

## Do we measure shadow economy correctly?<sup>1</sup>

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**Summary.** This article aims at presenting the approach of national statistical institutes to the issue of the size of the shadow economy estimated in national accounts as a GDP component in the light of rapid changes in the global economy. The creation of value added and its market pricing are considered as criteria for inclusion activities to the shadow economy. Methodological problems like production boundaries, legal and illegal shadow economy activities were raised. Official statistics on the shadow economy were confronted with independent estimates. It is argued that the official estimates of the shadow economy should serve as the benchmark for experts from different disciplines of sciences interested in this phenomenon. The more elaborated economic theory of the shadow economy could diminish confusion over estimates of the shadow economy.

**Keywords:** value added, shadow economy, national accounts, GDP, estimation methodology

## Czy poprawnie mierzymy szarą strefę gospodarczą?

**Streszczenie.** Rozważania zawarte w artykule dotyczą podejścia krajowych urzędów statystycznych do szacowanych w rachunkach narodowych rozmiarów szarej strefy gospodarczej jako składnika PKB w świetle szybkich zmian w globalnej gospodarce. Kryteriami, jakimi należy się kierować przy zaliczaniu działalności gospodarczych do szarej strefy, są: tworzenie wartości dodanej i jej rynkowa wycena. Poruszono problemy metodologiczne, takie jak granice produkcji czy działalność legalna i nielegalna w ramach szarej strefy gospodarczej. Oficjalne szacunki szarej strefy gospodarczej porównano z szacunkami ośrodków niezależnych. Dla badaczy szarej strefy, także z innych dyscyplin naukowych niż ekonomia, punktem odniesienia powinny być oficjalne szacunki rozmiarów szarej strefy. Zamieszanie wokół szacunków rozmiarów szarej strefy mogłoby zmaleć w wyniku postępu w opracowywaniu teorii zjawiska szarej strefy gospodarczej.

**Słowa kluczowe:** wartość dodana, szara strefa gospodarcza, rachunki narodowe, PKB, metodologia szacunków szarej strefy

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The shadow economy, a multidimensional phenomenon, lies in the professional interest of economists, policymakers, sociologists, psychologists, lawyers, criminologists and others. Since there is no universal definition of the shadow economy, many definitions have been created by stakeholders making interdisciplinary discussion difficult. The paper proposes to treat official estimates of the size of the shadow economy delivered by national statistical institutes as the benchmark for other definitions. A broad discussion is herein presented as to whether definition of the shadow economy applied in national accounts can be used to measure this phenomenon correctly.

### DEFINING THE SHADOW ECONOMY

The issue of defining the shadow economy<sup>2</sup> is a serious problem in itself. There are many approaches used by economists to describe and to name shadow (irregular) economic activities. The easiest way to avoid confusion is to apply the definition and terminology used in official international economic statistics in the frame of national accounts. The definition of the shadow economy used in official statistics is unified in global perspective and should serve as the benchmark for other kinds of approaches and estimates. Such a solution definitely solves terminological discussion, while the scope of shadow activities defined in international statistics requires further discussion resulting i.a. from rapid and permanent changes in contemporary developments in the global economy. Changes in the behaviour of economic agents and new phenomena are included in official statistics with delay sometimes counted in years. When methodological revisions in national accounts are introduced, national statistical institutes are usually obliged to revise historical time series as well.

Certain theoretical issues of the shadow economy should also be reconsidered. One has to begin with a firm statement that, for economists, considerations of perspective concerning the shadow economy must be limited to activities both generating value added and its market pricing. These two criteria to be fulfilled simultaneously are crucial for discussion on the shadow economy.

Value added is strictly connected with the concept of gross domestic product (GDP) as it constitutes a major part of it. Rules on GDP estimates have been elaborated upon and several times revised by international expert groups within the framework of the United Nations (UN) agencies since the fifties of the 20th century. The outcome of their work is known under the name of SNA (System of National Accounts) or in its European version as ESA (European System of Accounts).

The SNA and, consequently, the ESA have been adjusted several times to fit the new economic realities. The necessity of including the shadow economy in

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<sup>2</sup> To avoid terminological discussion, the shadow economy is consistently used throughout this paper.

