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**ESTIMATION OF EXCESS BURDEN
 OF LABOR TAXATION IN RUSSIA**

The article presents the results of calculations of the labor (income) tax losses in Russia, based on partial equilibrium. The sensitivity analysis of the excess burden of labor taxation in relation to the values of the labor marginal tax rate and compensated elasticity of labor supply is made. It shows considerable sensitivity of labor tax losses (the value changed several times), especially in relation to the labor marginal tax rate.

Keywords: taxation; taxation burden; welfare; labor tax.

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**ОЦІНЮВАННЯ НАДМІРНОГО ТЯГАРЯ
 ОПОДАТКУВАННЯ ПРАЦІ В РОСІЇ**

У статті представлено результати розрахунку втрат оподаткування праці (доходу) в Росії, що спираються на умови часткової рівноваги. Проаналізовано чутливість надмірного тягара оподаткування праці по відношенню до значення максимальної ставки податку на працю та до еластичності компенсуючої пропозиції праці. Доведено суттєву чутливість даного показника (він змінювався в рази), зокрема, по відношенню до максимальної ставки податку на працю.

Ключові слова: оподаткування; тягар оподаткування; суспільний добробут; податок на працю.

Форм. 3. Табл. 1. Літ. 11.

Владимир И. Чуркин, Ольга В. Калинина
**ОЦЕНКА ИЗБЫТОЧНОГО БРЕМЕНИ НАЛОГООБЛОЖЕНИЯ
 ТРУДА В РОССИИ**

В статье представлены результаты расчета потерь налогообложения труда (дохода) в России, основанные на условиях частичного равновесия. Проанализирована чувствительность избыточного бремени налогообложения труда по отношению к значению предельной ставки налога на труд и эластичности компенсированного предложения труда, что показало значительную чувствительность этого показателя (он изменялся в разы), в особенности, по отношению к предельной ставке налога на труд.

Ключевые слова: налогообложение; бремя налогообложения; общественное благосостояние; налог на труд.

Introduction. In economic policy sometimes government has to choose between reducing or increasing taxes. However, such decisions should be based on careful analysis. The dependence of tax sum, received by the state, from the tax rate, has the form of the Laffer curve. It shows that a certain rate of tax volume is collected by the state in the form of tax, up to the maximum. Known theoretical results on optimal taxation are valid under certain conditions and do not fully apply in the real world tax systems (Ramsey, 1927; Corlett and Hague, 1953).

All taxes affect economic behavior. Inefficiency (net loss) from imposing a tax is considered an additional income which the state could have received with the same effect on the usefulness of the consumer as if the government has introduced a lump-sum tax. Inefficiencies are associated with the distorting effect of tax. Their measure

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is the excessive tax burden (net loss from taxation or welfare loss from taxation). Therefore, economists carry out numerous studies aimed at minimizing these tax losses.

Welfare cost of taxation can be divided into next components (Robson, 2005):

- deadweight loss of a tax (DWL) or excess burden of taxation (EB);
- administrative and enforcement costs;
- evasion costs;
- compliance costs;
- rent seeking costs.

In the present work we assess one component of tax losses, namely, the excess burden of labor taxation in Russia.

Recent research and publications analysis. The earliest and most well-known results of the assessment of the excess tax burden belong to A. Harberger (1964). In case of changes in one tax only they can be presented as:

$$EB = -\frac{1}{2}t_k^2 \frac{dX_k}{dt_k} - \sum_{i \neq k} t_i t_k \frac{dX_i}{dt_k}, \quad (1)$$

where EB – excess tax burden from taxation of a new k -good; X_i – the amount of i -good; t_i – the tax rate of i -good.

Under the assumptions related to this formula, excess burden of a new tax can be represented as the sum of products of the former tax rate at each market, and changes in the amount of these markets, caused by a new tax for the k -good.

In practice, economists rarely use this general formula because of the difficulties with assessing all the derivatives. Instead, they usually apply a simple "Harberger triangle" formula or the "excess burden triangle":

$$EB = -\frac{1}{2}t_k^2 \frac{dX_k}{dt_k}. \quad (2)$$

This formula corresponds to the partial equilibrium condition (at one market) and comprises only the first term of the formula (1). Thus, the distorting effect on the market, in which the new tax is introduced, is considered.

