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Introduction of the personal tax-free allowance in Russia and its budget implications

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ABSTRACT
The social problem of poverty can be mitigated by introduction of a personal tax-free allowance. In this paper the likely effects that a personal tax-free allowance will have on the Russian budget is investigated. It has been assumed that a tax-free allowance will hit regional budgets because they depend greatly on income tax revenue. The indicated effects were estimated by applying a personal tax-free allowance to the data on economic conditions in 2019. Rosstat data on population, poverty, wages and gross regional product and Federal Tax Service data on the number of taxpayers and personal income tax revenues were used. For the purpose of the paper, two scenarios were calculated. In the first scenario, a zero personal income tax rate is applied to wages below the minimum cost of living. We found that under this scenario the consolidated budget of Russia loses over 1 trillion rubles while regional tax revenues reduce by more than 10%. In the second scenario, citizens whose income is below the minimum cost of living are exempt from personal income tax. We found that under this scenario regional tax revenues would be reduced by 1-5%. In both cases the introduction of the personal tax-free allowance puts greater pressure on regions that critically depend on the personal income tax receipts. It was concluded that the negative effect of an introduction of a personal tax-free allowance would be greater, the greater the prevalence of low-income taxpayers in a region. Also considerable regional disparities create a risk that such tax reform will deepen regional inequality and be disruptive for the Russian budgetary system.

KEYWORDS
income tax, progressive scale, tax deduction, tax-free allowance, tax reform

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Оценка бюджетных последствий введения необлагаемого минимума в налогообложение личных доходов в России

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АННОТАЦИЯ
Социальную проблему бедности может смягчить введение необлагаемого подоходным налогом минимума доходов граждан. В статье исследуются вероятные бюджетные потери от введения в России необлагаемого подоходным налогом

минимума доходов граждан. Выдвигается гипотеза, что введение необлагаемого минимума негативно скажется на регионах, поскольку зависимость их бюджетов от поступления подоходного налога велика. Расчет последствий введения необлагаемого минимума проводился для экономических условий 2019 г. Источником данных являлись данные Росстата о населении, бедности, заработной плате и валовом региональном продукте, а также данные Федеральной налоговой службы о количестве налогоплательщиков и налоговых поступлениях. Для целей исследования были рассчитаны два сценария. По первому сценарию к заработной плате ниже прожиточного минимума применяется нулевая ставка налога на доходы физических лиц. Мы обнаружили, что при этом сценарии консолидированный бюджет России теряет более 1 трлн р., в то время как налоговые поступления в региональные бюджеты сокращаются более чем на 10%. По второму сценарию не облагаются налогом на доходы физических лиц граждане, чей доход ниже прожиточного минимума. Данные, полученные по второму сценарию, показывают, что региональные налоговые поступления сократятся на 1–5%. В любом случае, введение необлагаемого налогом минимума оказывает более сильное давление на те регионы, которые критически зависят от поступлений подоходного налога с физических лиц. Можно сделать вывод, что введение льготы при преобладании налогоплательщиков с низкими доходами приведет к существенным потерям для региональных бюджетов. Сделан вывод, что негативное влияние введения необлагаемого минимума будет тем больше, чем больше в регионе преобладают малообеспеченные налогоплательщики. Кроме того, значительные региональные диспропорции создают риск того, что такая налоговая реформа усугубит региональное неравенство и подорвет бюджетную систему России.

КЛЮЧЕВЫЕ СЛОВА
налоговая реформа, налоговый вычет, необлагаемый минимум, подоходный налог, прогрессивная шкала

1. Introduction

Flat personal income tax rate was adopted in Russia in 2001. This step was aimed at legalizing individual incomes and expanding the tax base in economy. Since then, the design of the Russian personal income tax has hinged upon the concept of budget efficiency of taxation. In accordance with this concept, the standard tax deduction of 400 roubles was cancelled in 2012. At the same time the absence of a tax-free allowance is still a much discussed question in Russia for the following reasons:

1. The tax burden is not lowered for disadvantaged groups. There is neither reduced tax rate nor tax exemption for low incomes. Even the subsistence minimum is fully taxed. For poor people, this burden is much heavier than for wealthier taxpayers because the lower is the income, the higher is the share of expenditures on basic necessities. Thus, the tax fairness is not observed.

2. According to the Federal State Statistics Service (Rosstat), in 2019 the share of poor people in Russia was 12.3% or 18.1 million. In these conditions, the absence of a personal tax-free allowance exacerbates the problem of poverty. Although the personal income tax design is not the ultimate solution to the problem of poverty, it can help narrow the gap between the rich and the poor.

3. The connection between the simplicity of the personal income tax's calculation and its collectability is far from being obvious. Economists cannot agree even regarding the success of the tax reform of 2001: some consider it to be a direct outcome of the transition to the flat tax rate [1], others point out that these results were achieved due to the overall individual income growth in Russia and reduction of social security contribution rates [2].

4. The rules of personal income taxation do not fit into the global trends. Tax systems of all developed countries with the largest economies in the world, including the USA, UK, Japan, Germany and Canada, have a personal allowance.

5. No inflation-related indexation of the existing tax deductions has been made and the transition to progressive taxation since 2021 is unlikely to bring any dramatic improvements to the lives of people from disadvantaged groups. The extra tax rate of 15% is aimed at enhancing income tax collection.

In Russia, where poverty is a serious social problem, the design of personal income tax has been a subject of consi-derable debate and no finality has been achieved up to date. The tax system is now entering a new stage in its development, which makes our study particularly relevant. The Russian government's decision to abolish the flat tax rate shows the willingness to apply more complex models of income taxation. And we're at a fork in the road. On one hand, the fiscal success Russia has enjoyed in recent years signifies the efficiency of its current taxation pattern and relevance to support it. On the other hand, taxpayers' abili-ty to pay the personal income tax is taken into account only in dealing with high incomes while low income, as before, is considered of little importance in determining the degree of tax immunity.

In the light of the above, it is obvious that there is a need for such tax mechanism for income redistribution and inequality reduction as a personal tax-free allowance. This, in turn, raises a question as to how such reform will influence the Russian budget system.

The aim of this study is to evaluate the possible budget implications of the introduction of a personal tax-free allowance by taking into account the Russian federative structure. Therefore, we are going to look at the reform's effect on the consolidated budget of Russia and the budgets of regional governments.

We are going to test the hypothesis that there is a connection between the amount of tax revenue losses of regional governments and these regions' reliance on the personal income tax for their tax revenues. We suppose that the regions that are going to be hit the hardest by the reform are most likely to be those with a high share of the personal income tax in the structure of their tax revenues.