GDP estimates was mentioned for the first time in the nineties. It was necessary to elaborate upon the wide range of definitional and methodological issues before the obligation to include the shadow economy in GDP estimates was announced. Countries were given several years of preparation for gradual inclusion of the shadow economy estimates to official statistics.

According to the SNA 2008 and ESA 2010 rules estimates of the shadow economy are included in GDP. There are two main components of the shadow (unobserved) economy: legal and illegal economic activities generating value added.

In ESA 2010 the term *unobserved economy* is used to define the shadow economy and three main types of activity are distinguished (Eurostat, 2013):

- illegal activities where the parties are willing partners in an economic transaction;
- hidden and underground activities where the transactions themselves are not against the law, but are unreported to avoid official scrutiny;
- activities described as "informal", typically where no records are kept.

These activities are not directly observed, but are located within the national accounts boundary and have to be traced by national statistical institutes.

The ESA 2010 definition of the shadow economy is general, but more precise guidelines were given to national statistical institutes in order to have comparable results of GDP estimates within a European perspective. In fact, the scope of the unobserved economy is to some extent a result of the permanent dialogue between Eurostat and national statistical institutes. The expectations of Eurostat based on economic theory and experimental estimates of illegal activity segments are confronted with practical availability of information on the shadow economy in most European countries. It should be added that full comparability between countries will never be achieved due to various legal regulations in the countries. The legal status of prostitution in different countries is the best illustration of such a problem.

The first part of the ESA definition eliminates from the shadow economy criminal activities where transactions are not voluntary. In other words, criminal activities like thefts or VAT extortion are not creating value added, but changing income or wealth distribution and are excluded from the national accounts.

A part of registered enterprises (mostly SMEs) underreports the real size of their production to tax and economic administration in order to pay less taxes or social contributions. There are more reasons for underreporting such as inability to follow administrative regulations (environmental protection, work security) and generally low tax morality. Legal shadow economic activities are also undertaken by unregistered companies.

It was decided by Eurostat within the framework of ESA 2010 to include in the shadow (unobserved) economy three illegal economic activities, believed to be the most meaningful: production and distribution of drugs, tobacco and alcohol smuggling and prostitution, wherever it is illegal.

The strategy applied by the UN to let international statistical organizations gradually include the shadow economy in national accounts undertaken within the framework of SNA seems to be correct. At first, legal informal activities were included, then illegal economic activities starting from the most important three components. In addition to the three components of the illegal shadow economy there are other activities, probably less important, but they should also be included in national accounts in the future.

Certain identified illegal activities are not covered by official statistics, probably for two reasons: firstly due to the marginal size of the phenomena at the European Union (EU) level, secondly due to the lack of methods for reliable data compilation. Among the omitted illegal activities (Blades, 1983) there are medical services delivered by healers or unlicensed persons, hidden gambling, poaching (illegal hunting, fishing, tree cutting) and fencing (resale of stolen goods). Much attention of statisticians in estimating the three illegal activities probably caused less methodological efforts on other illegal activities.

The issue of illegal part of the shadow economy is not a closed chapter for both international statistical organizations and national statistical institutes. There are discussions, experimental surveys, searches for reliable sources of information and the exchange of good practices. One may expect that new methodological solutions will be announced in the coming decade.

## GENERAL REMARKS ON THE SHADOW ECONOMY

The mission and the role of official statistics is to provide public opinion with data reflecting social and economic reality. GDP is the most important economic aggregate information showing the size of economic activity of societies. National statistical institutes deliver GDP estimates — not exact or precise numbers. There are other components of GDP which are estimated, and the shadow economy is not an exception.

The shadow economy is a phenomenon that has existed since the beginning of the market economy and the creation of public institutions and administration. It was described in theoretical economic sense by economists only in the seventies of the 20th century (Gutmann, 1977; Feige, 1979; Tanzi, 1980).

One may be disappointed that very little progress has been made in theoretical works and considerations on the shadow economy since then. The factors and forms of the shadow economy described by pioneer researchers already known in the late seventies (Wyżnikiewicz, 1987) were never more deeply elaborated upon. The same observation is true for the majority of estimation methods used by researches to evaluate the size of the shadow economy.

The issue of the shadow economy has provoked a development of interest in this phenomenon and was put forward in other sciences, i.e. sociology, psychology and criminology. Definitions of the shadow economy applied in these disci-

plines differ from those used in economics, however a broad interest of other disciplines may contribute to a better understanding of the mechanisms governing the shadow economy and will make its phenomenon more interdisciplinary.