For the analysis of deadweight costs the results of E.K. Browning (1987) are also often used. E.K. Browning used partial equilibrium conditions for the assessment of income excess tax burden:

$$EB = \frac{1}{2}\eta \frac{t^2}{1-t} wL, \quad (3)$$

where t – the tax rate; η – the elasticity of compensated labor supply; wL – the total income from labor (w – wages rate; L – the amount of labor), which is decomposed into a number of components.

In this formula, it is assumed that the function of labor demand is absolutely elastic. Elasticity of compensated labor supply function does not include the income effect (it is equivalent to not distorting lump-sum tax and does not introduce inefficiency). The compensated labor supply function contains only the substitution effect, which brings distorts and excess burden. This formula does not follow from formula (1). The reason for this is that in the "Harberger triangle" the formula for labor supply elasticity should be assessed for a tax-free situation (which is not realistic), and formula (3) is used for the post-tax situation.

Changing tax burden at one market, in particular, at the labor market entails changes at other markets. So, in most cases, the increase of labor taxes entails a rise in prices, decrease in wages, reduction of labor supply, which in turn leads to reduced consumption, including social services, and this, finally, worsens the conditions for formation and development of human capital etc. (Zaborovskaya et al., 2014, 2015). Therefore, the tax effect should ultimately be determined in the context of a general equilibrium model. The corresponding algorithm for calculating the parameters of general equilibrium was proposed by H.E. Scarf (1969). Using this algorithm the effect of tax changes in the framework of general equilibrium can be evaluated numerically.

Unresolved issues. Before we change taxation, which is especially important in Russia due to the low oil prices period, it is advisable to assess the amount of possible losses from the existing tax. The effect of future tax changes depends on it. However, there is still no assessment of labor (income) tax loss for Russia.

The research objective is to assess the losses of labor (income) taxation in Russia.

Key research findings. To calculate the deadweight welfare loss from taxes on labor in Russia we use formula (3). Since this formula is based on the condition of partial equilibrium, this result should be viewed as an approximation of the first order. For our calculations, we use the official data for the year 2014, all are in bln RUB.

According to the Federal Statistics Service (www.gks.ru) wages/salaries of employees in 2014 without "hidden" salaries are: $37119.24 - 10161 = 26958.24$ bln RUB. According to the published procedure (Federal Statistics Service, www.gks.ru), this value includes social security payments and income tax. It should be noted that officially published data on these fees and taxes, which are listed below, do not mark out the amounts related to wages of employees. However, they are the main component and are accepted as the labor wage estimations. In any case, sensitivity analysis of the excess tax burden is carried out.

In respect of tax on personal income in Russia, it should be said that the basic tax rate is 13%, tax rates of 9%, 30%, 15%, 35% are used in specific cases. The tax base is determined separately for each type of income, thus, for each different tax rate is set. Income tax at the rate of 13% can be reduced by the amount of tax deductions: standard; social; property; professional.

Russia has a regressive scale of social security payments, and the role of fiscal agent is fully performed by the employer. For the annual income up to 624,000 RUB (in 2014) the rate of social security payment was 30% and for the amounts exceed that the rate of 10% is applied. In addition, there are privileged categories of taxpayers enjoying reduced rates. Individual entrepreneurs with low income pay social security of a fixed amount. Some income is not subject to insurance payments as such (dividends etc.). In 2014, the total social security payments amounted (Federal Statistics Service, www.gks.ru) to 5035.7 bln RUB. A considerable part of it fell on the wages of employees.

We now define the total income in the form of gross wages, containing only netto wage and income tax: $26958.24 - 21922.54 = 5035.7$ bln RUB.

The effect of labor is also reflected in the fact that it generates income, which goes to the state through indirect taxes (VAT etc.). According to the Federal Statistics Service (www.gks.ru), VAT in Russia in 2014 amounted to 2188.8 bln RUB, and the

excise tax on the corresponding goods produced on the territory of Russia amounted to 1000.6 bln RUB.

E.K. Browning (1987) assumed that both these taxes (excise and VAT) are entirely related to the payment of the labor factor. However, it is only one of the production factors. In this paper, we use the measure of real unit labor costs – RULS, which shows what percentage in good unit cost (to be exact – in one USD or one RUB of gross value added) is the cost of labor. According to the Federal Statistics Service (www.gks.ru), the share of official wages in GDP (net of a hidden payment, and payments to social funds) in the recent years stabilized at 33%.