The article is structured as follows. Section 2 provides an overview of the relevant research literature on the problem; Section 3 describes the data and methodology of the study; Section 4 discusses the results; and Section 5 summarizes our findings.

2. Literature review

In research literature, tax-free allowance is usually seen as one of the key elements of progressive income taxation, while the latter is compared to flat income taxation to identify the strengths and weaknesses of these taxation types. The choice of a tax scale is widely discussed in connection to fairness of taxation.

J. Head et al. contend that the selection of criteria of fairness in dealing with horizontal-equity (individuals with similar incomes) issues of taxation are related to the choice of income, consumption, or wealth as the tax base while vertical-equity issues (individuals with different incomes) are related to the choice of flat or more progressive rate structures [3].

D. Roberts and M. Sullivan observe that the classical argument given by the proponents of the flat scale is that the amount to be paid is differentiated regardless of the single tax rate as wealthier individuals are bound to pay more [4]. Such approach, however, ignores the distribution of the tax burden among individuals. B. Adhikari and J. Alm, for example, argue that the share of consumption expenditures is larger for the poor, which is why the real tax burden is higher for low-income households [5].

As a part of the progressive scale, tax-free allowance may be represented in the form of a zero tax rate. But the theory of taxation has described mechanisms to achieve progressivity even under the flat rate tax by using some other tax elements than the tax rate itself. In this context, tax-free allowance is seen as similar to the personal exemption or tax deduction. J. McNulty demonstrates that if the structure of a flat income tax includes personal tax exemptions, such tax is actually progressive even though officially it may be flat [6].

G. Nicodème argues that tax progressivity is primarily provided by the design of the tax, not by the transition to the progressive scale as such. The tax design is based on the combination of the marginal tax rate and tax-free allowance [7]. L. Chengjian and L. Shuanglin believe that a moderately progressive tax scheme is preferable since it distorts labour supply less and is more beneficial for the state. It also enables the government to expand the tax base that can be taxed at higher rates [8]. Their findings are supported by J. Davies and M. Hoy, who argue that an extremely high tax rate is not necessary for alleviating income inequality [9].

P. Doerrenberg et al. believe that budget losses incurred by the deviations from standard rules of personal income taxation are not pure losses of the state budget but should be seen as investment in the country's socio-economic policy [10]. G. Iyer et al. argue that the government can regulate the degree of the flat rate tax's progressivity by increasing or, on the contrary, reducing the amount of tax exemptions [11]. In their study, S. Barrios et al. explore the ways of such regulation. Basic tax allowances can in some instances be universal or be related only to employment income, be granted to all taxpayers or only to low-income earners, have a fixed amount or a sliding scale reducing the tax-free amount as the income rises [12].

Contemporary researchers pay much attention to tax exemptions, including the tax-free allowance, in the light of the administrative burden borne by taxpayers. M. Keen et al. explain some countries' decision not to introduce a tax-free allowance by their desire to simplify their personal income tax administration [13]. A. Evans and P. Aligica show the connection between the advantages of simple tax administration and tax evasion [14].

E. Luttmer and M. Singhal consider the phenomenon of tax morale, which they define as nonpecuniary motivations for tax compliance, and its potential to reduce tax evasion [15]. F. Schneider highlights the fact that on the macro-level, a heavy tax burden may affect labour supply in the shadow economy [16]. According to R. Cerqueti and R. Coppier, the shadow economy curbs economic growth due to the lack of funds in state budget for generating public goods [17].

T. Damjanovic and D. Ulph discuss the problem of the inefficient use of funds in economy due to the tax non-compliance. The government has to spend more on tax control trying to detect taxpayers' evasion schemes instead of using these funds more productively [18]. H. Cremer et al. emphasize that in the digital age, the simplicity of tax administration plays no crucial role in the choice of the right design of personal income tax [19].

Some economists focus on the fairness of the income and connect it to the problem of tax evasion. M. Roberts et al. show that the public preference for progressive taxation may be determined not by the desire to collect more tax but to eliminate the effect of tax minimization on the part of wealthy taxpayers [20]. Similarly, D. Nichols and W. Wempe interpret the 'ability to pay' principle as a condition under which the effective tax rate should not be lowered as the income increases [21].

Some studies approach progressive taxation from the perspective of tax burden redistribution. In this case, what comes to the forefront is the level of economic development of countries. For example, A. Paulus and A. Peichl contend that the idea to introduce a flat tax scale is less popular in societies where the middle class is in a strong position [22]. The preference for tax progressivity, according to B. Tarroux, is based on its ability to reduce inequality and poverty and improve social wellbeing [23].

V. Tanzi and H. Zee show the connection between the level of economic development of countries and efficiency of tax administration. They apply this approach to explain possible differences in the tax systems of developed and developing countries. In developing countries, a range of factors such as a large share of the informal sector, the limited capacity of tax administration, taxpayers' limited ability to keep accounts, the lack of reliable tax data, qualified staff and necessary technical equipment for tax control can impede the implementation of progressive taxation [24].

Another aspect of the research on personal income taxation is the impact of tax design on work motivation. L. Osberg argues that the progressive income tax has a distorting effect on the taxpayer's optimal choice of hours of work and hours of leisure [25]. As S. Raei points out, the higher is the elasticity of labour supply, the stronger is taxpayers' reaction to changes in the tax code and vice versa [26]. J. Pántya et al. show that the introduction of a progressive tax scale can lead to a significant growth in work performance [27]. E. Saez et al. also demonstrate that taxpayers may react to certain characteristics of the personal income tax design by choosing to evade taxes or, for example, switching to another sphere of activity [28].

A separate group of studies deal with the absence of a personal tax-free allowance in the Russian tax system. These studies, in their turn, can be divided into two groups.

The first group comprises studies dating to the period when there existed a standard tax deduction of 400 roubles and soon after it was cancelled. These studies discuss the tax-free allowance in relation to this deduction. N. Solovieva argues that the cancellation of this deduction aggravates the financial situation of low-income individuals, which contradicts the principle of tax fairness. Therefore, she recommends to increase the standard tax deduction instead of cancelling it [29]. This approach is shared by S. Barulin and E. Barulina. Comparing the tax deduction with the tax-free allowance, they argue that the optimal solution would be to significantly increase the latter [30]. S. Sulyaeva demonstrates that the tax deduction should be replaced with a tax-free allowance equal to the minimum wage [31].

