Development of the Republic of Sakha (Yakutia)'s Shadow Economy Assessment Methodology

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Abstract: The purpose of the article is to study the shadow economy assessment methodology. This article presents a comprehensive study of the parameters of a shadow economy, considers its essence, and defines its terminology. This study outlines the historical approach to the development of the shadow economy, both in Russia and worldwide, and gives a brief analysis of the economy of the Republic of Sakha. The authors examined the specifics of the statistical methods applied in assessing various structural elements of a shadow economy and measured and assessed the shadow economy in this region. The research conducted enabled the authors to formulate the main measures required to reduce the shadow economy. The scientific novelty is justified by the research results, which included studying and summarizing a wide range of published and unpublished materials, the examination of the initial and transitional periods of the shadow economy development in Yakutia. The article reveals the main causes and conditions that lead to the formation of the shadow economy in various sectors of the Yakutia economy. The solutions and suggestions proposed in the article are aimed at reducing the shadow economy parameters. The scientific research results are of theoretical and applied importance for public administration and authorities to improve the effectiveness of the fight against the shadow economy manifestations.

Keywords: Republic of Sakha (Yakutia), Interaction of the shadow and legal economy, Shadow economy, Corruption, Law, Real GDP, Methods of measuring the shadow economy, shadow economy dynamics.

INTRODUCTION

Shadow economy is an integral phenomenon of all countries of the world. It evolves, changes shape, and adapts to economic and legal constraints. The shadow economy creates difficulties for the authorities (Medina and Schneider, 2018; Schneider and Enste, 2000). The study of the negative processes and parameters is a highly relevant issue in the modern conditions of a developing legal economy.

A shadow economy is an incredibly complex socio-economic phenomenon that has various names, such as unaccounted, second, illegal, informal, criminal, black market, hidden, non-observed, or parallel. The lack of clear terminology indicates that researchers have not, as yet, developed a main methodological approach in defining a shadow economy. Russian experts traditionally use the concept of "the shadow economy" (Kolesnikov, 1994; Popova and Popov, 2000).

International scientists, being mostly forensic specialists, began to explore the shadow economy in the 1930s. Economists, however, only joined in the study of this issue in the 1970s. The general problems of a shadow economy have been considered by B. Dallago, E. Feige, P. Gutmann, and K. Morris (Bokun and Kulibaba, 1997; Glinkina, 1993).

Soviet and later Russian, scientists have been exploring the shadow economy since the 1980s. These scientists include N. G. Gadzhiev, S. Glinkina, A. I. Gurov, V. M. Yesipov, T. Koryagina, V. V. Kolesnikov, A. M. Yakovlev, K. V. Privalov, A. V. Shestakov, and M. E. Tarasov (Latov, 1997; Ponomarenko, 1997; Shestakov, 2000). They examined the main approaches to studying various issues relating to the existence and development of a shadow economy as well as some methods of dealing with it.

Due to the diversity and complexity of the shadow economy problem being studied, it is not possible to consider all the issues connected with this phenomenon. In this research, the focus was on statistical approaches to determine the parameters of a shadow economy under market conditions.

According to the statistical approach, a shadow economy refers to all types of economic activities that are not officially registered. They are therefore, not reflected in official statistics, being largely concealed in the economy.

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During market reforms, the shadow economy was evaluated by the international statistics methodology following the United Nations System of National Accounts 1993. For a more accurate accounting of GDP, this methodology developed by UN specialists was formally introduced in Russia by Resolution No. 7 of the State Committee for Statistics (Goskomstat) of the Russian Federation of January 31, 1998 "On approval (as amended of February 25, 2000, and June 25, 2005) of the main methodological provisions for assessing the hidden (informal) economy."

The available statistical information does not enable accurate consideration of the indicators of the shadow economy. Meanwhile, the results of our study indicate that the shadow economy has a very significant share of the income that is not reflected in the official statistics of the country.

There are also some positive effects of the shadow economy, such as mitigation of the impact of economic crises on real incomes. Nevertheless, the shadow economy impact on the regions is significant, which makes it necessary to combat this phenomenon (Tafenau, Herwartz, and Schneider, 2010; Herwartz, Tafenau, and Schneider, 2015).

