Determination of Budget Tax Losses from the Non-Observed (Shadow) Economy at the Regional Level

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Abstract. *Research subject.* The article presents the author's method of quantitative assessment of aggregate tax revenue losses from the non-observed (shadow) economy at a regional level. The method has been tested in Amur Region. *Goal.* The research seeks to design a method of quantitative assessment of aggregate tax revenue losses from the non-observed (shadow) economy. *Methodology.* The research methodology is based on the economic and statistical method, computational and constructive method, and comparative analysis. To compute the theoretical (projected) amount of tax revenue, the discrepancy approach is used that is part of the group of balance methods. The approach operates by juxtaposing two or more data sources or statistical reports. *Results.* The author has performed a quantitative assessment of the personal income tax revenue losses of Amur Region caused by the non-observed (shadow) economy. It has been established that the region has been losing substantial tax revenue due to a large number of contributing factors. *Conclusions.* The study has indicated the possibility of applying the presented method at a regional level. By applying the method it will be possible, on the one hand, to identify the amount of untapped tax resources in the formal economy, and on the other hand to analyze the effectiveness of regional fiscal and tax policy by tracking tax revenue losses over time.

1. Introduction

Today, the fiscal system of Russia's regions is characterized by its strong dependence on federal transfers and an acute shortage of their own income that is earmarked for meeting the obligations that are imposed on the regional governments by relevant laws. This reinforces the value and urgency of the task of identifying the factors that have a negative impact on the size of tax revenue.

It is a widely acknowledged fact that the non-observed economy has a significant influence on public revenue.

The first attempts at in-depth analysis of the non-observed economy and its structure were made in the first half of the 1970s by Western economists Gutmann P., Tanzi V., Feige E., Hart K. They laid the theoretical foundations for shadow economic activities.

Both foreign (Katsios S. [1], Medina L., Schneider F. [2], Buehn A. [3], Alexandru A. [4], Enste D. [5]) and Russian scholars (V.O. Ispravnikov [6], I.I. Eliseeva, N.V. Burova [7], A.A. Kuklin, G.A. Agarkov [8], V.Yu. Burov, L.A. Burova, V.N. Gonin [9], N.V. Artem'ev, YU.V. Latov [10]) have investigated various aspects of the shadow economy.

Despite the fact that the influence of the shadow economy on public revenue has been the focus of many studies, there is no consensus on the definition of lost tax revenue from the shadow economy.

In this study, the authors define lost tax revenue from the shadow economy as a type of lost tax revenue that is caused by the negative impact of shadow economic activities on tax revenues of governments. This indicator is calculated to see the amount of potential tax revenue that a subnational government could have earned had it not been for the shadow economy.

2. Method

Despite the obviously negative impact of the shadow economy on tax revenue, there is no commonly recognized method for assessing associated losses of public revenue.

There are, however, various approaches to estimating the size of the shadow econo-my.

We have analyzed the approaches to see whether they are applicable for assessing losses of tax revenue. It has been established that the discrepancy approach, which belongs to the group of balancing methods and is based on the comparison of two or more data sources or statistical reports [11]. This method enables one to assess tax revenue losses from the shadow economy in general as well as by type of tax.

3. Assessment of aggregate tax revenue losses from the non-observed (shadow) economy

Building upon the discrepancy model, we propose an approach to assessing aggregate tax revenue losses of a regional government from the shadow economy.

The approach uses the following formula for assessing aggregate tax revenue losses of a regional government:

$$TRL_{se} = TRL_{ct} + TRL_{pit} + TRL_{cpt} + TRL_{et} + TRL_{met} + TRL_{other}, \qquad (1)$$

where TRL_{se} are aggregate tax revenue losses of a regional government from the shadow economy; TRL_{ct} – corporate tax revenue losses from the shadow economy; TRL_{pit} - personal income tax revenue losses; TRL_{cpt} - corporate property tax revenue losses; TRL_{et} - excise tax revenue losses; TRL_{met} - mineral extraction tax revenue losses; TRL_{other} - other tax revenue losses.

