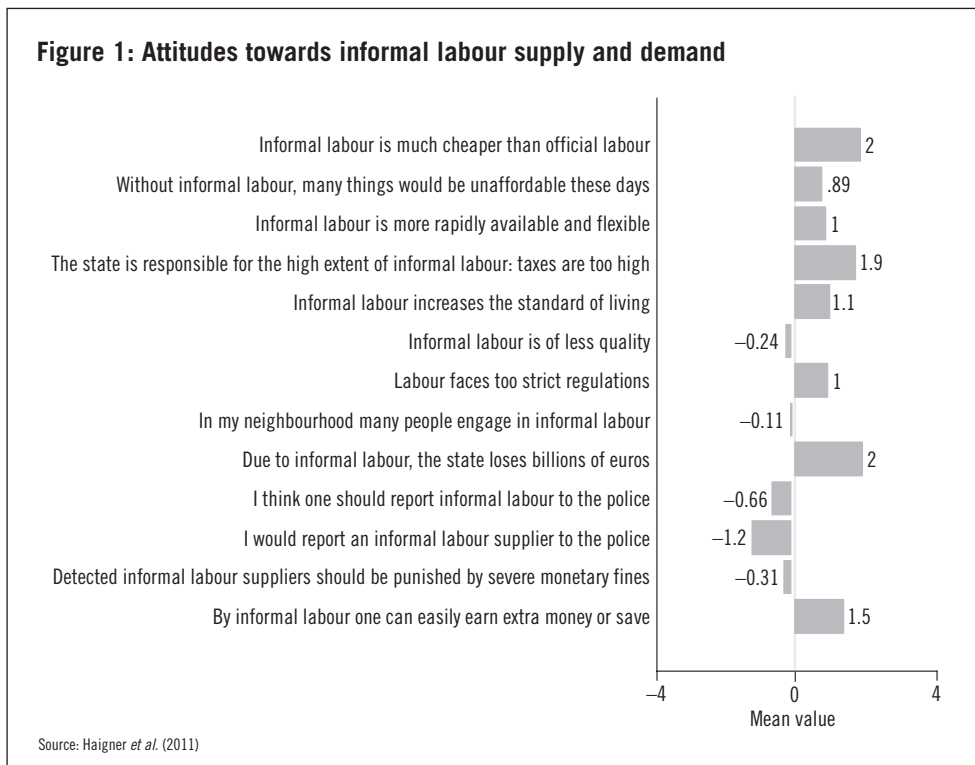
Year	Germany		Austria		Switzerland	
	Full-time shadow economy workers	Illegal foreign workers	Full-time shadow economy workers	Illegal foreign workers	Full-time shadow economy workers	Illegal foreign workers
1995	7.320	878	575	75	391	55
1996	7.636	939	617	83	426	61
1997	7.899	987	623	86	456	67
1998	8.240	1,039	634	89	462	69
1999	8.524	1,074	667	93	484	74
2000	8.621	1,103	703	99	517	79
2001	8.909	1,149	734	104	543	84
2002	9.182	1,194	746	109	556	88
2003	9.420	1,225	769	112	565	90
2004	9.023	1,103	789	114	560	89
2005	8.549	1,002	750	104	520	82
2006	8.124	952	716	98	493	78
2007	8.206	961	709	97	490	77
2008	8.154	955	679	93	471	74
2009	8.272	968	713	98	484	76

Source: Own calculations (2010)

* Explanation: these numbers of full-time shadow economy domestic workers are a fiction, because these are calculated from the million hours worked in the shadow economy. Most people who work in the shadow economy in these three countries are 'part-time' shadow economy workers. The calculation is done only to make comparisons to official statistics.

Informal labour supply

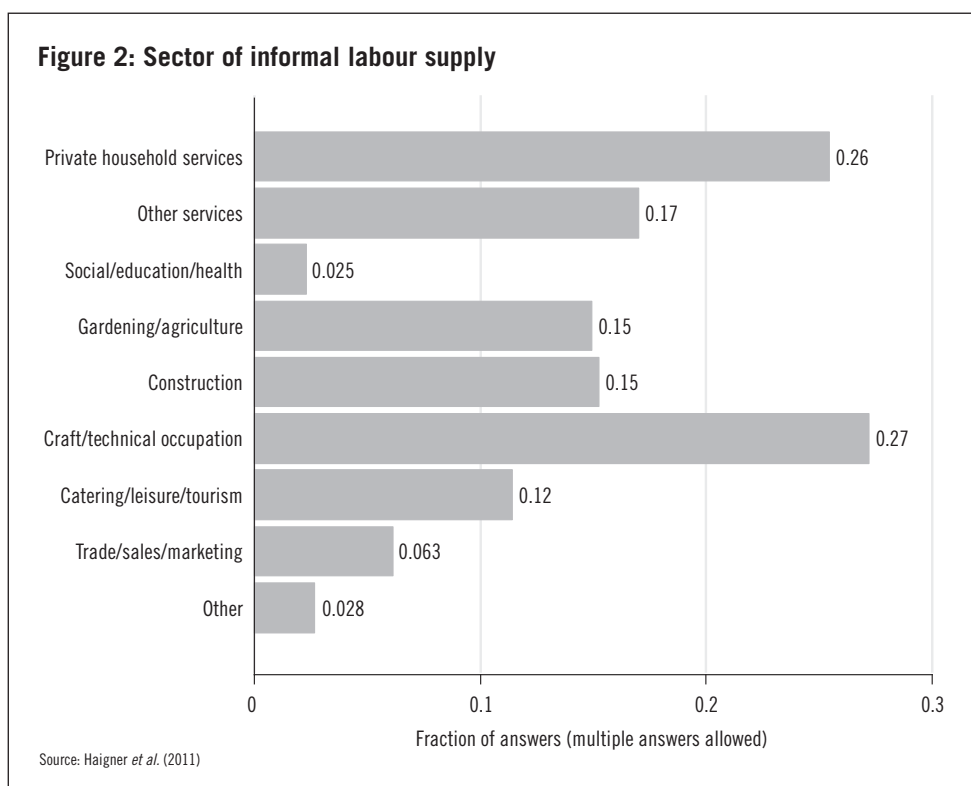
Of 2,104 respondents, 285 (13.55%) declared that they had been supplying informal labour during the year before the survey. Among men, the fraction of informal labour suppliers was significantly higher (18.82%) than among women (8.58%).¹⁸ Moreover, the authors find above average fractions of informal labour suppliers among the unemployed (29.29%) and people out of the labour force ‘due to other reasons’ (23.53%). Among pensioners (5.10%) and housewives and housemen (9.52%), the fraction is below the average, while it is close to the average among students (14.44%), apprentices (11.75%), self-employed persons (15.17%) and dependent employees (15.60%). Among persons not having completed compulsory education and those who have completed an apprenticeship, informal labour suppliers are overrepresented (24.24% and 20.41%), while they are underrepresented among persons with a university degree (7.19%).