It was agreed that the phenomenon of the shadow economy is caused mainly by administrative burdens imposed on entrepreneurs (Portes et al., 1989). Among other important factors one should mention low tax morality and the existence of marginal labor force (unemployed, illegal immigrants, students and retired persons) who wish to increase their income. They meet and satisfy the demand for a cheap labour force.

The phenomenon of the shadow economy provoked a rapid development of estimation methods, the majority of which were created in the eighties of the 20th century. There are two main approaches, i.e. indirect and direct estimates. The first one concentrates on applying one general tool, mainly econometric models. In this approach the size of the shadow economy is based on indirect variables believed by researches to be responsible for the shadow economy. The second method focuses on the collection of pieces of information from various segments of the shadow economy and adding them. In many cases direct methods are limited to one aspect of the shadow economy, for instance to the labour market. The shadow labour market is a crucial element of the shadow economy, however it does not cover all forms of shadow activities. The drawback of direct methods is a tendency to underestimate the size of the shadow economy.

There are attempts to base estimates of the shadow economy on surveys and questionnaires sent to the employed and unemployed persons. The credibility of such surveys seems to be low, because respondents may be afraid of possible sanctions from the authorities if they admit real involvement in hidden activities.

The phenomenon of the shadow economy creates huge interest and a quite sense of curiosity for public opinion, as well as a profound confusion. Lack of economic knowledge is one of the reasons that media and public opinion often criticize the inclusion of the shadow economy in GDP. At the same time, the concept of GDP has been a subject of criticism from many points of view. The best known is the report by a commission led by the Nobel Prize winner in economics in 2001 Joseph Stiglitz (INSEE, 2009).

Confusion and criticism of the shadow economy concept and estimates of its size performed outside national statistical institutes is a result of several factors which sometimes appear jointly:

- application of definitions different from national accounts — various economic phenomena are covered, i.e. criminal activities not generating value added or beyond production boundaries defined in national accounts;
- application of different methodologies and approaches;
- presentation of the shadow economy only as a percentage of GDP, not in value terms. A popular approach is to present what fraction of GDP is generated by the shadow economy, in another approach the percentage of the

shadow economy is related to GDP value which does or does not include the shadow economy;

- lack of verification methods.

## ISSUE OF PRODUCTION BOUNDARIES

Production boundaries play a crucial role in both defining and estimating the shadow economy according to the national accounts concept. Since the shadow economy should generate value added and be priced on the market, certain controversial activities should be excluded from the shadow economy concept. Another reason for excluding certain elements of illegal activities generating value added from the shadow economy is difficulty of measurement or estimation. Such general provision was mentioned in ESA'95. At present, according to Eurostat, activities fulfilling this condition of minor importance for GDP are still excluded.

Household production for own final use is an example of activity that in the opinion of some researchers should be treated as the shadow economy activity. There are two strong reasons against such a solution. First, more important, which should be decisive, is lack of market pricing as well as there is no transaction involved. The value added criterion is not fulfilled. The second reason is practical, it would be extremely difficult to estimate value of such activities in the short period of time for estimating quarterly dynamics of GDP. There is general pressure from the public opinion and the business community in every country to have estimates of quarterly GDP growth as soon as possible. There is also a methodological problem as how to best estimate the value of households production comparably in many countries.

Household production for own use could be an attractive topic for researchers and their experimental ventures outside national accounts. Estimation of such information will be an interesting supplement to GDP value.

Other controversial items that some researchers treat as a part of the shadow economy are illegal or criminal activities which do not create value added. Two of them require special attention: bribery and money laundering (Blades, 1983).

In the current practice of international statistical organizations bribery is agreed not to contribute to the illegal economy. One reason is difficulties in estimation, the second is theoretical doubts. There are several kinds of bribery: barter transactions, paid protection in personal professional carriers and corruption connected to public procurement, granting licences etc. In the last case sums paid to civil servants by entrepreneurs could be treated as production costs, while civil servants enlarge their income.

The illegal activity commonly called money laundering is not included in the shadow economy. Elimination of double counting explains this decision. Money to be laundered must be first earned and originates from illegal activities that should

be, and often are, included in estimates of illegal activities. While being laundered it is declared as legal production and is treated as a part of the official economy.

