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SHADOW ECONOMY IN UKRAINE: METHODOLOGY AND EVALUATION

The paper presents the methodological approaches to the definition of shadow economy in the world and different estimates of the shadow economy in Ukraine. From official sources, the results of calculations of the Ministry of Economic Development and Trade of Ukraine are presented, which evaluates it through integral index, according to the methods of "spending - retail trade", businesses losses, monetary, and the State Statistics Service of Ukraine within the System of National Accounts, which delivers indicator "non-observed economy". Unofficial estimates are presented by the World Bank.

Keywords: shadow economy; Ukraine.

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ТІНЬОВА ЕКОНОМІКА В УКРАЇНІ: МЕТОДОЛОГІЯ ТА ОЦІНКИ

У статті представлено методологічні підходи до визначення обсягів тіньової економіки, що існують у світі, та наведено різні оцінки рівня тіньової економіки України. З офіційних джерел представлено результати розрахунків Міністерства економічного розвитку і торгівлі України, яке оцінює її через інтегральний показник, відповідно до методів «витрати населення – роздрібний товарообіг», збитковості підприємств, монетарний показник, а також Державної служби статистики України в рамках Системи національних рахунків, що подає показник «обсяг економіки, що безпосередньо не спостерігається». Неофіційні оцінки представлено даними Світового банку.

Ключові слова: тіньова економіка; Україна.

Табл. 4. Рис. 1. Літ. 39.

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ТЕНЕВАЯ ЭКОНОМИКА В УКРАИНЕ: МЕТОДОЛОГИЯ И ОЦЕНКИ

В статье представлены существующие в мировой практике методологические подходы к определению объемов теневой экономики, приведены различные оценки уровня теневой экономики в Украине. Из официальных источников представлены результаты расчетов Министерства экономического развития и торговли Украины, которое оценивает ее через интегральный показатель, в соответствии с методами «расходы населения – розничный товарооборот», убыточности предприятий, монетарный показатель, а также Государственной службы статистики Украины, которая в рамках Системы национальных счетов представляет показатель «ненаблюдаемые объемы экономики». Неофициальные оценки представлены данными Всемирного банка.

Ключевые слова: теневая экономика; Украина.

Problem Statement. One of the main challenges for Ukraine during its economic transformation is struggling against shadow economy. It is true that the so-called "not observed economy" does exist in every country. However, for each country its dimensions are different. Size and changes of shadow economy are important because they can be a source for independent changes in the economy and can have an effect on the direction and strength of economic policy (Ott, 2002). The Ministry of Economic Development and Trade of Ukraine (2012) estimated the size of shadow economy for 2011 at the level of 34% of gross domestic product (GDP). Meanwhile, according to one of the latest foreign researches, the size of shadow sector amounted to 57,3% (Schneider, 2009), which represents Ukraine as the third most burdened with informal activities country in transition. The existence of particular schemes that allow shadow operations and the absence of specific policies are the reasons why some economic entities prefer to operate in "shadow" rather than in the official economy, because the price of legality is much higher than the price for shadow.

All informal activities have one common feature: entrepreneurs who operate in the informal economy perceive the benefits of doing so to outweigh the costs of going formal. Recent studies have identified a number of reasons why some business activity may take place in the shadow. The most important determinants are burdensome and costly government regulations (Johnson et al., 1997; Johnson et al., 2000; Djankov et al., 2002) and the level and administrative complexity of taxation (Schneider & Enste, 2000; Djankov et al., 2002). Schneider (2009) adds that with these 2 insights/conclusions goes a third, no less important: a government aiming to decrease shadow economic activity has to first and foremost analyze the complex relationships between the official and shadow economy – and even more important – the consequences of its own policy decisions.

Analysis of previous research and publications. Gutmann (1977) published one of the earliest studies on a hypothetical shadow economy (SE) of the United States for the year 1976. He assumed that there was no SE prior to the World War II and that the growth in the ratio of currency to bank deposits since then was due entirely to the growth of the SE. With the additional assumption that the ratio of value added to money is the same in both shadow and regular economies, he then proceeded to calculate that in 1976 the value added of the SE amounted to \$176 bln. or just over 10% of the United States GDP.

Several researchers developed more complex models of the demand for money. Tanzi (1983) argued that a hypothetical SE was only one factor determining the demand for cash. His model used 3 variables – tax burden, share of wages in total household income, and per capita GDP – which he used as a proxy for urbanization, increase in travel, and other aspects of economic development that might be expected to affect the demand for currency.