The theoretical and methodological basis of the study is the analysis of the historical, socio-economic, and legal aspects of the economic security of the Republic of Sakha and possible solutions in the context of modern requirements. Conducting this study, we used general scientific and empirical research methods: system and structural, formal legal, and statistical research procedures, which enabled us to give the theoretical interpretation of the scientific and empirical material, draw the conclusions on this basis, and outline proposals.

RESULTS AND DISCUSSION

Estimating the size and determining the parameters of the shadow economy are rather difficult tasks. The very nature of this phenomenon explains why it is so: the shadow economy is concealed and invisible and emerges due to the intention to avoid evaluation.

Official statistics have no access to the relationships within the shadow economy, so they are difficult to measure and evaluate. In this regard, the main goal of our study is obvious: to give the most reliable estimate of the size of the shadow economy. There are no standard or universal approaches that one could successfully use for such economic calculations. At the same time, unfortunately, one cannot estimate the scale of the shadow economy with accurate and absolute statistical reliability.

Let us analyze the specifics of the statistical methods applied to identify and evaluate the
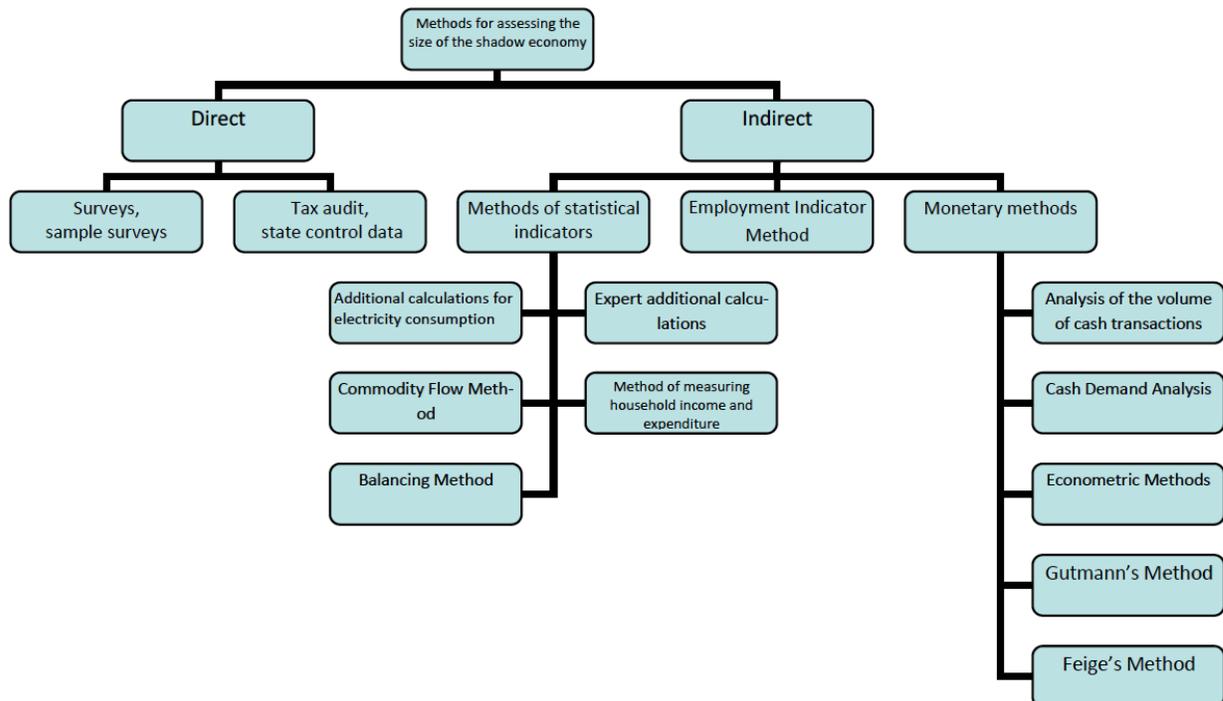

Figure 1: Classification of the methods for assessing the size of the shadow economy (Bokun and Kulibaba, 1997).

parameters of the shadow (non-observed) economy in various sectors of the economy (Yesipov, 1998; Popov, 1994).