The second group of studies discuss the current state of the Russian tax system, which does not make exceptions for low-income taxpayers. Problems of personal income taxation are analyzed in connection to the absence of a tax-free allowance. T. Davletshin argues that it is necessary to introduce a tax-free allowance and apply a zero tax rate for incomes below the regional subsistence minimum [32]. N. Semenova shows the need to apply a tax-free allowance equal to the regionally differentiated amount [33]. V. Panskov and N. Melnikova see the tax-free allowance as an alternative to ineffective standard tax deductions [34]. M. Kosov and N. Bondarenko consider the tax-free allowance as a way to raise the income for the poor but warn that this measure will reduce tax revenues in the short term [35].

N. Malis calculates tax revenue losses suffered by the state budget if low-income taxpayers are exempted from income taxation. In her estimates she uses the data on the number of low-income earners and their average wages, concluding that the budget losses will be 2.6 billion roubles per month [36]. Her estimates, however, do not reflect the actual burden borne by the state budget since her calculations do not take into account the small business sector where millions of taxpayers are employed. Neither does she provide any estimates of how tax revenue losses are distributed among regional budgets.

Thus, in contemporary research literature the personal tax-free allowance is usually considered in connection with the impact of tax deductions and breaks on the progressivity of the personal income tax. The question of personal tax allowances is usually discussed together with that of tax fairness and is seen from the perspective of possibilities and risks of tax administration. Both earlier and contemporary research on this topic centres around the idea that the absence of a tax-free allowance or its small amount reduces progressivity and fairness of the personal income tax. Even though there is a large body of research on the problems of personal income taxation in Russia, the tax-free allowance still remains an underexplored topic. Therefore, when the recommendations concerning its introduction are given, no quantitative estimates of budget losses are provided.

3. Data and methodology

In our research, we are going to model the introduction of a personal tax-free allowance in the economic conditions of 2019 and to evaluate the possible consequences of this measure for the consolidated budget of Russia as well for budgets of regional governments. It is crucial to consider the regional aspect because the budget system of Russia is based on the principles of federalism. In accordance with the Russian budget legislation, the personal income tax is a source of tax revenues of regional governments. Therefore, it is primarily Russian regions that have to shoulder the burden of income tax exemptions and reliefs.

For fuller and more accurate results we need to be able not only to forecast the overall amount of tax revenue losses but also to predict the distribution of the burden among Russian regions. This will provide us with important insights into the stability of regional budgets and their ability to provide tax support to disadvantaged citizens. We will also be able to predict the number of regions where the introduction of the personal tax-free allowance would considerably diminish their tax revenues and the number of regions that would lose the least. Therefore, in this study we are particularly interested in regional statistics.

We use Rosstat data on the population in regions, the share of the working-age population and the number of poor people, on the average and median wages, and gross regional product (the size of regional economy). We also use the data of the Federal Tax Service of Russia, such as the number of taxpayers, regions' tax revenues, and revenues from the personal income tax. The data on the amount of subsistence minimum were acquired from the officially published legal acts of the Russian Ministry of Labour and Social Protection.

To evaluate the consequences of the tax reform in quantitative terms we need to specify the parameters of the personal tax-free allowance. These include the following: the maximum tax-exempt amount of income; the type of income exempt from the personal income tax; the perime-ter of beneficiaries entitled to a reduction of the tax base. We assume that the tax-free allowance should correspond to the standards of living, on the one hand, and, on the other, should not be extremely low.

In our calculations, the maximum amount of a personal tax-free allowance corresponds to the subsistence minimum for working-age population. This indicator accurately reflects the standards of living since it comprises the cost of the consumer basket and obligatory payments and fees. It reflects the income necessary to cover the costs of food and non-food essentials, in other words, the expenditures required to stay healthy and maintain basic life in a society. For the purpose of our study, among other types of income, the subsistence minimum should reduce the employment-related income. Depending on who will be the beneficiaries of the tax relief, we will identify and analyze budget implications according to two scenarios of the tax reform.

The first scenario is based on the model of the traditional progressive tax schedule where the tax-free allowance has the form of zero tax rate. Such approach is the closest to established world practices. According to the second scenario, only individuals with an income below the subsistence minimum will qualify for a tax-free allowance. In this case, it will be a targeted tax exemption and thus this measure will be able to reconcile the social policy goals and the needs of the budget system. Therefore, the key indicator used to evaluate the consequences of the reform is the number of beneficiaries in each scenario. For the zero tax rate scenario, we are going to use the data on the number of wage earners. For the second scenario, we are going to use only the number of low-income earners.

Our analysis will fall into the following three stages.

At the first stage, we will focus on regions' reliance on the personal income tax by using such indicator as the share of this tax in the structure of regional tax revenues. For the purpose of our study, a region's reliance on the personal income tax will be deemed critical if such share accounts for more than 50% of the tax revenues.

At the second stage, we are going to estimate tax revenue losses of the consolidated budget of Russia and budgets of regional governments for the two above-described scenarios. We are also going to show how budget losses would be distributed among the regions, identifying the most resilient and the most vulnerable regions. We will calculate the amount and percentage of tax revenue losses. The amount per each beneficiary will be defined as tax-free amount multiplied by the main income tax rate of 13%. The percentage is based on the 'personal income tax to tax revenues' ratio mentioned above. To obtain aggregated estimates, we are going to use the data on the total number of beneficiaries and their distribution across the regions as well as the amount of the subsistence minimum we specified for each scenario. These estimates will then be compared with the levels of regions' reliance on the personal income tax and the results will be further specified by looking at socio-economic conditions in Russian regions.

At the third stage, we are going to systematize our findings concerning regions' fiscal abilities to compensate for their tax revenue losses. The stages of evaluation and scenarios of the tax reform are shown in Figure 1.

4. Results and discussion

4.1. Regions' reliance on the personal income tax

Many Russian regions strongly depend on the personal income tax for their revenues. The share of this tax in the total tax revenue of the consolidated budget of Russia is about 18% while in regional budgets this figure may reach 40%. There are, however, significant differences in the extent of regions' reliance on the personal income tax: in some of them, the share of this tax is considerably below average. For example, the Yamal-Nenets Autonomous Area has the minimum share of the personal income tax in its tax revenues – 19%. Comparatively small shares – 30% or lower – are characteristic of twelve other regions, including Khanty-Mansi Autonomous Area-Yugra, Krasnoyarsk Territory, Nenets Autonomous Area, Republic of Tatarstan and Sakhalin Region.

Nevertheless, the majority of regional governments are much more heavily dependent on the personal income tax: in 60 regions, this tax accounts for 30% to 50% of tax revenues. In 12 regions out of 85, the personal income tax is the main source of tax revenues, accounting for over 50%. The highest share of the personal income tax is 70% in Chechen Republic while in four other regions – Kamchatka Territory, Republic of Ingushetia, Republic of Tuva and Sevastopol city – it is over 60%. In other words, their reliance on the personal income tax reaches a critical level.