Using currency/money ratios for the United Kingdom, Dilnot & Morris (1981) offered a "proof" that the SE in the UK declined from 34% of GDP in 1952 to 7% in 1979. They commented that "if the changes in monetary behavior are really taken as indicators of the size of the black economy then the prima facie case is that the black economy is in steady decline and only a somewhat strained approach can yield different results. But we do not believe for a moment that these figures do in fact reflect

a decline in the black economy; they reflect changes in the financial system which implies greater economy in the use of currency".

Blades (1982) looked at monetary models of the SE in the United States and pointed out that the US dollar serves as an international currency. In a few countries it is used as the national currency and in many more it is a preferred alternative to an official currency. As a result, there is little point in relating dollars in circulation throughout the world to economic activity in the United States.

Houston (1987) developed a theoretical business cycle model, in which there are tax and monetary policy linkages with the SE, and concludes that the existence of a SE could lead to an overstatement of inflationary effects of fiscal or monetary stimulus.

Zelner (1970) introduced MIMIC method, which stands for "multiple indicator – multiple causes". The method has its origins in the factor analysis literature of psychometrics. In 1984 Frey & Weck-Hanneman applied this approach to estimate the SE of the data set of 17 OECD countries. Aigner et al. (1988) allowed some adjustments in dynamic MIMIC (or DYMIMIC) model to calculate the SE of the United States. Later, this method became quite popular among researchers. Schneider (2009) improved it and presented MIMIC (or model approach) as the one that explicitly considers multiple causes of the existence and growth of the shadow economy, as well as the multiple effects of the shadow economy over time. It is based on the statistical theory of unobserved variables, which considers multiple causes and multiple indicators of the phenomenon to be measured. However, this method is criticized for irrelevance of the causal and indicator variables employed (Giles & Tedds, 2002).

Kaufmann & Kaliberda (1996), following the paper of Dobozi & Pohl (1995), introduced the next independent approach for estimating SE – electricity consumption method. It uses the aggregate electric consumption as a proxy for overall GDP. The case study of Ukraine (from 1989 to 1994) was tested empirically for the applicability of this method. The authors also hypothesized the relationship between the evolution of SE in 16 countries in FSU and CEE regions. The criticism of the method is presented further.

Loayza (1996) presented a simple macroeconomic endogenous growth model in which production technology depends on congestible public services and in which "excessive" taxes and regulations are imposed by governments unable to enforce fully compliance. He concluded that an increase in the relative size of informal economy reduces economic growth in the economies where (1) the statutory tax burden is larger than the optimal tax burden and where (2) the enforcement of compliance is weak. The reason for this negative correlation is the strongly negative correlation between the informal sector and public infrastructure indices, while public-infrastructure is the key element for economic growth.

However, this negative impact of informal sector activities on economic growth is not broadly accepted, e.g. by Asea (1996). For example, the Loayza (1996) model was based on the assumption that the production technology depends on tax-financed public services, that are subject to congestion and that the informal sector is not paying any taxes but must pay penalties that are not used to finance public services. The negative correlation between the size of the informal sector and economic growth is therefore not very surprising.

The neoclassical view (Schneider, 2002) on the SE is optimal in the sense that it responds to the economic environment's demand for urban services and small-scale manufacturing. From this point of view the informal sector provides the economy with a dynamic and entrepreneurial spirit and can lead to more competition, higher efficiency, and stronger boundaries and limits for government activities. Put it differently, the informal sector may "help to create markets, increase financial resources, enhance entrepreneurship, and transform the legal, social, and economic institutions necessary for accumulation" (Asea, 1996: 166). The voluntary self-selection between formal and informal sectors may provide a higher potential for economic growth and hence a positive correlation between an increase of the informal sector and economic growth. Finally, considering both lines of theoretical argumentation, the effects of an increase of the SE on economic growth therefore remain considerably ambiguous.

Thomas (1999) pointed out that macroeconomic estimates of the SE were of little practical use for policy purposes. Citing large and fluctuating macroestimates of the UK SE published by Feige, Thomas (1999, p. 388) wrote: "Rather than accepting these magic numbers we should ask the obvious microeconomic questions... Where was this all happening? Who was doing it and how were they hiding their activities?"

Karajic (2001), depending on the respect for rules and legality of economic transactions, differentiated official economy and SE. Depending on the extent of the failure to observe regulations, Karajic distinguishes unreported, unrecorded, informal, corrupt, shadow and illegal, criminal. In the transition, particularly marked is the complementarity and continuousness of all these formal and informal types.