At present, there are two groups of methods for determining the size of the shadow economy: *micro methods* (direct methods) and *macro methods* (indirect methods). *Micro methods* include surveying people during sample surveys and the analysis of tax book entries. These methods usually give a lower estimate of the shadow economic activity and focus on only one sector of the shadow economy – the gray one. Therefore, traditional statistical methods of collecting information are not always applicable. If there is not enough direct information, one can replace it with the results of the calculations.

Macro methods focus on the study of cash flows. For example, they analyze the differences between total revenues and total expenses, and the demand for cash in circulation. Estimates obtained by macro methods are believed to be more reliable and more complex.

Another specific approach (for the implementation of national accounts) implies that the final macro indicators, such as GDP, are calculated in the system of national accounts not with one, but with several methods applied independently of each other. According to this approach, if one method cannot provide information sufficient for calculation, one can use the results of calculations obtained by other methods. This is a classic balancing method that has various modifications and different names, but it boils down to one idea – comparing data from various sources and calculating the missing information arrays on this basis (Shestakov, 2000).

Besides, there are expert estimates. Contrary to popular belief, they can be much more accurate than the results obtained using official, but dubious sources.

The *balancing method* is the basis of national accounts. GDP is balanced and calculated by several methods used independently of each other, while the resources are balanced on each account, and the indicators are balanced for each of the sectors. This leads to imbalances, which are commonly called statistical discrepancies. If the statistical discrepancy is within reasonable limits, this is normal. On the contrary, the calculations that balance the result without any discrepancies look suspicious. Nevertheless, if the discrepancy is too large, it can be either due to the

insufficient reliability of the primary information, or the fact that some element of the array or phenomenon was not taken into account. Formally, it is almost impossible to differentiate between an acceptable and unacceptable discrepancy. It is the task for an expert doing calculations, and it is this person who eventually takes responsibility for the result.

Another approach is the method of *expert evaluation*. When one talks about such a poorly studied topic as the shadow economy, one cannot do without this method (Shestakov, 2000).

It is an extremely complex task to consider the methodology of expert evaluations since the experts themselves devise this methodology. The expert does not have to be a statistician or even an economist. What matters most is the qualification and knowledge of the problem. In this regard, the State Statistics Committee should actively cooperate with the tax inspectorate, customs, and representatives of certain professional groups. A certain policy of Goskomstat and explanations regarding the goals of obtaining these evaluations are important measures in attracting qualified experts and improving the quality of evaluation.

The most objective evaluation of the shadow economy implies the integrated use of various methods.

To achieve this, we used the following approaches: accounting and statistical; formal legal; criminological; and integrated.

The accounting and statistical approach is the most comprehensive one as it reflects all economic relations that are not taken into account in the national accounting: illegal economic activity, hidden production, and other unaccounted for economic activities, that is, there are no official statistics for them, they evade taxation and are not included in the gross domestic product (Buhn and Schneider, 2016; Damayanti, Prabowo, Sucahyo, and Supramano, 2020).

The *formal legal approach* defines the shadow economy as an attitude to the regulatory system, that is, as evasion from official or state registration and from state control, which is illegal.

The *criminological approach* perceives the shadow economy as a socially harmful, dangerous phenomenon, that is, as a prohibited, illegal activity,
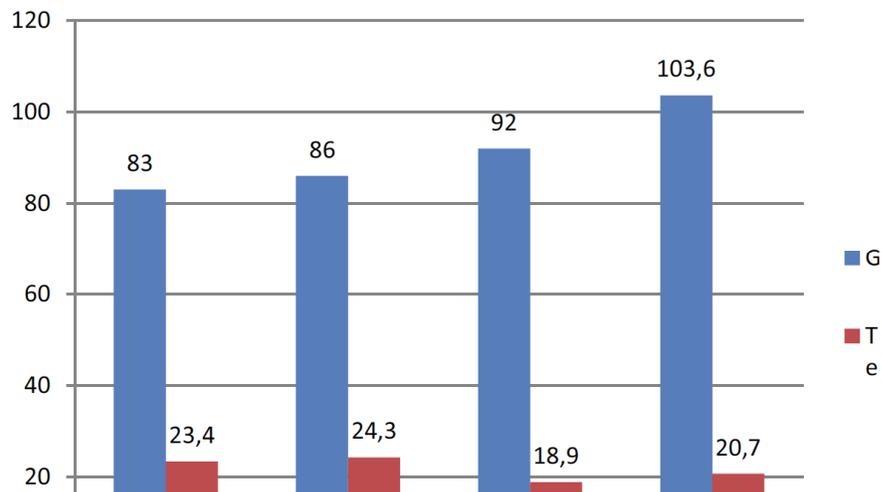
Figure 2: The size of the shadow economy in Russia (Starostina, 2019).