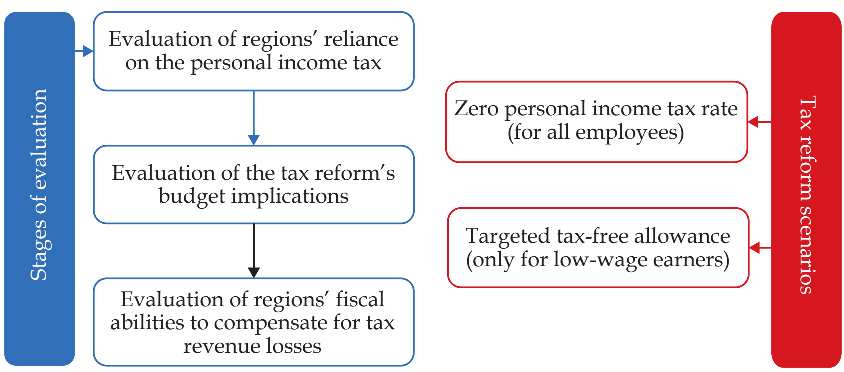

Fig. 1. **Stages of evaluation and tax reform scenarios**

A high share of the personal income tax does not necessarily imply high wages in one or another region. On the contrary, most of Russian regions are characterized by payments of low wages to employees. The lowest income levels are mainly feature of the regions that are heavily dependent on the personal income tax. Moreover, we found that a high share of the personal income tax in regional tax revenues usually goes together with high poverty rates. In the Russian economy, this indicator is 12.3% but may vary across regions and in some of them exceed 20%, for example, in Chechen Republic, Jewish Autonomous Region, Karachay-Cherkess Republic and Republic of Altay. In Republic of Ingushetia and Republic of Tuva, however, low-income individuals account for about a third of the total population. Therefore, personal income tax revenue collections in such weak, unstable regional economies are based on taxes paid by low-income taxpayers. Therefore, such regions will be hit harder by the reform than their more prosperous counterparts.

As our analysis has shown, such situation is not an accident. The share of the personal income tax in tax revenues of regional governments can be an indication of the degree of the regional economy's sensitivity to income tax exemptions or absence thereof, on the one hand, and, on the other, the size and state of the regional economy. The lar-ger and more developed is the economy, the higher is the share of the corporate income tax and the lower is the share of the personal income tax in the total tax revenues. Regions where the personal income tax accounts for less than 30% of their tax revenues tend to have the hig-hest GRP. Smaller economies are generally more reliant on the personal income tax. The economic performance of regions that are overly reliant on this tax is rather poor. A small regional economy is unable to generate sufficient economic activity to provide tax revenue from a variety of taxes and to raise people's income levels. Fewer economic transactions and business operations increase the role of the personal income tax despite the low average individual income. Therefore, the less reliant a region is on the personal income tax, the more stable is its economy and vice versa, if a region is heavily reliant on the personal income tax, it is a sign of economic problems and low living standards.

This conclusion is supported by the data provided by the Russian Ministry of Finance regarding regions' dependence on federal subsidies. This indicator shows how dependent the regions are on federal transfers and to what extent regions are capable of covering its own expenditures. We compared the data on the share of the personal income tax in regional tax revenues with this indicator and came to the conclusion that the regions that are overreliant on the personal income tax are struggling economically, typically less self-sufficient and dependent on federal subsidies.

A small number of regions that are less reliant on the personal income tax are also more self-sufficient in terms of federal transfers (subsidies). These are financially independent and economically prosperous regions that tend to rely more on the corporate income tax for their revenues. This situation is to a great extent determined by the regional industrial specialization: oil producing regions are usually more independent. Despite the low share of the personal income tax in their tax revenues, they maintain a higher wage level (Table 1). Regions with the largest economies have the lowest poverty rates. For example, in Yamal-Nenets Autonomous Area the share of poor people does not exceed 6%; in Republic of Tatarstan, 7%; and in Sakhalin Region, 9%.

The personal income level plays an important role for the formation of the tax base that will be available after personal allowances are granted to taxpayers. In other words, if there are high wages in the region, then it faces less risks of losing too much of tax revenues. What matters the most is the amount of the tax-free allowance and the number of beneficiaries. It should be noted at this point that the combination of a very large share of the personal income tax in tax revenues and high wages is a rare situation in Russian regions, with the only exception of Kamchatka Territory.

Thus, the structure of tax revenues of regional governments is determined by the socio-economic characteristics of Russian regions, including the level of wages as a tax base. Nevertheless, there are cases where a high share of the personal income tax in the tax revenues does not correlate with the region's weak economy and the generally low level of taxpayers' income. We mean the regions with a concentrated tax base that should be considered separately. These are primarily the cities of federal significance – Moscow and St. Petersburg – and, besides them, Moscow Region. Remarkably, in the structure of their tax revenues, the personal income tax accounts for 40–50% because these regions concentrate over one fourth of employees. Moreover, almost three-fourths of employees with wages over 1 million roubles per month work and pay their income tax in these three regions. This circumstance agrees with the fact that in these regions the share of poor people is one of the smallest in Russia – only 7% on average. Therefore, despite a large share of the personal income tax in their tax revenues, as we are going to show further, the regions

Table 1

Regions' reliance on the personal income tax

Regions	Personal income tax, % of tax revenues	Corporate income tax, % of tax revenues	Share of low-income earners, %	Median wage, rbs	Size of the economy, % of Moscow GRP
Regions that are critically dependent on the income tax (>50%)					
Chechen Republic	69.5	7.4	20.7	22 501	1.1
Republic of Ingushetia	65.8	11.2	30.5	19 954	0.3
Sevastopol city	64.5	13.4	11.6	29 563	0.4
Republic of Tuva	63.3	16.2	34.7	27 822	0.4
Kamchatka Territory	61.4	14.0	15.0	62 444	1.3
Republic of Crimea	55.6	16.7	17.2	25 901	2.2
Republic of Dagestan	55.5	14.3	14.6	20 015	3.5
Republic of Altay	54.5	21.3	24.2	24 872	0.3
Karachay-Cherkess Republic	53.9	16.3	23.2	20 788	0.4
Pskov Region	53.6	19.8	16.2	23 895	0.9
Republic of North Ossetia-Alania	53.5	11.7	13.5	21 061	0.7
Jewish Autonomous Region	51.0	15.1	23.9	34 538	0.3
Regions with a more resilient budget (<30%, no federal subsidies)					
Khanty-Mansi Autonomous Area-Yugra	28.4	41.3	8.9	60 570	24.9
Republic of Tatarstan	28.4	38.6	6.9	31 341	13.8
Sakhalin Region	24.8	62.3	8.5	62 647	6.6
Nenets Autonomous Area	20.1	47.9	9.5	71 303	1.7
Yamal-Nenets Autonomous Area	19.4	52.4	5.6	77 542	17.2
Regions with a concentrated tax base					
Moscow Region	42.2	26.6	7.3	45 201	23.5
St. Petersburg city	48.4	33.0	6.6	51 248	23.5
Moscow city	46.0	38.2	6.6	66 103	100.0
Russia	17.6	20.2	12.3	34 335	–