Although Ott (2002) concluded there is a considerable connection between corruption (defined as abuse of public service for personal profit) and SE (e.g., Eilat & Zinnes (2000), she did not deal in particular with corruption. She explained it with the fact that measurements of corruption are on the whole fairly unreliable, and when they tried to determine that corruption was the consequence, and the cause was the lack of transparency of the public sector, large discretionary rights of public servants, the inefficiency of courts and so on, it seemed better to concentrate on the causes.

Ahumada et al. (2007) focused on the income elasticity of the demand for currency. They argued that monetary methods only produced coherent results if the income elasticity of the demand for currency is unity, and suggested that the estimated size of SE could be corrected when such elasticity is not one. Some of these models were complex incorporating variables that are difficult (or even impossible) to estimate, such as the velocity of currency circulation (Feige, 1979) or tax morality (Frey & Weck-Hanneman, 1984). Several models also required bold assumptions about a time when there was no SE or about money/value added ratios in SE.

Blades (2011) pointed out a common feature of macroeconomic measurement of SE – they produce very large estimates. There are several versions of this model but the basic idea is that transactions under SE are entirely in cash so that any growth in the cash to deposit ratio in excess of changes that can be explained by the factors such as interest rates, changes in payments habits or growth of income levels, is due to the SE growth. Since the model only measures the change in SE, assumptions must next be made about the size of SE at some point in the period under investigation. The usual assumption is that it was zero in an early base year.

According to Blades & Roberts (2002), Schneider and Enste in their review of methodologies of shadow economies gave estimates of it as percentages of official GDP for a number of OECD countries. Averages for 1996 and 1997 go from 9% in Austria and the United States to 27% in Italy and 30% in Greece. Even Norway, Denmark, and Sweden – countries that are commonly perceived to be law-abiding and socially cohesive – are shown as having shadow economies amounting to 18% or more of GDP. They note that the estimates of SE presented by Schneider are additional to the non-observed activities that are already included in official GDP estimates. To support this point, an example of Hungary is provided. The authors claim that Schneider and Enste calculate the SE size of this country as 28% instead of 16%.

Blades & Roberts (2002) also criticized the electricity consumption method. According to this method, they stated the "true" GDP, i.e. the "official" plus the "shadow" parts – grows in line with electricity consumption. This approach again requires an assumption about the size of SE in a base year. Estimates based on electricity consumption tend to produce even larger estimates of SE than those based on currency demand models.

Unsolved parts of the problem. Today, in Ukraine as the country with transition economy the need to study shadow economy is clearly agreed. However, the effectiveness of corresponding institutions is hardly tangible.

Research task. The task of this research is to present current state of the shadow economy in Ukraine.

Research results. There are few measurement methods to estimate the size of the shadow economy (SE) in Ukraine. Figure 1 presents general tendencies of SE of Ukraine in comparison to GDP. The SE level is taken as the integrated index calculated by the Ministry of Economical Development and Trade of Ukraine, and GDP is taken ad real GDP growth index.

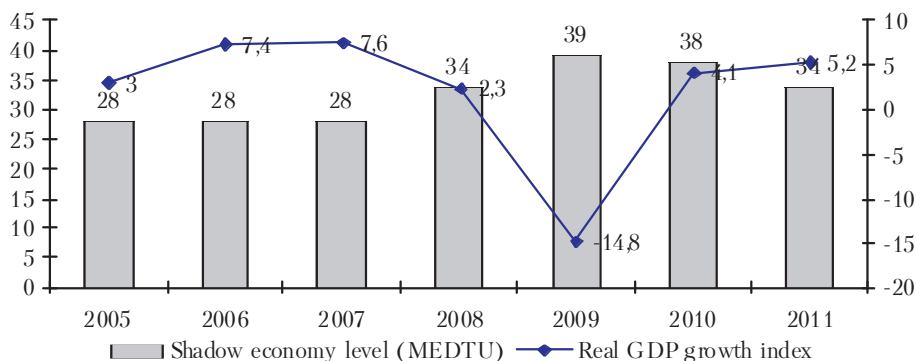


Figure 1. General tendencies of shadow economy and GDP of Ukraine

According to the estimates of MEDTU, in 2011 the level of SE decreased by 4% to 34% of GDP. The graph clearly shows the inverse relationship of the indicators: during the crisis phase decline of real GDP growth level by 5,3% (from 7,6 to 2,3) in 2008 and 17,1% (from 2,3 to -14,8) in 2009 was accompanied with the rise of SE by 6% (from 28 to 34) and 5% (from 34 to 39) respectively. During 2010–2011 there is an increase in the level of real GDP growth (4.1% and 5.2% respectively) and the decrease of SE (38% and 34% respectively).