which includes the sale of drugs, weapons, and prostitution. In this case, the shadow economy includes non-productive types of illegal activity, such as organized crime, racketeering, and assassinations. These types of activities are not connected with the flows of products or income, but they bring huge profit and, therefore, can be considered economic phenomena.

The *integrated approaches* embrace various combinations of the previously considered approaches used to examine the shadow economy.

Within these approaches, modern researchers measure the size of the shadow economy at two levels: micro and macro ones, which, in turn, are combined into three groups of methods: accounting statistical, control (financial, economic, social), and special economic legal (documentary, accounting, economic

analysis) methods. Also, the methods that are used for statistical evaluation of the shadow economy are divided into direct and indirect methods (Glinkina, 1993).

In Russia, various sectors have a different share of the shadow economy.

The shadow economy in Russia, according to Rosfinmonitoring, exceeds RUB 20 trillion. This is more than the expenses of the entire federal budget for 2019 (RUB 18 trillion), three times more than Gazprom's annual revenue (RUB 6.5 trillion in 2017), and more than a third of the monetary income of all Russians in 2018 (RUB 57.5 trillion).

There are several sectors with the greatest share of the shadow economy. Real estate has the highest share of informal activities (6.3% of GDP, or half of the

Table 1: The Sectors of Economy with Most Undisclosed Operations (Starostina, 2019)

The sector of the economy	% of GDP	% of the gross value added to the economic sector
Real estate	6.3	70.6
Agriculture, forestry, hunting, and fishing	1.4	38.1
Trade, car and motorbike maintenance	1.4	10.3
Construction	0.9	15.8
Manufacturing	0.7	5.9
Activities of households as employers; their production for personal consumption	0.5	100
Administrative activities	0.4	16.7
Transportation and storage	0.3	4.2
Professional, scientific, and technical activities	0.2	4.4
Mining	0.1	0.7

country's gray economy). At the same time, most economic operations in this sector, or 70.6%, are informal (Starostina, 2019).

Agriculture, hunting, and fishing present 1.4% of the unaccounted GDP of Russia, while the wholesale and retail trade, as well as cars and motorbike maintenance, have the same figure. Construction ranks third, where almost 16% of all economic operations are part of the shadow economy (0.9% of GDP) (Starostina, 2019).

There are practically no grey activities in the state administration and military security, as well as in the water supply and waste management sector, according to the Rosstat data (Starostina, 2019).

According to the Central Bank, the sectors of construction and services (except logistics), as well as wholesale and retail trade, form the largest demand for shadow financial services in Russia. According to the regulator, over the past year, RUB 73 billion was illegally transferred abroad. The Central Bank estimated the cash withdrawal market at RUB 176 billion (Starostina, 2019).

Additionally, we conducted a sociological study on the assessment of the shadow economy. We surveyed people who are or are likely to be associated with the illegal economy (in the city of Yakutsk). The survey involved 40 entrepreneurs and 40 people chosen randomly.

Having analyzed the respondents' answers, we identified the main reasons for the increase in crime. The main one was the worsening socio-economic situation (42.5 and 65%, respectively), the second – the weakening of the moral and spiritual foundations of society (32.5 and 20%), and the third – the increase in alcoholism and drug addiction (20 and 32.5%).

The results of the analysis indicate that in recent years, a sharp decrease in the living standards of the people in the North led to the worse state of their health, shorter life expectancy, and aggravation of such social diseases as tuberculosis, alcoholism, and drug addiction. The birth rate is steadily going down, while the absolute population of the Republic of Sakha (Yakutia) tends to decrease, and the most obvious feature is the growth of hidden unemployment in rural areas. The economy is experiencing crisis and inflation, accompanied by general socio-economic instability, which provokes the expansion of the informal sector (Osipov, Ponkratov, Karepova, Volkova, Karaev, and Kuznetsov, 2020).