Source: author's calculations

Notes: 1) The economy of Moscow is the largest among Russian regions; for better data comparability we use their GRP in relation to GRP of Moscow; 2) low income refers to amounts being lower than subsistence minimum; 3) the data on the median wage are provided by Rosstat for medium-sized and large enterprises, and the values of this indicator would be lower if small businesses were also taken into account.

with a concentrated tax base are more resilient to tax base fluctuations. That way these regions enjoy an advantageous combination of high wages and low poverty rates, which leaves more room for a tax maneuver and for maintaining the necessary level of the income tax collectability when the tax reform comes into force.

4.2. Budget implications according to Scenario 1 (zero tax rate)

For all employees, a tax-free allowance means that the traditional progressive scale with the zero tax rate is applied. Low-income earners are not singled out as a separate category of be-neficiaries. An individual's right to a tax-free allowance does not depend on their income level. The subsistence minimum is taken as 12,130 roubles. The income below this threshold is non-taxable. The tax is levied on the income above the subsistence minimum. Progressivity is achieved because the share of the non-taxable amount is increased when the income is falling. In this case the number of beneficiaries will be maximal: in Scenario 1, it would be about 59 million. Tax expenditures of the Russian budget system would exceed 1 trillion roubles. This sum is equal to receipts from certain Russian taxes. The budget losses resul-ting from the tax reform in this scenario are comparable with those incurred by the cancellation of the regional tax on the assets of organizations. The losses caused by the cancellation of the personal property tax, transport tax and land tax would be more than twice lower.

In this regard the reform would create an extremely heavy burden on the state financial system. Tax revenues of the consolidated budget of Russia would be reduced by 5.0%. Taking into consideration the fact that the personal income tax is one of the key sources of revenue for regional governments, a more reliable indicator appears to be the ratio of their budget losses to regional tax revenues. In this case regions would lose 11.0% of their tax revenues – quite a substantial figure.

No less important is the distribution of losses among the regions, especially since regions differ considerably in terms of their reliance on the personal income tax. In absolute terms, the heaviest pressure will be borne by the cities of Moscow and St. Petersburg and Moscow Region – 256.6 billion roubles or one fourth of all the budget losses. For many other regions, the losses would be much lower, especially for those whose dependence on the personal income tax is critical. For instance, Republic of Ingushetia would lose 1.1 billion roubles.

This does not mean, however, that more prosperous regions are actually facing a more significant decrease in their revenues. The extent of revenue losses is determined by the number of taxpayers: the more taxpayers a region has, the bigger are the losses. Therefore, in absolute terms, larger economies will suffer more tax revenue losses. The real burden on the budget is determined by the share of the tax revenues lost due to the reform. In this case, the picture looks totally different. For instance, the city of Moscow would lose less than 6% of its revenue while St. Petersburg city and Moscow Region, 10–11%. As for Republic of Ingushetia, according to our forecast, it would lose about 28% of its tax revenue, which is the largest amount of losses among all Russian regions. As Figure 2 illustrates, losses of tax revenues of 70 regions would exceed 10%, with 47 regions losing from 10 to 20% of their tax revenues. Losses of such scale are likely to pose a serious challenge to the implementation of any regional expenditure budget.

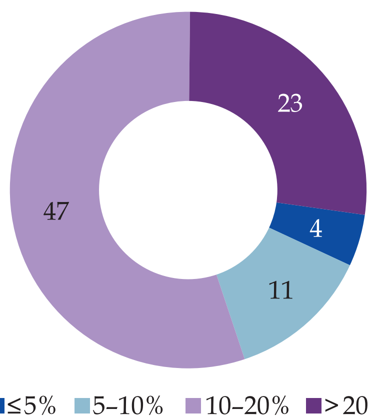

***Fig. 2.* Number of regions according to the percentage of their tax revenue losses (Scenario 1 – zero tax rate)**

Oil-producing regions would lose the least: Nenets Autonomous Area, less than 2%; Sakhalin Region and Yamal-Nenets Autonomous Area, 2–3%. The tax revenues of Khanty-Mansi Autonomous Area-Yugra would drop by about 6%. These are the regions where the share of the personal income tax does not exceed 30% of the total tax revenues.

Interestingly, budget losses tend to grow together with the region's reliance on the personal income tax (see Fig. 3). The losses exceeding 20% are characteristic of the regions where the personal income tax is the main source of tax revenues. Therefore, the majority of Russian regions will suffer a 5–20% drop in their tax revenues – these are the regions where the personal income tax accounts for approximately 40% of tax revenues. This figure corresponds to the average figure for the whole economy.

Thus, the less dependent a region is on the personal income tax, the easier it will bear the burden of various tax breaks and tax exemptions. Unsurprisingly, the least vulnerable in this respect are the regions whose main source of revenues is the corporate income tax. They also enjoy a more stable budget and they are also more self-reliant and independent of federal grants. These regions, however, are only just a few. Apart from that, tax revenue losses still remain quite substantial even for their budgets.

One of the reasons behind more advantaged regions' resilience to the financial pressure is the above average wage level. Regions with low wages stand a small chance of coping with the zero tax rate. While the former would still have a sufficient tax base, the latter's tax base would be diminished by the tax reform. As a result, favourable economic conditions in some regions do not change the general situation: the zero tax rate scenario remains undesirable at large.

Our analysis of the tax reform's implications for regional budgets leads us to the conclusion that Scenario 1 goes beyond a reform of personal income taxation. To restore the level of tax revenues, the government would have to reconsider revenue sources both of the federal and regional budgets, in other words, create a new fiscal system. In the existing economic conditions and taxation model, such task turns into an unresolvable conundrum.