There are other estimates of SE. Besides the Ministry of Economic Development and Trade of Ukraine the System of National Accounts gives the statistics of the so-called "non-observed economy". And it is possible to compare the state of SE from the official statistics with unofficial estimates of the World Bank performed by Friedrich Schneider from Johannes Kepler University of Linz. The estimates are presented in Table 1.

Table 1. State of shadow economy of Ukraine from different estimates, % of GDP

	2005	2006	2007	2008	2009	2010	2011	Average
MEDTU integrated	28	28	28	34	39	38	34	32,7
SNA	18,1	17,3	n/a	n/a	16,7	17,7	n/a	17,5
World Bank (Schneider)	57	57,5	58,1	n/a	n/a	n/a	n/a	57,5

Source: Ministry of Economic Development and Trade of Ukraine (2012), System of National Accounts (2012), Schneider (2010).

There is a clear difference between the level of SE shown by the official statistics (MEDTU and SNA) and unofficial (World Bank). If the average level of SE of Ukraine for 2005–2011 is calculated as 32,7% and 17,5% by MEDTU and SNA, the World Bank estimates it up to 57,5%.

It should be noted that Schneider uses MIMIC (multiple indicators multiple causes) model in his estimates in order to examine the relationships between unobserved variables with respect to the relationships the set of observed variables.

MEDTU actually applies several methods in SE measurement. Table 2 presents estimations of the SE by different methods.

Table 2. State of shadow economy in Ukraine from different estimates, % of GDP

	2005	2006	2007	2008	2009	2010	2011
Expenditures – retail trade	46	40	38	40	45	44	45
Enterprise loss	24	24	24	30	31	31	25
Monetary	25	25	26	38	40	30	27
Integrated	28	28	28	34	39	38	34

Source: Ministry of Economic Development and Trade of Ukraine (2012).

The level of shadow economy calculated by the method of "expenditures – retail trade" in 2011 shows the growth of the indicator (44% in the first half to 45% for 9 months and by the end of the year). The level of SE calculated by the method of enterprise loss shows a steady decline during 2011 (34% in the first quarter, 31% in January-June, 29% in January-September, and 25% by the end of the year). Similar was the trend by monetary method by which the level of shadowing in the first quarter was 29% in January-June and January-September – 28% for the year – 27%.

The calculation of SE by "expenditures – retail trade" is to identify the presence of excess cash in consumer expenditures of goods over total trade of goods by all public entities in the legal sector. The calculation of SE by enterprise loss determines the minimum and maximum limits of the coefficients of SE as a share of GDP. The monetary method identifies trends in the ratio of cash to bank deposits in the analyzed period, the base period (which is 1991) (Ministry of Economic Development and Trade of Ukraine, 2011).

Different trends directions of SE by different methods may presume that each calculation method covers a particular field of national economy (with correspond-

ingly different share of shadow sector in it), and therefore only the integral index can serve as an indicator of complex phenomena such as shadow economy.

The existence of shadow sector in Ukraine is significantly caused by imperfections of economic policy of the government, in particular by the disputes in the legislation that regulates economic activities.

Worldwide governance indicators (2011) is an analytical approach which develops and provides information about the cross-country study of 6 particular dimensions of governance: voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law, and control of corruption. 3 of them are particularly relevant for our research because they are the most determinant for individuals to make a decision in which way (formally or not) to participate in economic activities. Those are:

Government effectiveness captures perceptions of the quality of public services, the quality of civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of government's commitment to such policies.

Regulatory quality defines perceptions of the ability of government to formulate and implement sound policies and regulations that permit and promote private sector development.

Control of corruption illustrates perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

The indicators are measured in units ranging from -2.5 to 2.5, with higher values corresponding to better governance outcomes. The results are presented in Table 3.

Table 3. Worldwide Governance Indicators for Ukraine 2004–2011

	2004	2005	2006	2007	2008	2009	2010	2011
Government Effectiveness	-0,54	-0,58	-0,57	-0,68	-0,72	-0,82	-0,78	-0,83
Regulatory Quality	-0,39	-0,50	-0,50	-0,42	-0,51	-0,59	-0,53	-0,56
Control of Corruption	-0,89	-0,69	-0,68	-0,74	-0,79	-1,02	-0,99	-0,98

Source: worldbank.org.