¹⁸ Mann-Whitney U-Test, $N = 2104$, $p = 0.00$

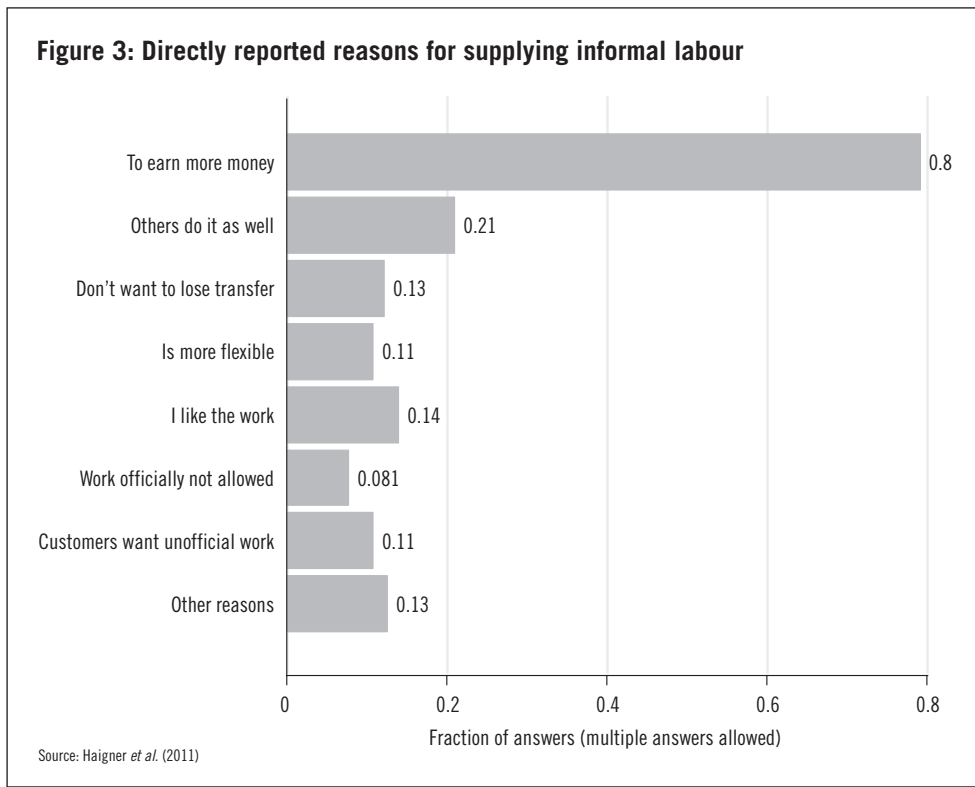
Sectors of informal labour supply

Figure 2 shows in which sectors the informal labour supply occurs. Not surprisingly, crafts and technical occupations and private household services have the highest relative importance. In both branches, more than a quarter of informal labour suppliers are engaged. About 15% of informal labour suppliers declare that they are working in other services, gardening/agriculture and construction. Fractions do not add up to 100% since multiple answers have been allowed.



Directly reported reasons

The authors directly asked the survey respondents (declaring that they engaged in the informal labour supply) for their reasons for so doing. Again, the results are as expected. Figure 3 shows that four in five declare that they supply informal labour in order to earn more money. All other reasons noted are far less important. However, it is interesting to see, for example, that one in about eight informal labour suppliers do so because



they do not want to lose transfer payments. In the German social system, pensioners as well as unemployment benefit and social assistance recipients face a full transfer cut and thus implicit marginal tax rates of 100% and more if they officially supply labour.

More than one in five informal labour suppliers claim that a reason for doing so is that others do it as well. This result is in line with our (earlier reported) finding that German residents perceive, in general, informal labour supply and demand as a rather trivial offence. By the same token, slightly more than 10% of informal labour suppliers claim that they do so because their customers want the demanded work to be done unofficially. Another 10% say that they like the flexibility of informal labour supply.

Developing countries: earlier results¹⁹

Table 5 shows the results of estimates of the shadow labour force for countries in Africa. Gambia has the largest shadow economy labour force with

¹⁹ This parts follows closely Schneider and Enste (2002, part 5, pp. 43–51).