4.3. Budget implications according to Scenario 2 (targeted tax relief)

Shortcomings of the zero tax rate would require the government to change the conditions for granting personal tax-free allowance in order to reduce the pressure on the budget system. This can be achieved by reducing the number of taxpayers entitled to a tax-free amount of income. In other words, a more targeted tax relief is needed. It can be adopted for

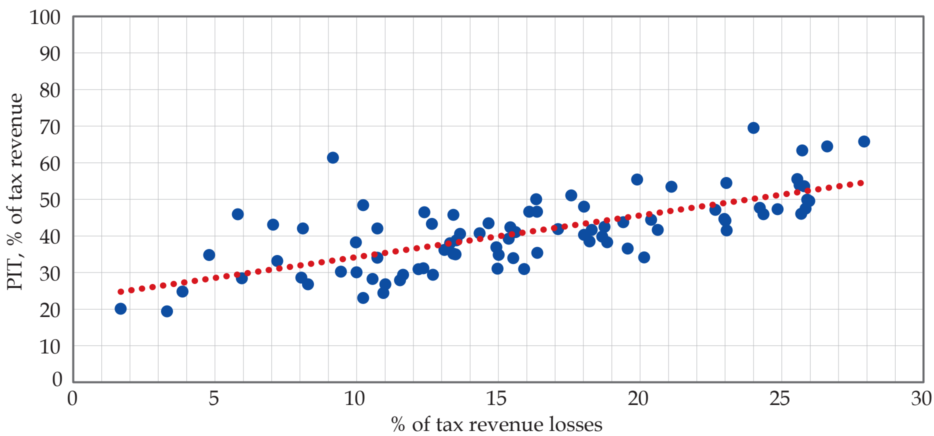

***Fig. 3.* Distribution of regions according to the percentage of tax revenue losses and reliance on the personal income tax (Scenario 1 – zero tax rate)**

Note: PIT – Personal income tax

people with income below the subsistence minimum of their respective regions. In this scenario, the individual income level is taken into account for tax purposes. If a taxpayer's income is higher than the subsistence minimum, the tax base is not reduced. Thus, being of little means becomes a criterion for entitlement to a personal tax-free allowance. Therefore, a tax-free allowance turns into an instrument to support low-income earners.

The Federal Tax Service does not provide any data on the distribution of taxpayers regarding their earnings. However, we have access to the data on the number of people living in poverty. It should be noted that poverty is measured in relation to per capita income and household income, which means that the number of poor people may include individuals without income of their own (e.g. dependents) or those that have a non-taxable income (e.g. pension). It is important since a tax-free allowance can be granted only to individuals who are taxpayers and have a taxable income. So, using an aggregate poor people can create risks of overestimating the tax revenue losses, which is why we adjust the number of the poor in regions to the share of the working-age population. This way we can obtain the real number of beneficiaries: 10.1 million taxpayers, which is almost six times lower than in Scenario 1. Therefore, the pressure on the budget system is supposed to be much smaller.

In order to measure the tax revenue losses as accurately as possible, we should know the regional average wages within the bounds of non-taxable income brackets (i.e. regionally differentiated tax-free amount). The subsistence minimum only marks the income threshold for personal allowance but the actually used tax-free amount would be lower than this threshold. In other words, the losses of regional budgets depend on how much of the allowance would be applied by every taxpayer depending on income received. There is, however, no region-specific information on the average income of those workers who earn less than the subsistence minimum. For approximate estimates, we are going to use the federal average wage of a low-income taxpayer (Rosstat data on the distribution of the number of workers according to the wage levels in April 2019): 9,454.4 roubles.

The forecast revenue losses are 148.3 billion roubles, which is 7.5 times less than the revenue losses incurred by the tax reform in the first scenario. Our calculations show that the tax revenues of the consolidated budget of Russia would decrease by 0.7% while regional budgets would lose 1.5%. The amount of losses depends on the number and share of low-income taxpayers in regions.

Moscow's losses would be the largest, reaching 7.1 billion roubles. Although the share of the poor in this region is quite small, this region is densely populated, which means that the number of beneficiaries will be quite high in comparison with other regions. A large share of low-income earners combined with a large population obviously leads to an increase of regional tax revenue losses in absolute terms. Krasnodar Territory, Krasnoyarsk Territory and Rostov Region have over 1 million taxpayers each. In addition, all of these regions have a significant share of low-income earners. Therefore, in each of these regions tax revenue losses would exceed 4 billion roubles. Republic of Dagestan is particularly worthy of attention in this respect: in this region, the number of taxpayers is almost 20 times smaller than in Moscow city but three-fourths of the taxpayers are poor. Therefore, the number of beneficiaries in Republic of Dagestan is virtually the same as in Moscow city (the difference is less than two times). These regions together with Moscow Region would bear about 20% of tax revenue los-ses (see Table 2).

Losses are minimized if a region has a small number of taxpayers and an insignificant share of beneficiaries. For example, in Nenets Autonomous Area there are less than 20 thousand wage earners, and only 13 % of them would be entitled to a personal allowance. In Chukotka Autonomous Area, there are about 40 thousand wage earners but only 7% of them are beneficiaries. As a result, these regions' tax revenues would decline by not more than 40 million roubles.

Table 2

Distribution of the maximum and minimum amounts of tax revenue losses among the regions in Scenario 2

Regions	Employees, ths people	Beneficiaries		Tax revenue losses	
		ths, people	% of employees	mln rbs	% of total
Regions with maximum losses					
Moscow city	6,969.5	478.4	6.9	7,055.9	4.76
Krasnodar Territory	1,992.5	334.1	16.8	4,927.7	3.32
Moscow Region	3,504.4	320.9	9.2	4,733.5	3.19
Rostov Region	1,422.6	312.3	22.0	4,605.9	3.10
Krasnoyarsk Territory	1,248.2	286.8	23.0	4,230.1	2.85
Republic of Dagestan	366.2	272.4	74.4	4,018.0	2.71
Regions with minimal losses					
Sakhalin Region	269.0	23.7	8.8	349.8	0.24
Jewish Autonomous Regi on	61.3	21.3	34.8	314.8	0.21
Yamal-Nenets Autonomous Area	484.9	19.4	4.0	286.8	0.19
Magadan Region	95.9	7.9	8.2	116.2	0.08
Chukotka Autonomous Area	38.1	2.7	7.1	40.0	0.03
Nenets Autonomous Area	18.1	2.4	13.0	34.8	0.02
Russia	58,904.9	10,057.5	5.9	148,337.2	100

Source: author's calculations

Analysis of tax revenue losses in the ratio to tax revenues has shown that the second scenario of the tax reform would considerably reduce the budget losses of the vast majority of regional governments. If tax relief is granted only to low-income groups, tax revenues of 70 regions would fall by less than 5%. These are primarily the regions where the personal income tax accounts for no more than a half of their tax revenues. Moreover, in 12 regions, tax revenues would decrease by less than 1% (see Fig. 4). These are Chukotka Autonomous Area, Khanty-Mansi Autonomous Area-Yugra, Leningrad Region, Magadan Region, Moscow Region, Moscow city, Murmansk Region, Nenets Autonomous Area, Republic of Tatarstan, Sakhalin Region, St. Petersburg city and Yamal-Nenets Autonomous Area. In general, these are the regions with large economies and lower poverty rates. This group includes oil producing regions and regions with a concentrated tax base.