As it is seen from Table 3, all the indicators have negative value. Moreover, they have nearly similar fluctuating dynamics in the 2004–2011 period and a visibly descending trend in 2007–2011.

The results of another rating, "Doing Business", are illustrated in Table 4.

Table 4. Ukraine's ranking in "Doing Business 2013"

	Rank ¹
Paying Taxes	165
Starting Business	50
Resolving Insolvency	157

¹ Out of 183 countries.

Source: World Bank (2011), worldbank.org

So, Ukraine is ranked 165 out of 183 countries based on the estimation of the level of Ukrainian tax system convenience, number 50 for the convenience of starting business, number 157 for resolving insolvency.

Doing Business 2013 (2012) states there are 7 procedures, 22 business days, and 1,5% of income per capita required to start business in Ukraine. Even though the number of procedures, as well as time and cost, have decreased since 2004, Ukrainian data does not correspond to the average estimates for Eastern Europe and Central Asia regions, which are 6, 14, and 6,8, respectively.

The independent survey conducted by Williams (2011) reports that 90% of the sample of 331 Ukrainian entrepreneurs do participate in business transactions with shadow basis. 1/2 of the surveyed mentioned they neither registered their businesses, nor sought a license to trade, thus were operating totally underground.

Another cross-country comparison on small and medium enterprises (SME) presents information on the contribution of SME to formal employment and official GDP across the sample of 76 developed and developing countries. Ukrainian estimates for SME share in the formal employment is 5,38%, for official GDP – 7,13%, while, on average, SME constitutes 54% of the economies in different countries (Ayyagari et al., 2007).

Conclusions. The shadow economy of Ukraine was originally caused by 2 main groups of reasons. Firstly, in the conditions of market transformation, a significant number of independent economic agents emerged, which for some time existed without completing the relevant legalisation procedures, because of poor government regulation of market and lack of business experience, the market did not feel any benefits from such legalisation or any loss from its absence. Effects of the above-mentioned reasons were temporary and almost stopped in the second half of the 1990s.

Secondly, emergence and development of informal (underground) economy is a reaction to excessive tax and regulatory pressure on the part of the state. For example, according to experts, in the early 2000's, the share of net taxes in the legal sector amounted to 20.1% of GDP, the level of budget and extra-budgetary funds revenue amounted to 44% of the official GDP. However, with account of the informal sector, net taxes declined to 14.4%, that is, became closer to that figure in the OECD countries, and the level of the budget and extra-budgetary funds revenue decreased to 31.4% of the aggregate GDP (Kryuchkova, 2004: 265).

Functioning of shadow economic agents is primarily inherent to products and services markets where there are individual entrepreneurs or small number of partnerships, the activity of which is difficult to control for Ukrainian government. Such markets are, in particular, retail trade, consumer services, certain kinds of agricultural production that do not require any special cultivation and processing of construction work, particularly types transport, some civil technologies, certain categories construction, and the like. The informal (shadow) activity of legalized economic agents covers much broader range of economic activities.

All mentioned above coincides with Schneider & Klingmair's (2004) conclusion that SE is one of the main reasons for a considerable erosion of the tax base with the consequence of a lower provision of public infrastructure and basic public service (e.g., an efficient legal system), as well as with lower official growth.

Thus, implementing special policies will improve institutional environment in Ukraine, so that shadow activities would be economically unprofitable. Anyway, the main emphasis in offering recommendations of measures for reducing shadow economy is expected to be preventing causes rather than reacting on consequences (Feige

& Ott, 1999). Ott (2002) after her several researches concludes that "it is the institutional sphere that is crucial in this, i.e. the relation between government and economy". So, it is necessary to improve laws and regulations, strengthen the independence and qualifications and equipment of courts, improve statistics, the organization, efficiency, qualifications and cooperation among governmental bodies, reduce the role of government in the economy, rationalize public expenditure, improve the quality of the public sector, keep on with the implementation of reforms in the pension system and also start off the reform of healthcare, as well as of civil service, reduce the role of government in privatization processes and strengthen the democratic forms of control.

It should be noted that the punitive measures of the state may not be effective against SE. Withdrawing money from shadow turnover may result in decapitalization of economy, which stimulates correspondent cuts in employment, aggregate demand and aggregate supply. This in turn decreases investment opportunities for further economic growth in the country.

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