Both tax evasion and VAT extortion are not considered as the shadow economy activities. As criminal activities such practices cause fewer transfers to state budget revenue and do not create value added. In other words, a portion of GDP is appropriated by dishonest entrepreneurs.

Rapid developments in the global economy create new phenomena and processes that should be covered by official statistics. Expansion of ICT technologies and Internet-driven business models facilitates new entry to the shadow economy. One meaningful example is the so called "sharing economy", where individuals deliver paid services to consumers using social media or Internet application to find customers. This kind of activity takes place mainly in passenger transport, both urban and long distance, and in the provision of hotel services through informal homestays. Such activities run by individuals who are often not registered entrepreneurs require the development of methodology and statistical tools to trace the economic effects of the sharing economy that lies on the edge of official and shadow economy.

#### OFFICIAL STATISTICS VERSUS INDEPENDENT ESTIMATES

It is obvious and fully understandable that national statistical institutes have to base their estimates of the shadow economy on two pillars. The first one is the international recommendations and guidelines formulated in SNA and ESA which are the EU legal acts. A unified approach is necessary to achieve international comparability. The second pillar is well-documented sources of information preferably coming from a variety of independent sources and places. Cross-checking of collected information should be an everyday practice.

Statistical institutes take into account reports of specialized agencies and institutions, police and customs statistics, surveys published by think tanks and research centers as well as traditional media information. New perspectives for estimates could be derived from social media or even from big data resources.

Reflection is needed as to what size is the part of the shadow economy not covered by official statistics. As mentioned earlier, the problem on coverage may touch several legal and illegal activities of minor importance for the GDP size.

Lack of methodology and insufficient information are important reasons for the exclusion of some illegal activities. Certain activities could not be traced directly due to the lack of any evidence. Illegal medical practices can serve as an example of such a situation.

Another problem of estimating the shadow economy is the guidelines delivered by Eurostat versus country-specific situations. An open question is whether compromise between a unified approach (which is necessary) and country specificity is possible.

From September 2014, national statistical institutes of the EU have been obliged by Eurostat to include the illegal part of the shadow economy in their GDP estimates. The legal part of the shadow economy was included more than a decade earlier.

It is plausible to assume that the transitory period when the shadow economy is included in GDP has not yet expired. Several facts confirm such an opinion:

- Eurostat has not published general statistics on the shadow (unobserved) economy neither for individual member states nor for the entire community;
- some EU national statistical institutes are not eager to participate in a dialogue with economists and researchers conducting analyses and estimates of the shadow economy;
- there is no elaborated international methodology of estimation for illegal activities of minor importance for the GDP size;
- experimental surveys on illegal activities are still taking place;
- differences in legal systems of the EU member states seem to be the main obstacle to make a compromise.

Information on the size of the shadow economy in the EU member states is publicly available only in official national statistical sources. The Polish case will be discussed below.

The most recent information on the shadow economy in Poland published by Statistics Poland<sup>3</sup> is as follows (table 1):

**TABLE 1. GDP OF POLAND (current prices)**

GDP	2012		2013		2014	
	in bn PLN	in %	in bn PLN	in %	in bn PLN	in %
<b>Total</b> .....	<b>1629</b>	<b>100.0</b>	<b>1566</b>	<b>100.0</b>	<b>1719</b>	<b>100.0</b>
Official part .....	1417	87.0	1427	86.2	1490	86.7
Shadow economy .....	212	13.0	229	13.8	229	13.3
legal part .....	199	12.2	215	13.0	218	12.7
illegal part .....	13	0.8	14	0.8	11	0.6

S o u r c e: Central Statistical Office (2016).

Disaggregated annual data on the shadow economy are published in Poland with a delay that makes current observation difficult. To fill the information gap several estimates are compiled outside official statistics by research centers.

A group of researchers from the think tank GIME (Gdansk Institute for Market Economics) was monitoring the shadow economy (Fundowicz et al., 2016) and presenting current estimates and annual forecasts of its share in GDP. To the estimates of the shadow economy presented by Statistics Poland were added

<sup>3</sup> Official GDP estimates have been revised after estimates of shadow economy were compiled. This paper presents recent GDP figures, while shadow economy estimates are based on figures before revision.



legal and illegal activities not covered by official statistics according to reasoning presented earlier. The GIME estimates were based on sector by sector analysis of items omitted by Statistics Poland in both legal and illegal parts of the shadow economy.