Enterprises' profit is also based on the labor factor. Corporate income tax in 2014, according to the Federal Statistics Service (www.gks.ru), was 2375.3 bln RUB. Thus, to labor taxes, we add the following sum: $(1 / 3) (2188.8 + 1000.6 + 2375.3) = 5564.7 / 3 = 1854.9$ bln RUB. Taking this into account, the total deriving income, which generates labor under the existing taxes is: $21922.54 + 5035.7 + 1854.9 = 28813.14$ bln RUB.

If we assume that the average labor tax rate is 13% (we call it as the probable value of the assessment rate because the tax revenues from it – 2850 bln RUB are close to the officially published data by the Federal Statistics Service (www.gks.ru) – 2702.6 bln RUB), then, taking this into account, the tax revenue is: $2850 + 5035.7 + 1854.9 = 9740.6$ bln RUB. Let us call "tax rate on labor in the broad sense," a rate that takes into account all fees and tax revenues related to labor (with the gross wages base). If we are using the probable value of the tax rate on labor, the probable average tax rate on labor in a broad sense is: $t = 9740.6 / 21922.54 = 44\%$. We consider the probable average tax rate on labor in the broad sense as a probable estimate of the marginal tax rate on labor in the broad sense.

In formula (3) the value wL should represent the income that generates labor under the existing taxes, i.e. $wL = 28813.14$ bln RUB.

Here we provide the example of calculating EB if: the probable marginal tax rate on labor in a broad sense is $t = 0.44$, the average compensated elasticity of labor supply is $\eta = 0.4$. Thus, get:

$$EB = \frac{1}{2} \eta \frac{t^2}{1-t} wL = \frac{0.4}{2} \frac{0.1936}{0.56} \times 28813.138 = 1992.2 \text{ bln RUB.}$$

In literature a relative measure of EB is also used as the absolute measure divided to the sum of social security payment and the income tax on labor (Browning, 1987): $2702.6 + 5035.7 = 7738.3$ bln RUB. As a result, we get EB as the monetary losses per one rouble of charges and taxes that apply to wages (or losses as a percentage): $1992.2 / 7738.3 = 0.257 = 25.7\%$. Thus, the share of net losses from taxes on labor in the total revenues from taxes and duties from labor is 25.7%.

With regard to the elasticity evaluation of η , in some countries such research was carried out, including studies for different categories of employees (Stiglitz, 1988). However, the results are quite contradictory. E.K. Browning (1987) uses 3 values: 0.2; 0.3 and 0.4. In this paper, for sensitivity analysis, we take the set of marginal tax rate on labor in a broad sense (0.3, 0.44, 0.55) and the compensated elasticity of labor supply with the values of 0.2; 0.3 and 0.4. The calculation results are shown in Table 1.

Table 1. Results of EB sensitivity analysis on labor taxation in Russia, monetary amounts, bln RUB, authors' calculations

<i>t</i>	η		
	0.2	0.3	0.4
0.3	370.45	555.68	740.91
	4.79%	7.18%	9.57%
0.44	996.11	1494.17	1992.22
	12.87%	19.31%	25.74%
0.55	1936.88	2905.32	3873.77
	25.03%	37.54%	50.06%

Conclusion. The calculation results on the excess burden of labor taxation in Russia, based on partial equilibrium, show that under the probable estimation of the marginal tax rate on labor in the broadest sense of 0.44, and the weighted average elasticity of labor compensated supply 0.4, the deadweight loss of taxes on labor earnings show significant loss of 1992.2 bln RUB (or 25.74%). The sensitivity analysis for the excess burden of labor taxation shows considerable sensitivity of this measure (it changed several times) with respect to marginal tax rate on labor in a broad sense (with variations from 0.3 to 0.55) and the average elasticity of compensated labor supply (with variations from 0.2 to 0.4).

These results emphasize the importance of the research aimed at clarifying assessment of marginal tax rates on labor in the broadest sense, the weighted average of elasticity of compensated labor supply and, ultimately, the deadweight loss of taxes on labor earnings evaluation in Russia.

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