Table 5: Shadow economy labour force in Africa

Country	Informal employment (1998)			Labour force (1997)		Shadow economy GNP in billion \$, 1998	Official GNP in billion \$, 1998	Shadow economy GNP as % of official GNP
	Millions	As % of official labour force	In % of population	Population (1997)				
				millions	As % of population			
Angola	1.90	35.7	16.3	11.66	5.3	646	4,000	16.2
Benin	2.00	76.9	34.5	5.80	2.6	758	2,200	34.5
Botswana	0.30	45.0	19.6	1.53	0.7	1,080	5,600	19.3
Burkina Faso	3.40	65.0	32.5	10.47	5.2	816	2,600	31.4
Cameroon	3.50	61.7	25.1	13.94	5.7	2,135	8,700	24.5
Chad	1.30	38.0	18.2	7.15	3.4	299	—	—
Congo	0.60	50.3	22.1	2.71	1.1	414	1,900	21.8
Côte d'Ivoire	3.40	60.3	23.9	14.21	5.7	2,380	10,100	23.6
Democratic Republic of Congo	15.70	80.0	33.6	46.71	19.6	1,727	5,400	32.0
Ethiopia	15.70	61.0	26.3	59.75	25.7	1,570	6,200	25.3
Gabon	0.30	58.0	26.1	1.15	0.5	1,251	—	—
Gambia	0.50	80.0	42.4	1.18	0.6	170	413	41.2
Ghana	6.10	72.3	33.9	17.98	8.5	2,379	7,200	33.0
Guinea	2.60	79.0	37.6	6.92	3.3	1,404	3,800	36.9
Kenya	6.00	40.8	21.0	28.61	14.6	2,100	9,800	21.4
Lesotho	0.31	38.8	15.4	2.01	0.8	185	1,200	15.4
Liberia	0.40	35.0	13.8	2.89	1.2	—	—	—
Madagascar	3.90	57.5	27.6	14.15	6.7	1,014	3,700	27.4
Malawi	2.50	51.7	24.3	10.28	4.9	500	2,100	23.8
Mali	1.80	36.0	17.5	10.29	5.0	450	2,600	17.3
Mauritania	0.50	41.0	20.3	2.46	1.1	205	1,000	20.5
Namibia	0.33	47.1	20.4	1.62	0.7	652	3,200	20.4

(continued)

Table 5: Shadow economy labour force in Africa (continued)

Country	Informal employment (1998)			Labour force (1997)		Shadow economy GNP in billion \$, 1998	Official GNP in billion \$, 1998	Shadow economy GNP as % of official GNP
	Millions	As % of official labour force	In % of population	Population (1997) millions	Millions			
Niger	2.30	51.0	23.5	9.80	4.6	437	—	—
Nigeria	23.40	48.9	19.8	117.90	47.9	17,780	36,400	48.8
Rwanda	3.20	75.0	40.5	7.90	4.2	736	1,900	38.7
Senegal	2.50	62.4	28.4	8.79	4.0	1,325	4,800	27.6
Sierra Leone	1.30	70.0	27.4	4.75	1.8	182	702	25.9
Sudan	4.60	42.6	16.3	28.30	10.8	1,333	8,200	16.3
Tanzania	6.80	42.2	21.7	31.32	16.1	1,476	6,800	21.7
Togo	0.70	38.9	16.1	4.34	1.8	226	1,400	16.1
Tunisia	2.00	57.1	21.5	9.30	3.5	4,272	19,400	21.5
Uganda	5.80	56.4	28.5	20.32	10.2	1,798	—	—
Zimbabwe	1.80	33.9	15.7	11.47	5.3	1,082	6,900	15.7
Average over 33 countries	3.9	54.2	24.6					25.7

Source: Schneider & Enste (2002, Ch. 5), based on World Bank, Africa Region Live Database. <http://www.worldbank.org/html/extdr/regions.htm>

80% of the official one, followed by Guinea with 79%, Benin with 76.9%, Rwanda with 75% and the Republic of Congo with 50%.²⁰ Zimbabwe has the lowest rate of illicit work, with 33.9% of the official labour force. For African countries, the figures show considerable variation and should really be seen as first and preliminary results. Under the assumption that this informal or shadow economy labour force is as productive as the official economy and contributes per capita a similar added value, the shadow economy GNP can be calculated, which is also shown in Table 5. Gambia has the largest shadow economy as a percentage of official GNP, with 41.2%, followed by Guinea with 36.9% and Rwanda with 38.7%. On average, the supply of illicit work in these 33 African countries is 54.2% (of the official labour force) and 24.6% of the population.

Table 6 illustrates the results for some Asian countries. Here, China, India and Indonesia have to be examined more closely, as they are the three largest countries in Asia (in terms of population). In China, it is estimated that 160 million people work in the shadow economy – 21.9% of

**In India, 217 million people
work illicitly – 50% of the
official labour force.**

the official labour force.²¹ In India, 217 million people work illicitly – 50% of the official labour force.

In Indonesia, 36.7 million people engage in shadow economic activities; this corresponds to 37.4% of the official labour force. In Pakistan, 29.4 million people, or 60%, work in the shadow economy. One realises that, in Asia, the shadow economy labour force is quite numerous, a result also found in the OECD (2009) study. On the whole, the shadow economy labour force in these Asian countries makes up 46.5% of the official labour force and 19.6% of the population.

In Table 7, some Latin and South American states are shown. In absolute terms, Brazil has the highest shadow economy labour force, with 37.4 million (49.2% of the official labour force), followed by Colombia with 9.7 million, or 53.8%. Both Ecuador with 58.8%, and Peru with 54.6%,

²⁰ These high values strongly indicate that a considerable number of these illicit workers also have (at least part-time) jobs in the official economy. Yet, the number of these 'double-job-holders' (official and unofficial at the same time) is unknown and may differ from country to country. The ratio of the shadow economy labour force as a percentage of the official one should be interpreted very cautiously, since it is unclear what this ratio actually stands for. Hence, an interpretation is very difficult. In addition, making comparisons between different countries is very complicated and such comparisons provide only a crude picture. Perhaps the rate of the shadow economy labour force as a percentage of the population is a somewhat better gauge.

²¹ The figure for China should be interpreted with great care, however, as this country still has a communist regime with some regions under a capitalist system.