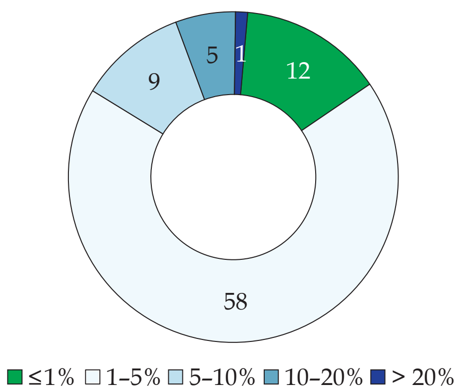

***Fig. 4.* Number of regions according to the percentage of their tax revenue losses (Scenario 2 – tax-free allowance only for low-income taxpayers)**

In this scenario, a more than 10% decrease in tax revenues of regional governments appears exceptional: such regions perform poorly both in social and economic spheres due to a number of adverse factors. As a rule, these factors include a large share of the poor (higher than the Russian average level), low per capita income, lack of business activities and resulting overreliance on the personal income tax. This group comprises regions of the North Caucasus, such as Chechen Republic, Karachay-Cherkess Republic, Republic of Dagestan, Republic of Ingushetia, and Republic of Tuva (Siberian Federal District). We could also include in this list Kabardino-Balkarian Republic but personal income tax makes up there slightly less than 50% of tax revenues while listed regions critically depend on receipts of this tax. However, three-fourths of taxpayers in this region are poor, which explains large tax revenue losses. With the exception of Republic of Ingushetia, tax revenue decline for the group would be 10–20%. In Republic of Ingushetia, this figure is still close to 30%, which is the maximum.

As we can see, the scenario of a more targeted tax relief facilitates the tax reform. However, regional governments' losses are distributed unevenly. Regions that are struggling both socially and economically would be hit the hardest while the fiscal interests of more prosperous regions would be affected much less. Thus, there may be a higher risk that the existing regional disparities would be exacerbated. Figure 5 illustrates the connection between tax revenue losses and regions' dependence on the personal income tax as well as significant regional disparities in the light of the tax reform.

The higher is the number of low-income earners in a region, the more this region will have to spend in order to implement the tax reform and, as a result, the less opportunities it will have to provide tax relief to low-income individuals. Taking into account the fact that poor regions are also the most dependent on federal funding, increasing financial pressure on their budgets will inevitably turn into the federal government's problem.

4.4. Fiscal limitations

We assume that the tax reform in question will be budget neutral. The principle of budget neutrality means that changes in the tax code will not be detrimental to state finance and will not go against the fiscal interests of regions. In other words, the introduction of the personal tax-free allowance should be associated with a shift of the tax burden to high incomes in order to compensate for tax revenue losses. Our analysis has shown that the government aiming at covering tax expenditures incurred by the expected reduction of tax receipts will have to deal with two major limitations.

Limitation 1 – The absence of middle class. According to the OECD methodology, the middle class consists of the households with income between 75%

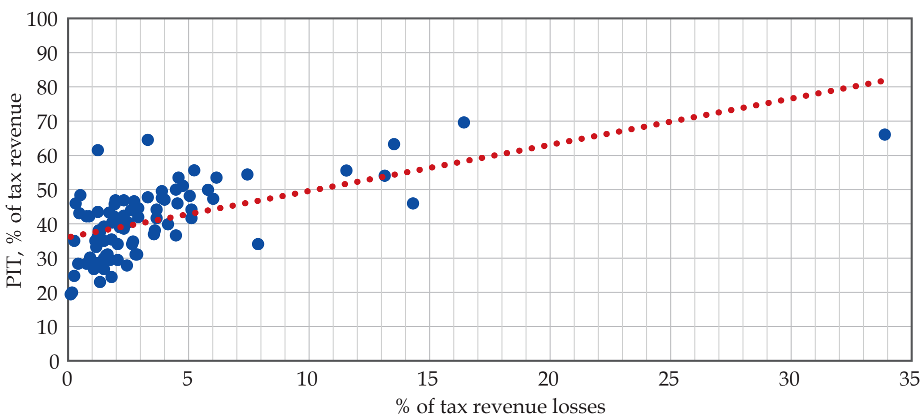

Fig. 5. **Distribution of regions according to the percentage of tax revenue losses and reliance on the personal income tax (Scenario 2 – tax-free allowance only for low-income taxpayers)**

Note: PIT – Personal income tax

and 200% of the median national income[1]. The median wage in Russia is 34,335 roubles. Therefore, individuals with income 25,751–68,670 roubles can be referred to as middle class. Such approach, however, is purely formal and depends entirely on people's welfare. Therefore, it can be said that there is a middle class even if the general individual income level is low. For taxation, however, what matters more is taxpayers' ability to pay. Therefore, it should be noted that the interval of income specified above corresponds to a low ability to pay. The subsistence minimum in Russia is about one third of the median wage. The average wage of 47,867 roubles is equal to just four subsistence minimums.

If we look at the data on the distribution of per capita income, we will see that most Russian regions are low-income. As Figure 6 shows, three fourths of the Russian population have an income below the average wage level. In fact, this means that Russia has no middle class. Therefore, an increase in the tax burden on the main part of incomes (below 100 thousand roubles) does not make the personal income tax more fair. On the contrary, this measure will impoverish the population as additional tax revenues will be mainly transferred between poor taxpayers (i.e., from low-income earners to lowest-income earners).

The number of individuals with high and highest income is too small to eliminate the negative implications of the tax reform. Only 3.3% of taxpayers in Russia earn monthly wages above 100 thousand roubles. Such wage level cannot be considered a sign of financial wellbeing since it is only twice higher than average. At the same time only 0.08% of employees have an income above 500 thousand roubles a month; 0.02%, over 1 million roubles a month. It means that every wealthy taxpayer would have to finance tax exemption for 200 low-income earners in the first case and about 900 of them in the second case.

Limitation 2 – Extremely uneven distribution of the tax base among the regions. The problem of low income goes hand in hand with the fact that most high-income earners are concentrated in only a few of the regions. These are affluent and self-reliant regions with large economies, such as the cities of Moscow and St. Petersburg and Moscow Region. The pressure on these regions' budgets would be minimal. Moreover, they enjoy ample opportunities for restoring their tax revenues. If there is no viable mechanism for a redistribution of extra tax revenues among regional budgets, the tax reform will exacerbate the socio-economic disparities between the regions.