Any program for the socio-economic development of the ulus, the city, and especially the republic, should be focused on people, and, most importantly, create economic security and comfortable living and working conditions for them (Popova and Popov, 2000), that is, ensure the well-being of people. These ideas should become the basis when devising the programs for the socio-economic development of the Republic of Sakha (Yakutia) and the concept of modernization of the regional economy (Starostina, 2019; Popova and Popov, 2000).

The conducted study revealed that increasing economic security and the protection of the vital economic interests of the republic can be achieved through the development of its economic, social, financial, and regulatory spheres.

When measuring and evaluating the shadow economy, one should also use the *control* (financial, economic, and social) method. This method (open audit) is applied by specially created regulatory bodies. Due to its huge size, informal activity may be hard to conceal from the public eye. It sometimes becomes visible and massive; however, this does not guarantee its easy identification.

As we have noted above, tax offenses and crimes are among the most striking manifestations of the shadow economy, which typically hides from state accounting, thus contributing to generating uncontrolled income.

Along with the study of the indicators mentioned above, we identified the cases of tax evasion by concealing income and other actions.

The magnitude of financial losses due to tax concealment can be roughly calculated according to the available data.

The misuse of funds was the most frequent among the identified violations. The reasons contributing to the misuse of funds in organizations funded from the budget are the lack of proper preliminary and current control by financial authorities, drawbacks in accounting and reporting, the lack of primary documents, and the destruction of accounting documents.

When evaluating the shadow economy, one should consider not only unaccounted goods and services, but also society's losses from the spread of certain illegal forms of business activity (Orlova, Gagarinskaya,

Mikheeva, and Yelyakov, 2015; Fedorenko, Persteneva, Konovalova, and Tokarev, 2016). In this regard, it is essential to identify the scale of material damage.

In addition to this, we conducted a sample sociological survey and collected the information in regulatory bodies. These findings enabled us to determine the size of the shadow economy in the republic. Using various methods of obtaining a qualitative characteristic of certain economic phenomena that are not covered by the current statistical reporting, we identified the scale of the non-observed economy.

As theory shows, direct methods give fairly reliable results.

However, in practice, when one carries out the quantitative assessment of the shadow economy, official data give lower results, which indicates the limited reliability of respondents' answers due to understandable psychological reasons.

Thus, the main disadvantages of direct methods are the difficulty of collecting data and deliberate distortion of information obtained from surveys.

Indirect methods based on the data from regulatory authorities provide reliable, but incomplete information since they cover only identified economic crimes, though their real number is much larger.

Having analyzed the sociological research data and the information sources of the Ministry of Internal Affairs of the Republic of Sakha (Yakutia), Goskomstat of the Russian Federation and the Republic of Sakha

(Yakutia), the Main Intelligence Directorate and the Audit Office of the Republic of Sakha (Yakutia), we revealed the specifics of Yakutia's shadow economy. They have associated with the republic's specialization in gold and diamond mining; large migration and a large share of newcomers, often with the criminal background; high, in comparison with the western regions of Russia, nominal incomes of the population; high prices for consumer goods and their poor supply at the expense of local production (about 20%); the export of cash outside the republic; and multinational composition of the population. These features affect the functioning of the shadow economy.

We have been researching the shadow economy from 2001 and until the present day. Table **2** summarizes the results of the study, which depicts the involvement of various groups of people in the shadow economy.

This table allowed us to consider the method of obtaining the summary evaluation of the shadow economy, which one can later apply in similar cases. The obtained estimates for an earlier period to some extent reflect the situation with the shadow economy in the republic. In general, according to the indicators of the shadow economy in Table **2**, there is a certain downward trend. At the same time, the decrease in the indicators of the shadow economy was mainly due to more favorable conditions for the development of the economy and the work of regulatory bodies. These indicators enabled us to determine the size of the shadow turnover in different areas. For instance, we estimated the share of the shadow economy in the service sector (15.9% or RUB 7126.3 million), while the

Table 2: The Summary Evaluation of the Size of the Shadow Economy in the Republic of Sakha (Yakutia) (The Surveys of Experts and the Materials of the Regulatory Bodies of the RS (Y))