Table 6: Shadow economy labour force in Asia

Country	Informal employment (1998)			Labour force (1998)			Informal GNP in billion \$, 1998	Official GNP in billion \$, 1998	Informal GNP as % of official GNP
	Millions	As % of official labour force	In % of population	Population (1998) millions	Millions	As % of population			
China	162.40	21.9	13.1	1,238.60	743.0	59.99	138,327	1,055,000	13.1
India	217.20	50.4	22.2	979.70	431.0	43.99	95,568	427,400	22.4
Indonesia	36.70	37.4	18.0	203.70	98.0	48.11	24,956	221,500	11.3
Mongolia	0.42	44.0	16.2	2.60	1.0	38.46	169	1,000	16.9
Nepal	8.60	78.1	37.6	22.90	11.0	48.03	1,803	4,800	37.6
Pakistan	29.40	60.0	22.3	131.60	49.0	37.23	—	—	—
Philippines	9.80	30.6	13.0	75.20	32.0	42.55	11,520	88,400	13.1
Sri Lanka	2.50	31.3	13.3	18.80	8.0	42.55	—	—	—
Yemen	3.30	65.0	19.9	16.60	5.0	30.12	990	4,400	22.5
Average of 9 countries	52.30	46.5	19.5			43.40			19.5

Source: Own calculations based on World Bank, World Development Indicators, <http://www.worldbank.org/html/extdr/regions.htm>

Table 7: Shadow economy labour force in Latin and South America

Country	Informal employment (1998)				Labour force (1998)			Informal GNP in billion \$, 1998	Official GNP in billion \$, 1998	Informal GNP as % of official GNP
	Millions	As % of official labour force	In % of population	Population (1998) millions	Millions	As % of population	Millions			
Bolivia	1.54	51.3	19.5	7.90	3.0	37.97	1,540	7,400	20.8	
Brazil	37.40	49.2	22.5	165.90	76.0	45.81	—	—	—	
Chile	2.40	40.0	16.2	14.80	6.0	40.54	11,544	73,400	15.7	
Colombia	9.70	53.8	23.8	40.80	18.0	44.12	25,220	106,100	23.8	
Ecuador	2.94	58.8	24.1	12.20	5.0	40.98	4,482	18,600	24.1	
El Salvador	1.40	47.3	23.0	6.10	3.0	49.18	2,590	11,200	23.1	
Guatemala	2.01	50.3	18.6	10.80	4.0	37.04	3,296	16,800	19.6	
Paraguay	0.80	41.0	15.4	5.20	2.0	38.46	1,408	9,200	15.3	
Peru	4.91	54.6	19.8	24.80	9.0	36.29	12,079	61,100	19.8	
Average of 9 countries	7.0	49.6	20.3			41.20			20.3	

Source: Schneider & Erste (2002, Ch. 5) based on World Bank, World Development Indicators, <http://www.worldbank.org/html/ektdr/regions.htm>

have a quite high rate of illicit work. Chile has the lowest rate, with 40%, as well as Paraguay with 41%, and El Salvador with 47.3% of the official labour force. Overall, the shadow economy labour force in these nine countries is 49.6% of the official labour force and 20.3% of the population.

Transition countries: earlier results

Nine transition countries were analysed (see Table 8). Armenia has the highest rate, with an illicit labour force of 75.5% of the official labour force, followed by Croatia with 70%, and Bulgaria with 63%. In absolute figures, Russia has by far the largest shadow economy labour force among the transition countries, with 32.9 million illegal workers, followed by Romania with 4.7 million, and Kazakhstan with 2.8 million. Slovenia has the lowest black labour force, with 31%.²² Generally, the shadow economy labour force in these nine countries is 49% of the official labour force and 23.9% of the population. Here the findings should be interpreted with great care as these 'transition' countries switched from a planned economy to a market economy and, due to this, official statistics had a lot of preliminary figures and calculation methods were difficult to use.

Developing and transition countries: latest results

Compared to the first estimates presented above, there have been some newer studies with respect to estimating the size and development of the shadow economy labour force.²³ Kucera and Roncolato (2008, p. 321) deal with informal employment. They address issues of crucial importance to labour market policy; first, the intensive labour market regulation is one major cause of informal employment; second, there is the so-called voluntary informal employment. Kucera and Roncolato give a theoretical overview on both issues and also a survey of a number of empirical studies, in which the effect of the official labour market regulations on informal employment is analysed, where they find a significant and quantitatively important influence.

In Table 9 the share of informal employment in total non-agricultural employment by five-year period and by country and region is presented. From the table, one can clearly see that, in all countries, the share of informal employment has increased over time. The share of informal

²² Of the official labour force.

²³ See also Feld & Schneider (2010), and Schneider *et al.* (2010).

Table 8: Shadow economy labour force in transition countries

Country	Informal employment (1998)				Labour force (1998)				Informal GNP as % of official GNP
	Millions	As % of official labour force	In % of population	Population (1998) millions	Millions	As % of population	Informal GNP in billion \$, 1998	Official GNP in billion \$, 1998	
Armenia	1.51	75.5	39.7	3.80	2.0	52.63	725	1,800	40.3
Bulgaria	2.52	63.0	30.4	8.30	4.0	48.19	3,100	10,100	30.7
Croatia	1.40	70.0	31.1	4.50	2.0	44.44	6,328	20,700	30.6
Georgia	1.10	36.7	20.4	5.40	3.0	55.56	1,023	5,100	20.1
Kazakhstan	2.80	40.0	17.9	15.60	7.0	44.87	3,668	19,400	18.9
Kyrgyzstan	0.80	40.0	17.0	4.70	2.0	42.55	280	1,600	17.5
Romania	4.70	42.7	20.9	22.50	11.0	48.89	6,533	31,300	20.9
Russian Federation	32.90	42.2	22.4	146.90	78.0	53.10	75,670	337,900	22.4
Slovenia	0.31	31.0	15.5	2.00	1.0	50.00	3,026	19,400	15.6
Average of 9 countries	5.3	49.0	23.9			48.90			24.1

Source: Schneider & Ernst (2002, Ch. 5) based on World Bank, World Development Indicators, <http://www.worldbank.org/html/extdr/regions.htm>

Table 9: Share of informal employment in total non-agricultural employment by five-year period, and by country and region (%)