Table 2 shows what percentage is believed to be the shadow economy not covered by official statistics in Poland due to the limitations mentioned earlier according to the GIME estimates. The benchmark shares is the official value of GDP covering the shadow economy.

**TABLE 2. SHARES OF THE SHADOW ECONOMY IN GDP ACCORDING TO STATISTICS POLAND AND GIME**

Specification	2012	2013	2014
	in %		
Share of officially estimated shadow economy .....	13.0	13.8	13.3
Share of GIME estimates of shadow economy .....	21.1	19.9	19.5
Difference between two estimates .....	8.1	6.1	6.2

S o u r c e: Central Statistical Office (2016); Fundowicz et al. (2016).

According to the estimates of GIME researchers the value of Polish GDP should be adjusted upward by 6.2% in 2014 if all activities creating value added were taken into account. The difference originates from underestimation of the legal part of the shadow economy and omitted estimates of illegal activities in official statistics.

Alternative estimates of the share of the shadow economy in Polish GDP (and tens other countries) are presented by Friedrich Schneider (Schneider, 2015). These estimates are derived from the econometric model calculations and reported as a percentage of official GDP. However, it is neither clear nor known which version of official GDP is taken as 100%, the one with its shadow economy component or the one without it.

In the case of GDP with its shadow component included, Schneider's estimates of the shadow economy are higher than in the case of GDP without its shadow economy component. In the first case, the double counting may take place.

**TABLE 3. SHARES OF THE SHADOW ECONOMY IN THE POLISH GDP ACCORDING TO SCHNEIDER'S ESTIMATES COMPARED TO OFFICIAL GDP**

Specification	2012	2013	2014
	in %		
Share of shadow economy (Schneider) in total official GDP .....	24.4	23.8	23.5
Share of shadow economy (Statistics Poland) in total official GDP .....	13.0	13.8	13.3
Difference between two estimates (Schneider and Statistics Poland) .....	11.4	10.0	10.2

**TABLE 3. SHARES OF THE SHADOW ECONOMY IN THE POLISH GDP ACCORDING TO SCHNEIDER'S ESTIMATES COMPARED TO OFFICIAL GDP (cont.)**

Specification	2012	2013	2014
	in %		
Share of shadow economy (Schneider) according to Statistics Poland method of presentation .....	19.6	19.2	19.0
Red difference between two estimates (Schneider and Statistics Poland according to Statistics Poland method of presentation) .....	6.6	5.4	5.7

S o u r c e: Schneider (2015) and own calculations.

The two surveys of the shadow economy presented above illustrate the importance of an agreed benchmark for estimates, concerning definition, searched scope of the phenomenon. Another important issue is presentation of results expressed in value in current national currencies. Otherwise, a problem of data misinterpretation may arise.

## CONCLUSIONS

The shadow economy is a phenomenon that requires thorough attention of experts from many disciplines and various points of view. The only benchmark is official estimates of the shadow economy fulfilling two criteria: creation of value added and its market pricing. Works of other disciplines interested in the shadow economy should locate their concepts against a definition, scope and size, if possible, and solutions offered by national accounts. Interdisciplinary contacts may contribute to making the definition, scope and estimates of the shadow economy more precise.

Economic sciences have failed to develop a sound and detailed theory of the shadow economy. There is an urgent need for a more substantial base of economic theory on the shadow economy, especially on the value added concept. Stress put on the transaction side of the shadow economy is important, but the value added concept should be put firstly. The concepts used nowadays were created in the seventies and eighties of the 20th century and they require a review and possible redefinition. The same comment may be formulated on the methodology used to research the shadow economy. There are several new concepts as compared to what was used thirty years ago.

Reflections on general knowledge of economic reality versus shadow economy estimates show that more efforts should be put into filling the gap. One factor in determining the incomplete picture of the shadow economy in official statistics is an international recommendation requesting reliable documentation of estimates. Such a situation is correct, although national statistics institutes should have more freedom in assessing the situation in their economies. The second factor is too slow introduction to GDP estimates into the areas which are identified as belonging to the illegal shadow economy.

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