[1] OECD (2019), Under Pressure: The Squeezed Middle Class, OECD Publishing, Paris. https://doi.org/10.1787/689afed1-en.

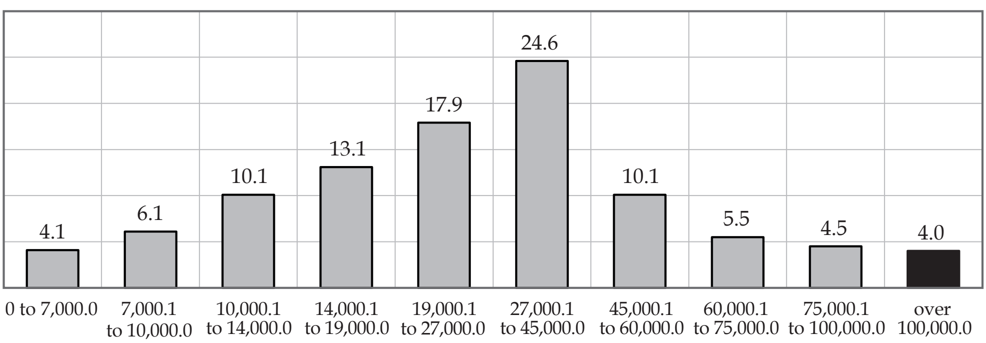

***Fig. 6.* Distribution of the Russian population according to per capita income in 2019, rbs, %**

Notes: 1) income figures are given in roubles; 2) monetary income includes the wage. Apart from the wage, monetary income includes other sources, both taxable (e.g. earnings from business operations) and non-taxable (e.g. pensions, scholarships), as well as social transfers. Labour wages account for about 60% of the population's monetary income.

Table 3

Territorial concentration of high and highest wages

Regions	> 100 000 rbs			> 500 000 rbs			> 1 000 000 rbs		
	people	% of total	% of employees	people	% of total	% of employees	people	% of total	% of employees
Moscow city	718,763	36.9	1.220	27,412	56.3	0.047	6 791	60.2	0.012
St. Petersburg city	157,599	8.1	0.268	4,392	9.0	0.007	910	8.1	0.002
Moscow Region	119,848	6.1	0.203	3,801	7.8	0.006	650	5.8	0.001
Other regions	953,000	48.9	1.618	13,097	26.9	0.022	2 935	26.0	0.005
Russia	1,949,209	100	3.309	48,701	100	0.083	11 287	100	0.019

Source: author's calculations

Moreover, in Russia some regions have no taxpayers with wages above 1 million a month. These are the regions that rely most heavily on federal funding such as Chechen Republic, Jewish Autonomous Region, Kabardino-Balkarian Republic, Republic of Altay, Republic of Ingushetia, Republic of Kalmykia and Republic of North Ossetia-Alania. At that, in Republic of Altay there are even no taxpayers with wages above 500 thousand roubles. Regions of this group would not be able to independently redistribute tax revenues from wealthy taxpayers in favour of low-income taxpayers.

It should also be noted that the favourable economic situation in a region doesn't guarantee fiscal possibilities to cover the regional tax expenditures. This is especially true of the economically stable Nenets Autonomous Area, which does not have a large tax base, that is, it has a small number of high-income earners. As a result, even small tax revenue losses can pose a problem for the regional government if they cannot be compensated.

Table 3 illustrates the imbalance of the tax base distribution across Russian regions. Over a half of the employees with income above 100 thousand roubles a month are employed in just three Russian regions. Moscow city is a major centre of attraction for the tax base. This region is the leader in number of highest-income taxpayers. Most individuals with monthly wages above 500 thousand / 1 million roubles pay their income taxes only to the budget of Moscow city. Therefore, the compensation for tax revenue losses at large requires Moscow personal income tax receipts to be partly redistributed to poorer regions dependent on federal subsidies.

In most regions, a higher personal income tax rate would be all but useless as the necessary fiscal effect would not be achieved due to the deficiency of high salaried income. Therefore, the losses in tax revenues would lead to pure losses of those regions that are dependent on federal funding. The federal government would have to increase its subsidies to these regions.

5. Conclusion

In this study, we analyzed how the introduction of a personal tax-free allowance can influence the Russian budget system, in particular the reform's implications for the revenues of regional governments. First, we discussed the extent of regions' reliance on the personal income tax. Our analysis has shown that the majority of Russian regions are heavily dependent on this tax for their revenues. The share of the personal income tax in regional tax revenues mainly varies between 30 and 50%, which can be explained by the lack of economic activity and the prevalence of the full taxation of low incomes. This led us to identify three specific groups of regions. The first group comprises the regions with struggling economies that are critically dependent on the personal income tax. The second group, on the contrary, includes oil producing regions with high wage levels, which are less reliant on the personal income tax. The third group consists of regions located in the economic and political centre of Russia (the cities of

Moscow and St. Petersburg and Moscow Region). In these regions, there is a high share of the personal income tax in their tax revenues due to the concentration of the tax base.

Our analysis of the reform's implications for regional budgets has confirmed the hypothesis that there is a connection between regions' reliance on the personal income tax and their revenue losses. We have also found an interesting pattern: the stronger is a region's reliance on the personal income tax, the heavier will be the burden on the regional budget if the tax-free allowance is introduced. We tested this hypothesis and analyzed the tax reform's implications for regional governments by looking at two possible scenarios.

According to the first scenario, a personal tax-free allowance should be introduced in the form of a zero income tax rate. We found that the effect of tax reform would be similar to the cancellation of certain regional taxes. In this case the consolidated budget of Russia loses over 1 trillion roubles while tax revenues of regional governments are commonly reduced by more than 10%. The second scenario, with a tax exemption of low wages and narrower range of beneficiaries, changes the situation dramatically: the consolidated budget of Russia would lose 7.5 times less revenue; as a rule, regional tax revenues would be reduced by 1–5%. Remarkably, in both scenarios, the tax reform is likely to pressure more heavily on budgets of those regions that critically depend on the personal income tax receipts. The fiscal interests of more economically successful regions, less dependent on the personal income tax, would suffer much less.

There are certain barriers to redistribution of high and highest incomes to restore tax revenues through increased tax rate. These include the lack of middle class in Russia and the extremely uneven distribution of the large tax base. The share of rich taxpayers is very small and most of them pay their income taxes in the cities of Moscow and St. Petersburg and Moscow region. The introduction of the personal tax-free allowance under the prevalence of low-income taxpayers would lead to great amounts of uncovered tax expenditures of regional governments. Also considerable regional disparities create a risk that the tax reform will deepen regional inequality and be disruptive for the Russian budget system.

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