Region	Period					
	1975-79	1980-84	1985-89	1990-94	1995-99	2000-07
North Africa					47.5	47.3
Algeria	21.8		25.6		42.7	41.3
Morocco		56.9			44.8	67.1
Tunisia	38.4	35.0	39.3		47.1	35.0
Egypt	58.7		37.3		55.2	45.9
Sub-Saharan Africa				76.0		
Benin				92.9		
Burkina Faso			70.0	77.0		
Chad				74.2	95.2	
Guinea		64.4		71.9	86.7	
Kenya			61.4	70.1	71.6	
Mali	63.1		78.6	90.4	94.1	81.8
Mauritania		69.4	80.0			
Mozambique				73.5		
Niger	62.9					
Senegal		76.0				
South Africa						50.6
Zaire (now Democratic Republic of Congo)		59.6				
Zambia				58.3		
Latin America					54.2	
Argentina				47.5	53.3	
Bolivia				56.9	63.5	
Brazil				60.0	60.0	51.1
Chile					35.8	
Colombia					38.4	
Costa Rica					44.3	
Dominican Republic					47.6	
Ecuador					53.5	74.9
El Salvador					56.6	
Guatemala				56.1		
Haiti					92.6	
Honduras					58.2	
Mexico				55.5	59.4	50.1
Panama					37.6	49.4
Paraguay					65.5	

(continued)

Table 9: Share of informal employment in total non-agricultural employment by five-year period and by country and region (%) (contd.)

Region	Period					
	1975–79	1980–84	1985–89	1990–94	1995–99	2000–07
Peru						67.9
Venezuela				38.8	46.9	49.4
South and Southeast Asia					69.9	
India			76.2	73.7	83.4	
Indonesia			39.2		77.9	
Pakistan			39.0		64.6	
Philippines				70.5	72.0	
Thailand			57.4	51.4	51.5	
West Asia						43.2
Iran			43.5			48.8
Lebanon						51.8
West Bank and Gaza Strip						43.4
Syria				41.7	42.9	30.7
Turkey					30.9	33.2
Yemen				57.1		51.1
Transition countries						24.1
Kyrgyzstan						44.4
Moldova						21.5
Romania					5.4	22.0
Russia						8.6

Sources: OECD (2009a, pp. 34–35); Charmes (2002, 2007, 2008) for the ILO Women and Men in the Informal Economy, 2002. For the most recent period: Heintz & Chang (2007) for the ILO, and for West Asia: Charmes (2007, 2008). Stat.Link <http://dx.doi.org/10.1787/533451351643>

employment in Algeria in the period 1975–1979 was 21.8% and increased in the period 2000–2007 to 41.3%. In India informal employment rose in the period 1985–1989 from 76.2% to 83.4% from 1995–1999. In the Republic of Mali the share of informal employment (as a percentage of total non-agricultural employment) was 63.1% from 1975–1979, and increased to 81.8% in 2000–2007. Table 9 clearly demonstrates that there is a very strong positive trend in the share of informal employment (as a percentage of total non-agricultural employment).

Table 10 provides the share of informal employment in total non-agricultural employment by country, region and gender. If one splits up the share of informal employment (as a percentage of total non-agricultural employment) by gender, we generally observe that the share of women is

Table 10: Share of informal employment in total non-agricultural employment, by country, region and gender (%), 1990s and 2000s

Region	1990–1999		2000–2007	
	Women	Men	Women	Men
North Africa	43.3	49.3		
Algeria	40.6	43.1		
Morocco	46.8	44.0		
Tunisia	39.2	53.2		
Egypt	46.5	56.9	38.6	47.2
Sub-Saharan Africa	84.1	63.0	77.1	62.6
Benin	97.3	87.0		
Chad	95.2	59.5		
Guinea	86.7	65.6		
Kenya	83.1	59.1		
Mali			89.2	74.2
South Africa	58.4	43.6	64.9	51.0
Latin America	56.2	47.1	59.5	55.4
Bolivia	74.4	55.0		
Brazil	67.3	54.7	52.3	50.2
Chile	43.9	30.9		
Colombia	44.0	34.1		
Costa Rica	48.0	42.1		
Dominican Republic	49.7	46.5		
Ecuador			76.9	73.2
El Salvador	68.6	45.7		
Guatemala	69.4	46.5		
Honduras	65.5	73.6		
Mexico	55.0	54.3	53.5	47.8
Panama	40.8	35.5	50.4	48.7
Peru			72.0	65.1
Venezuela	47.3	46.7	52.1	47.5
South and Southeast Asia	72.7	70.2		
India	85.7	82.9		
Indonesia	77.2	78.0		
Philippines	73.4	70.8		
Thailand	54.3	49.1		
West Asia	31.1	43.4	35.4	44.4
Lebanon			60.0	44.4
West Bank and Gaza Strip			20.2	46.8
Syria	34.6	42.8		
Turkey	19.1	29.1	32.2	33.4
Yemen	39.7	58.2	29.3	52.8

(continued)

Table 10: Share of informal employment in total non-agricultural employment, by country, region and gender (in percent), 1990s and 2000s (contd.)

Region	1990–1999		2000–2007	
	Women	Men	Women	Men
Transition countries			22.3	27.2
Kyrgyzstan			40.9	47.1
Moldova			18.4	28.0
Russia			7.6	9.6

Source: OECD (2009a, p. 47); and Charmes (2002), for the ILO Women and Men in the Informal Economy, 2002. For the most recent period: Heintz & Chang (2007) for the ILO.

significantly higher than the share of men. In North Africa (Algeria, Morocco, Tunisia and Egypt) the share of informal employment of women is 43.3% and that of men 49.3% over the period 1990–1999. In sub-Saharan Africa,

In Sub-Saharan Africa the share of women in informal employment in total non-agricultural employment is 84.1%.

the share of women is 84.1% and that of men 63.0%. In Latin America the share of women is 56.2% and the share of men 47.1%. Only in the region of West Asia and in the transition countries is the figure for the

share of men in informal employment higher than that for women. In West Asia (Lebanon, West Bank and Gaza Strip, Syria, Turkey and Yemen) the share of women is 31.1%, the share of men 43.4%.