Indicators	Information sources	Share, %	Note
The volume of unaccounted services to people, including:	Data	15.9	From the volume of paid services to the population
Medical services	Survey	2.8	- " -
Auto service and maintenance	- " -	7.7	- " -
Tutoring services	- " -	2.8	- "-
Carriage of passengers in personal transport	- " -	2.6	- " -
The volume of illegal operations, including:	-	0.16	From the income of the population
Drugs	MIA of RS (Y)*, media	0.16	- " -
Prostitution and sexual services	MIA of RS (Y), media	-	- " -

*The Ministry of Internal Affairs of the Republic of Sakha (Yakutia).

number of unaccounted payments in 2001 was RUB 1133 million.

The data on the shadow economy (illegal operations related to drug trafficking) were used to estimate the illegal money turnover, although one should bear in mind that the number of drug-related crimes is much larger; therefore, our indicators will be 10 times higher, and the same refers to the calculations of prostitution. Thus, illegal shadow trafficking in narcotic drugs amounted to about RUB 823 million, and in prostitution – to about RUB 30 million. Frauds amounted to about RUB 7 million.

Over the past three years, the indicators of the shadow economy have been growing, especially in the area of economic crime. The proposed methodology determines the amount of the income concealed from state control.

The approach to measuring the shadow economy in the republic that we presented in this article gives underestimated results. This is because respondents may deliberately distort the information collected during surveys and expert surveys of entrepreneurs and individuals.

Different reports, including the official ones cited in our study, give different estimates of unaccounted income. For instance, Goskomstat of the Republic of Sakha (Yakutia) believes it reaches 16%, although there is no separate evaluation of the shadow economy, and monthly adjustments are made according to a specific methodology that does not reflect the black economy. The latest statistics indicate that Yakutia is not the most criminal region of the Russian Federation.

According to our estimates, the share of the shadow (unaccounted for) activities is large in public services that are paid for in cash and not reflected in official statistical reporting. This type of economic activity is the informal (gray) shadow economy. From a legal point of view, this includes permitted activities, which entail tax concealment or the production of goods and services that are not registered by official statistics. The scale of unaccounted services is very significant, and the failure to register them dramatically reduces the reliability of current estimates and forecasts in the economy of the region and the country. This hinders the implementation of economic reforms aimed at facilitating the market economy.

In this situation, the state loses significant financial resources that are not collected in the form of taxes. According to our estimates, in the Republic of Sakha (Yakutia), the non-payment of income tax amounts to more than RUB 1 billion. However, the moral damage to society from the shadow economy is more serious. Illegal employment leads to a situation in which legal workers cannot do socially useful work, which implies a reduction in tax revenues. This leads to lower budget revenues and the underfunding of state institutions. Equally important consequences are insufficient financing of social programs and a reduction in government spending, which exacerbates the structural crisis (Orlova, Afonin, Voronin, and Akopyan, 2015; Shtiller, Appakova, Selezneva, Vasiljeva, and Sisina, 2017). The latter means that the military-industrial complex and manufacturing industries will face economic problems as the industries with the highest concentration of high technology and the most skilled labor. Also, taking into account the long-term consequences, one ruble not paid on time by the state to meet its obligations generates between eight and ten rubles of non-payments in the entire chain of economic relations. Considering this, a shortfall in the budget is the main reason for all non-payments in the country (up to two-thirds of non-payments).

The income from illegal operations satisfies and encourages destructive needs and activities. These include the drug market, prostitution, and racketeering. These types of shadow activities represent the criminal (black) economy and refer to various activities that hinder the positive development of the economy, cause considerable harm to society, and form the shadow economy, with its distorted and socially dangerous economic relations. The share of illegal operations in the republic is not large. The annual losses from drug abuse in Yakutia amount to about RUB 84 million. There are about 2,000 people (SakhaNews, 2019) involved in the drug business, including sellers, buyers, and consumers. In Yakutia, there are 179 drug users per 100,000 people, which is 1.5 times less than the average for Russia and 2.5 times less for the Far Eastern Federal District. Due to these factors, the drug situation in the republic is considered tense, although in the Amur, Magadan, Sakhalin, and Jewish Autonomous Regions, and the Republic of Buryatia, the drug situation is considered to be severe. However, these figures do not reflect the real number of drug users. When calculating this, one should take into account the secretive nature of drug addiction.