Tax revenue losses with regard to each particular tax is calculated as the difference between a theoretically estimated sum of the tax revenue (T_t) devoid of the influence of the shadow economy, and the actual revenue earned by the government over the same period (T_a):

$$TRL_i = T_t - T_a \qquad (2)$$

4. Assessment of personal income tax revenue losses from the non-observed (shadow) economy

In this study, we consider an algorithm of establishing tax revenue losses from the shadow economy with regard to personal income tax (PIT) that is the key source of government revenue for the majority of Russia's regions [12].

Data on the actually earned revenue by tax type, including PIT, is retrieved from reports by the Federal Tax Service of the Russian Federation (FTS), while producing a theoretical estimation of the sum of tax revenue that could be earned is tricky.

Such theoretical calculation requires, first and foremost, information about the tax base, i.e., personal incomes that is retrieved from statistical reports by the Federal State Statistic Service (Rosstat). In order to estimate tax revenue losses from the shadow economy, the sum total of personal incomes must exclude social transfers because they are considered non-taxable income under Article 217 of the Tax Code of the Russian Federation.

It is also necessary to take into account the fact that the Tax Code provides for tax deductions that could be applied to taxable income, thus reducing the tax base.

Bearing that in mind, we shall theoretically estimate potential tax revenue with the following formula:

$$T_t = R_t \times (B_t - T_s - D_t), \qquad (3)$$

where T_t is the revenue that could theoretically go into the public purse provided there was no shadow economy; R_t is the rate of personal income tax; B_t is the tax base for personal income tax; T_s is the sum total of social transfers; D_t is the sum total of tax deductions used the shadow economy.

5. Results and Discussion

We used the proposed method to estimate personal income tax revenue losses caused by the shadow economy in Amur Region that, in our view, has favorable conditions for the development of the shadow sector [13].
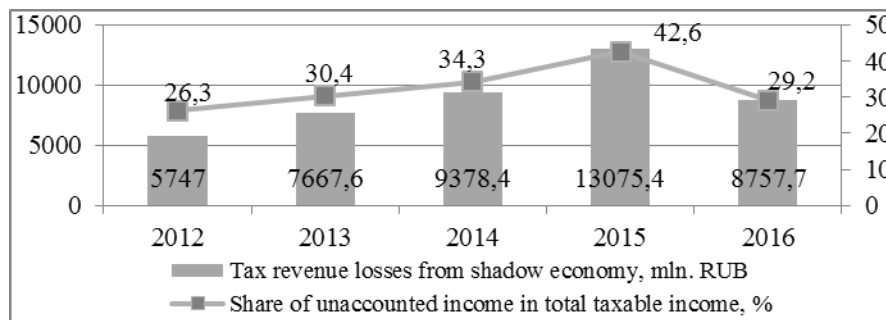
The estimation results are presented in Fig. 1.

Figure 1. Tax revenue losses in Amur Region caused by the non-observed (shadow) economy in 2012-16, %.

The figure shows that from 2012 to 2016 a third of the income earned by the population was unreported to the taxation authorities. Tax revenue losses over the observed period increased by 3,010.7m RUB.

There was a distinctive drop in the figure in 2016, which we believe was due to the fact that the Russian economy started to gradually recover from the crisis of 2014-15, and due to a decrease in the number of people in informal employment in Amur Region: in 2016 the share of workers who did not have formal job contracts was down 0.4% in Amur Region, compared to a nationwide growth of 0.7% [14].

The results of the estimation of tax revenue losses caused by the shadow economy in Amur Region showed vividly that for a lengthy period of time a large share of personal income has been earned in the shadow sector, making a substantial dent in tax revenue collected by the regional government.

6. Conclusion

The proposed method of estimating tax revenue losses caused by the unobserved (shadow) economy in a region has a number of advantages:

1) input information is accessible to anyone;

2) it eliminates bias in calculations (expert assessments are not included in the combination of indicators);

3) it can be applied to various taxes (tax calculation mechanisms are taken into account).

Additionally, the proposed method makes it possible to assess the degree of utilization of the region's combined tax potential and to predict how the region's fiscal performance would change if potential tax revenues were mobilized [15]. Using this method to calculate tax revenue losses from the shadow economy will make it possible to objectively assess the effectiveness of the regional and national fiscal policy.

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