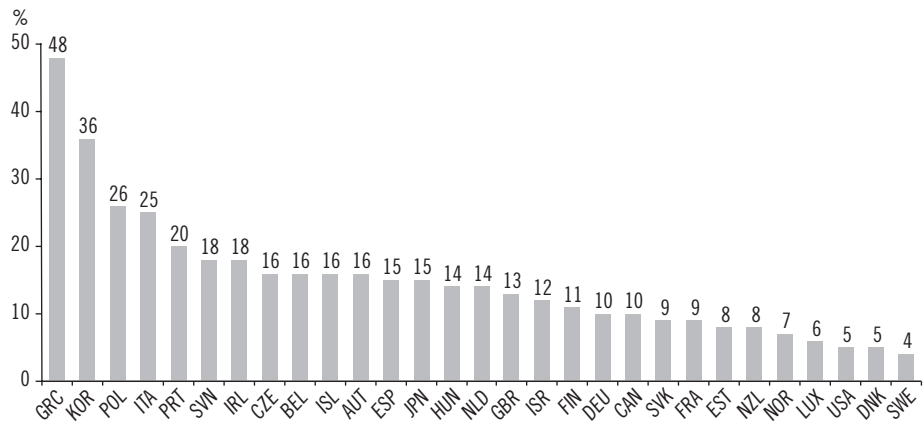
In the transition countries (Kyrgyzstan, Moldova and Russia) the share of women is 22.3% and the share of men 27.2%. We also see here some remarkable differences. In general the share of informal employment is rather large worldwide and certainly has important policy implications.

Further indicators of the shadow labour force

In this part some further indicators of the shadow economy labour force are discussed. As there are no exact measures of the shadow economy labour force, all measures that serve as proxies are shown.

The share of self-employment as a proportion of total employment can be seen as one indicator of the significance of the shadow economy labour force. If we consider Figure 4, we can clearly see that Greece, Korea, Poland, Italy and Portugal have the highest share of self-employed (as a percentage of total employed), with a value of 48% for Greece, and of 26% and 25% for

Figure 4: Share of self-employed in total employment (average: from 1995 to 2008 or the latest year available)



Source: OECD, STAN database (2010), Paris; quoted from OECD (2010, p. 17, Figure 7)

Poland and Italy, respectively. As these values are highly correlated with the size of the shadow economy, it is quite obvious that a significant proportion of these self-employed work in the shadow economy, too.

The share of employees not covered by social security contributions

In Table 11, the share of employees without social security contributions is shown for some European countries. If we compare the single countries

Table 11: Share of employees not covered by social security contributions

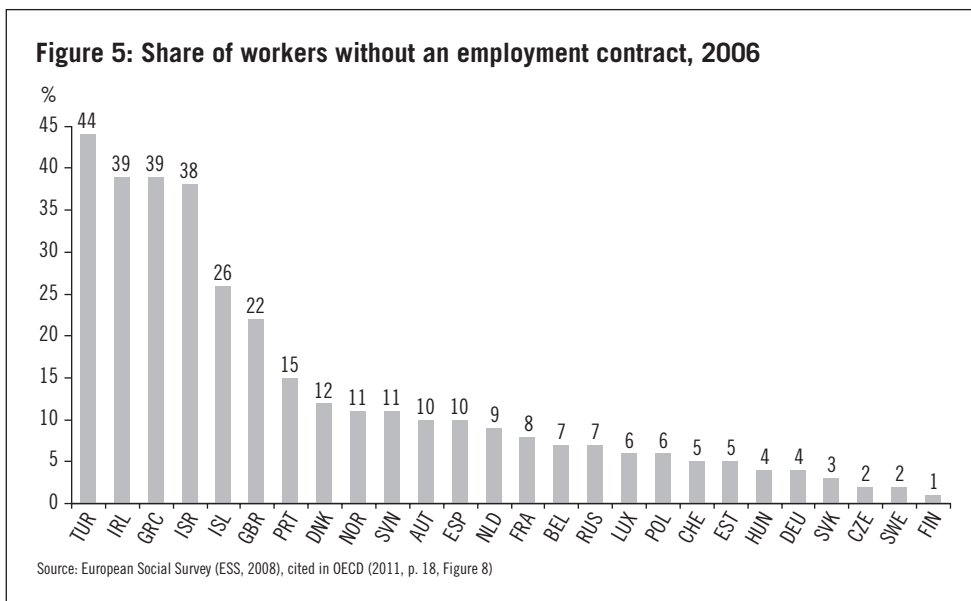
Country	% Share of non-insured employees in:		Country	% Share of non-insured employees in:	
	2007	2008		2007	2008
Austria	35.4	34.5	Italy	40.0	39.3
Belgium	38.8	36.2	Luxembourg	34.6	32.6
Czech Republic	40.8	40.4	Netherlands	17.7	21.6
Estonia	34.6	33.9	Norway	12.2	13.2
Finland	23.0	23.5	Poland	65.3	57.0
France	51.9	—	Portugal	35.1	38.5
Greece	37.1	37.3	Slovak Republic	39.1	38.5
Hungary	40.6	42.4	Slovenia	24.7	25.2
Iceland	13.4	13.3	Spain	41.5	41.4
Ireland	39.8	40.3	Sweden	22.7	22.0

Source: OECD calculation based on EU-SILC 2007 and 2008, quoted from OECD (2011, p. 18, Table 1)

in Table 11 we can clearly see that there are vast differences between the listed countries where in some the share of employees without any social security advantage is pretty high. The leader is Poland, with a value of between 65% and 57% in the years 2007 and 2008, followed by France with 51.9% and then Spain with 41.5%. Again the values in Table 5 give some indication about the size of the shadow economy labour force, as it is quite plausible that at least some of these work in the shadow economy.