Young people are the group most affected by social problems. The economic and moral damage caused by

the drug business is comparable to the losses incurred by other activities of the shadow economy. Such activities involve generating income by illegal means through criminal acts, such as robberies, mugging, thefts, extortion, and prostitution.

The material damage to the republic from the activities of the shadow economy is quite significant—10 to 20% of the state's consolidated budget (The authors' estimates). This includes violations such as shortages, misuse of budgetary and extrabudgetary funds, illegal payments, and other illegal expenses. One can assume that these budget funds are allocated to finance criminal structures in the form of debt repayments for goods and services. According to the statistics of the Republic of Sakha (Yakutia), monthly unaccounted income makes up 16% of earned income (The authors' estimates). Illegal income means the appropriation of goods that are not equivalent to the useful results of the activity or the appropriation of something that is not one's own but belongs to a society or other entities. There are two main ways to receive illegal income. It may be generated through inaction (theft) or received for an unnecessary or harmful activity. Illegal income incurs considerable physical and psychological costs for certain workers and is often associated with theft, embezzlement, speculation, obtaining unjustified advantages, and extortion.

The study showed that the most common method for measuring the shadow economy at the regional level is the balance method, taking into account electricity consumption, and the MIMIC method. The latter is gaining in popularity and has several serious advantages, but requires careful use. The monetary method was not applicable at the regional level. Noteworthy is the method based on fuzzy sets, which has not yet been used for regions but has a high potential in the case of a fundamental revision of internal evaluation mechanisms.

It is necessary to develop a method of such an assessment of the quantitative scale of the unobservable economy in the Republic of Sakha (Yakutia), which, in contrast to the already existing scientific recommendations that do not take into account regional specifcs of the Federation's constituent entities, will make it possible to determine shadow activity size by areas based on the data of sociological studies, the controlling authorities' information, and the regional mass media, as well as determine the methods of combating the shadow activity.

CONCLUSION

While attempting to determine the size of the shadow economy, we examined how reliable and comprehensive its evaluation is in Russia and the Republic of Sakha. One cannot deny that the shadow economy exists and has an increasingly strong influence on the development of society. Numerous interests are intertwined in the shadow economy, and many, if not most, of us, are involved in it to some extent, which we have attempted to demonstrate in this paper.

To deal with the social and economic problems caused by the shadow economy, modern economics should study it. The state should prepare specialists for combating economic crime, and this training should begin in universities. A training program for these professionals should include an in-depth study of economic subjects and the development of skills for identifying, investigating, and proving cases of economic crimes. In the future, these experts can work in government bodies to prevent the misuse of funds. It may also be viable to include these programs in the training programs of law enforcement agencies, in the form of a compulsory practical course.

Evaluation of the nature and size of the shadow economy is a pressing issue. For this purpose, we applied accounting, statistical, control, economic, and legal methods, which, in turn, determined the choice of a methodological approach in line with the research goal. According to our estimates, the shadow economy amounts to 30% of the legal economy. According to the various estimates of specialists, the share of the shadow economy in Russia is approximately 40% of GDP (Karatayeva, 2002). The Rosfinmonitoring data indicate that the shadow economy in Russia is declining: in 2018, it was about 20% of the country's GDP, compared to 28% in 2015–2016 (Solopov, Starostina, and Tkachev, 2019).

According to our observations, Goskomstat roughly determines the size of the non-observed economy, with additional calculations in some sectors of the economy, using the "Basic Methodological Provisions," but it excludes tax evasion, drug trafficking, and other illegal income. In practice, the evaluation of the non-observed economy is always lower than in reality. Official statistical reporting should separately consider the indicator of the shadow economy, including the black one, and obtain accurate and timely data from regulatory and law enforcement agencies.

At the same time, Goskomstat does not have a methodology for evaluating the shadow component of an important sector in the economy, the financial corporations, consisting of banks, insurance companies, and pension funds.

If the continuing growth of the shadow economy is left unchecked, society will lose control over the development of the main processes in the country, in particular the economic, social, and political processes.

If the government takes the proposed, and other relevant, measures, the shadow economy will lose part of the socio-economic basis that currently determines its success.

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