The share of workers without an employment contract

In Figure 5 the share of workers without an employment contract is shown for various European countries. The leading country is Turkey, with 44%, followed by Ireland, 39%, and Greece, 39%, then Israel, 38%. The lowest countries are Sweden and Finland with only 2 or 1% share of workers without an employment contract.



Summary of the measures of informal employment

In an OECD study (OECD 2008) the organisation focused on informal employment in seven member countries: the Czech Republic, Hungary, Korea, Mexico, Poland, the Slovak Republic and Turkey. Table 12, which is taken from this OECD study, nicely shows the alternative measures of informal employment and undeclared work. It is grouped in employees in

Table 12: Alternative measures of informal employment and undeclared work, 2006

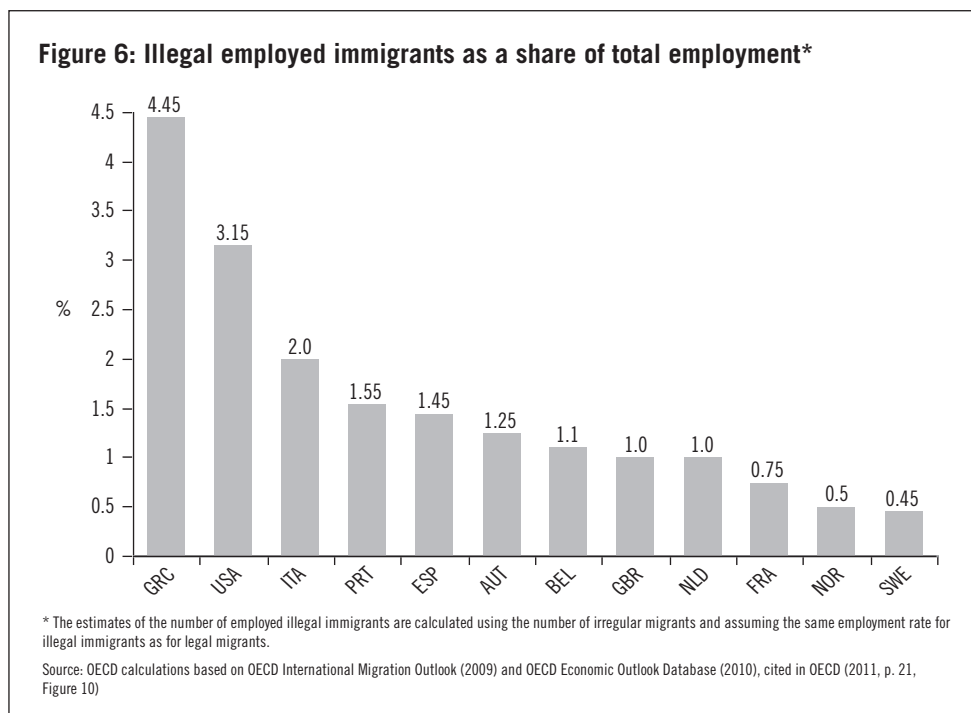
Country	Employees in informal jobs		Own account workers	Unpaid family workers	Multiple jobs holders	Undeclared income	
	Employees not registered for mandatory social security	Employees without work contract	% of non-farm employment	% of non-farm employment	% of total employment	% of workforce typically not reported for tax purposes ²	% of employees receiving wages cash-in-hand ³
	% of non-farm employment ¹						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Czech Republic	–	1.8	11.4	0.7	2.1	10.1	3.0
Hungary	19.4	2.6	6.4	0.3	1.8	8.6	8.0
Korea	25.8	–	17.1	4.7	1.7	7.0	–
Mexico	31.5	26.9	20.6	5.1	3.3	30.9	–
Poland	–	4.9	7.0	0.7	7.5	10.6	11.0
Slovak Republic	–	2.2	9.2	0.1	1.2	5.6	7.0
Turkey	21.7	–	16.6	3.3	3.1	24.6	–

Source: OECD (2008), Paris, cited in OECD (2011, p. 20, Table 3.1)

informal job and own account workers, unpaid family workers, multiple job holders with undeclared income. The highest values for almost all of these seven categories are held by Mexico, followed by Turkey and then Korea. Table 12 clearly shows how difficult measurement of the informal or shadow economy labour force is. In all categories there might be some shadow economy labour work, but it is very difficult to evaluate how large this figure is.

Shadow economy workers with illegal immigrant background

In a number of European countries there are data about shadow economy workers coming from illegal immigrants. A first estimate, undertaken again by the OECD (2011), is shown in Figure 6. Considering these figures, one realises that the size again is increased with 4.4% of total employment the highest in Greece, followed by the United States with 3.2%, Italy 2.0% and, at the lowest end, Norway and Sweden with 0.5% and 0.4% of total employment. This table ‘confirms’ the values of a similar size in Table 4 for Germany, Switzerland and Austria. Both tables clearly show that illegal immigrant employment takes place, but from the size perspective it is rather small for most countries.



The shadow economy and unemployment²⁴

There has been some discussion of the size of the shadow economy labour force and the reasons for it, but comparatively little attention has been paid to the relationship between unemployment and working in the shadow economy. As Tanzi (1999) points out, ‘the current literature does not cast much light on these relationships even though the existence of large underground activities would imply that one should look more deeply at what is happening in the labour market’.²⁵ Therefore, the objective of the paper by Bajada and Schneider (2009) is to examine the extent of participation in the shadow economy by the unemployed. They investigate the relationship between the unemployment rate and the shadow economy. Previous literature on this topic has suggested that the relationship between these two variables is ambiguous, predominantly because a heterogeneous group of people working in the shadow economy exists and there are also various cyclical forces at work, producing a net effect

²⁴ This part is taken from Feld and Schneider (2010).

²⁵ Tanzi (1999 p. 347).

that is weakly correlated with unemployment. They provide a suggestion for disentangling these cyclical effects, so as to study the component of the shadow economy that is influenced directly by those who are unemployed. They refer to this effect as the ‘substitution effect’ which typically increases during declining periods of legitimate economic activity (and increasing unemployment). Equipped with this approach for measuring the ‘substitution effect’, they discover that a relationship exists between changes in the unemployment rate and shadow economy activity. Then by examining the growth cycle characteristics of the ‘substitution effect’ component of the shadow economy, Bajada and Schneider (2009) determine that the growth cycles are symmetric (in terms of steepness and deepness) and that changes in the unemployment rate, whether positive or negative, had similar impacts on changes in the substitution effect component. They suggest that the shadow economy is a source of financial support during periods of unemployment for those genuinely wanting to participate in the legitimate economy. Although this does not exclude the possibility that long-term unemployed may also be participating in the shadow economy, it would appear that short-term fluctuations in unemployment contribute directly to short-term fluctuations in the shadow economy.

When Bajada and Schneider consider the various unemployment support programmes across 12 OECD countries, there appears to be no real systematic relationship between the generosity of the social security systems and the nature of short-term shadow economic activity by the unemployed. Even the various replacement rates across the OECD countries appear to have little consequence on the rate at which the unemployed take on and cut back shadow economy activity. There is, however, some evidence to suggest that an extended spell in unemployment lasts anywhere between less than three months to approximately nine months.

On the whole, Bajada and Schneider argue that dealing with unemployment participation in the shadow economy as a way of correcting the inequity it generates is best handled by more stringent monitoring of those receiving unemployment benefits, rather than reducing replacement rates as a way of encouraging reintegration into the workforce. A strategy of reducing replacement rates would not only fail to maintain adequate support for those experiencing financial hardship during periods of unemployment, it is likely to have little impact on reducing participation by the unemployed who are willing and able to engage in shadow economy activity.

Adjustments of shadow economy measures of value added in national accounts

Due to the strong increase in the size and development of the shadow economy (in value added terms) a number of countries have undertaken adjustments of this non-observed economy measure in their national accounts.²⁶ OECD (2011, p. 14) has detected seven adjustments necessitated by activities, which are included in some countries in their national accounts.

- A1: A producer deliberately does not register, to avoid tax and social security obligations.
- A2: A producer deliberately does not register as a legal identity or as entrepreneur because he is involved in illegal activities.
- A3: A producer is not required to register because he has no market output.
- A4: A legal person not surveyed due to reasons such as business register is out of date or updating procedures are inadequate.
- A5: Registered entrepreneurs may not be surveyed since the statistical office does not conduct a survey of registered entrepreneurs.
- A6: Cross-output is underreported and/or intermediate consumption is overstated.
- A7: Data are either not complete or not collected or not directly collectable and/or data are incorrectly handled.

If one considers those countries that do some adjustment, one amazing thing is that a major adjustment has taken place in Italy, between 14.8 and 16.7%, and in Poland between 7.8 and 15.7%. The largest adjustment has taken place in Russia, with 24.3%, and the smallest in the US, with 0.8%. Table 13 clearly shows that, of those countries that do some adjustment, their adjustment is vastly different compared to other countries. Hence, this leads to the problem that, for these countries, starting from Australia and ending with the US, the measures of the size and development of the shadow economy in terms of percentage of official GDP is biased, because a part of the shadow economy has already been considered. This is certainly a further difficulty when comparing the size and development of shadow economies between countries.

²⁶ The following text closely follows OECD (2011, pp. 11, 12, Box 2). Table 13 is also taken from there.

Table 13: Adjustment of non-observed economy in national accounts, around 2000

Country	Size of non-observed economy (% of GDP)	Activities included						
		A1 Non registered producers	A2 Non registered identity of a producer	A3 No requirement to register	A4 Non registration due to old state	A5 Not captured by the stat. office	A6 Underreporting Of output	A7 Incorrect data
Australia	1.3	X		X			X	X
Austria	7.9	X		X	X		X	X
Belgium	3.0–4.0	X		X			X	X
Canada	Not stated	X	X	X			X	X
Czech Republic	4.6(E); 6.6(0); 9.3(0)	X	X	X	X		X	X
Estonia	9.6	X	X				X	X
Finland	Not stated	X		X			X	
Germany	Not stated	X		X			X	X
Hungary	11.9	X		X	X		X	X
Ireland	4.0	X		X	X		X	X
Italy	14.8(L); 16.7(U)	X		X	X	X	X	
Mexico	12.1	X		X			X	
Netherlands	1.0			X			X	X
Norway	2.4(0); 1(E)			X	X		X	X
Poland	15.7(0); 7.8(E)	X	X	X	X		X	X
Russia	24.3	X		X	X		X	X
Spain	11.2	X		X	X		X	X
Sweden	1.3		X				X	X
Turkey	1.66	X		X			X	
UK	Not stated	X		X		X	X	X
US	0.8						X	X

Notes: 0 = according to output approach; E = according to expenditure approach; 1 = according to income approach; L = lower bound; U = upper bound
Source: United Nations (UN 2008), cited in OECD (2011, p. 12, Table 2.1)

Conclusions

In this paper some of the most recent developments in research on the shadow labour force and undeclared work in highly developed OECD, developing and transition countries are shown. Besides the figures for the illicit workforce in the rural and non-rural sector, some other measures of the shadow economy labour force, like unpaid family workers, own account workers, multiple job holders, etc., are presented. The studies based on the MIMIC approach also report strong effects of tax morale, but underline the higher importance of tax policies and state regulation to increase the shadow economy.

The discussion of the recent literature shows that economic opportunities for employees, the overall situation on the labour market, 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 this paper – ‘The shadow economy labour force: what do we (not) know?’ – there is certainly some knowledge about the size and development of the shadow economy labour force. For developing countries, the shadow economy labour force has reached a remarkable size, according to OECD (2009a) estimates, which is that in most developing countries the shadow economy labour force is greater than the official labour force. What we do not know are the exact motives for people to work in the shadow economy, and what is their relation and feeling if a government undertakes reforms in order to bring them back into the official economy. Hence, more detailed micro studies are needed in order to obtain a more in-depth knowledge of people’s motivation to work in either the shadow economy and/or the official one.

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