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Progressive income tax as a driver for the development of high-tech industries in Russia

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ABSTRACT

The study tests the hypothesis that Russia's transition from flat to progressive income taxation will produce revenue that would be sufficient for the advancement of high-tech industries. To test this hypothesis, we considered two scenarios of the reform – the two-tiered system, which has been implemented since 2021, and the project of a four-tiered system proposed by the Liberal Democratic Party. To estimate the effects of the tax reform, we calculated the revenues from taxing high-income taxpayer groups and subgroups at specific tax rates. As a result, it was found that the reform could produce 187 billion Rubles in extra revenue, which means that there is a vast discrepancy between the calculated estimates and the government's expectations (60 billion Rubles). In other words, the Russian government significantly underestimates the potential of the income tax. According to the second scenario, which aims to build a more sophisticated income tax system, the revenue would be 1.1 trillion Rubles. Thus, a well-designed scale of the personal income tax will enable the government to considerably enhance this tool's fiscal efficiency. The calculations of the extra revenue generated by the reform relied on the statistics of the *World Inequality Database* (WID) for 2019. To test the relevance of the input and output data, we conducted a comparative analysis at the micro-level by looking at the wage levels in Russian, American and European space corporations. We found that the micro-economic data are closer to the WID statistics rather than to Rosstat, which confirmed the accuracy of our results. Our calculations have confirmed the general hypothesis and showed that the extra revenue from the reform will enable the government to fully modernize microelectronics and the geothermal industry in Russia.

KEY WORDS

progressive taxation, personal income tax, PIT, effectiveness, industry analysis

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Прогрессивный подоходный налог как драйвер развития высокотехнологичных производств в России

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АННОТАЦИЯ

В статье проверяется гипотеза, согласно которой реформирование системы плоского подоходного налогообложения России путем введения прогрессивной шкалы позволит получить финансовые средства, достаточные для осуществления рывка в развитии высокотехнологичных производств страны. Для

проверки гипотезы рассмотрены два сценария реформы прогрессивного индивидуального подоходного налога – 2-уровневая система, действующую в стране с 2021 г., и проект Либерально-демократической партии с 4-уровневой шкалой. Получение искомых цифр основано на методологии тщательной калькуляция получаемых налоговых отчислений от высокодоходных групп и подгрупп населения России с учетом налоговых ставок. Прикладные расчеты дали величину от введенной реформы (187 млрд руб.), кратно превышающую официальную оценку правительственных ожиданий (60 млрд руб.), что свидетельствует о недооценке национальным регулятором потенциала подоходного налога. Доход от второго сценария, являющегося незначительным углублением начавшейся реформы, составляет 1,1 трлн руб. Таким образом, правильно сконструированная шкала подоходного налога позволяет многократно повысить его фискальную действенность. Расчеты дополнительного дохода от реформы подоходного налога осуществлялись на основе статистики Всемирной базы данных о неравенстве *World Inequality Database* (WID) за 2019 г. Для проверки релевантности используемых исходных данных и полученных результатов расчета осуществлена их проверка на микроуровне – путем сопоставления заработков сотрудников космических корпораций России, США и Европы. Проверка показала, что микроэкономические данные ближе к статистике WID, нежели Росстата, и тем самым подтвердила корректность авторской методики. Расчеты подтвердили сформулированную гипотезу и показали, что дополнительный доход от подоходного налога позволит полностью модернизировать микроэлектронную промышленность и геотермальную энергетику страны.

КЛЮЧЕВЫЕ СЛОВА
прогрессивное налогообложение, налог на доходы физических лиц, подоходный налог, эффективность, отраслевой анализ

1. Introduction

Russia belongs to the group of countries whose fiscal policy is based on taxing legal entities rather than individuals. At the same time, there is every indication that, Russia, like other countries, is facing the challenge of social inequality [1; 2]. Traditionally, progressive taxation, especially the personal income tax (PIT), has been seen as an instrument to tackle excessive social inequality (in Russia the PIT is officially referred to as the tax on the income of physical persons (NDFL)). Although this instrument is quite common in many countries of the world, in Russia it has been underused for a long time.

Since 2017, many of the country's political parties and fractions has been proposing various scenarios for adopting a progressive PIT system. However, until 2019, the Russian government had vehemently opposed the prospect of such reform, bringing up as an argument the country's negative experience of progressive taxation in 1992–2000. The situation changed dramatically in 2020, when Vladimir Putin in his address to the nation announced the beginning of the personal income tax reform on 1 January 2021. The PIT rate was raised for individuals earning an annual income of more than 5 million rubles from 13 to 15%. The higher tax rate applies only to the amount in excess of 5 million rubles per year.

Although the reform came into force in 2021, there is every reason to believe that it is just the first step towards larger-scale transformation and that it would be followed by other amendments to the PIT legislation. In March 2021, the deputy of the State Duma of the Russian Federation from the Liberal Democratic Party of Russia (LDPR) S. Katasonov presented a bill for introducing a progressive PIT scale[1]. This document describes a more sophisticated system of personal income taxation with more differentiated tax rates for the wealthiest taxpayers. In the current system, all taxpayers whose income exceeds 5 million roubles are taxed at the rate of 15%. This rate is applied not to the whole income, but only to its part excee-

[1] https://ldpr.ru/events/112373; https://nsn.fm/policy/progressivka-ndfl-zhdut-izmeneniya?utm_source=yxnews&utm_medium=desktop

ding the threshold level. S. Katasonov's bill proposes to further differentiate between the taxpayers with income exceeding 10 million but less than 100 million (in this case the excess amount will be taxed at 25%) and the taxpayers with income exceeding 100 million roubles (in this case the tax rate is 35%).

Although S. Katasonov's bill fits well into the general picture of the ongoing tax reforms, it made only as far as the first reading and was eventually turned down[2]. This, however, does not signify that the question of further reforms is closed for good. It is entirely likely that the Russian government will return to this initiative after making some adjustments to the initial figures.

The most intriguing and novel aspect of the current PIT system in Russia lies in the possibility to allocate the extra fiscal revenue to specific expenditure categories, that is, earmarking. This budgeting practice is commonly referred to as earmarked funds. In the current tax system, the extra receipts from the reform are earmarked for supporting health care: for the treatment of children, purchase of expensive medicines and equipment, for finan-cing complex surgical operations invol-ving high-tech procedures and so on[3]. The fact that the extra PIT revenues may be reallocated according to the government's priorities means that this tool holds signi-ficant opportunities for national economic development, especially for high-tech industries, whose growth in Russia is very modest.

The ongoing and future implementation of the current and prospective managerial innovations in relation to the PIT should be based on their prior economic assessment. This task, however, is not as simple and straightforward as it may seem.

This article aims to develop and test the analytical tools for measuring the fiscal and economic effects of the PIT reform in Russia.

Our general hypothesis deals with the question about the redistributive potential of the PIT: will the extra PIT revenue be sufficient to provide financial impetus and spur the development of high-tech industries in Russia?

The above-described aim determines the following research logic. First, we are going to provide an analytical overview of the approaches to assessing the efficiency of the PIT reform (Section 2). Second, we are going to present our own assessment methodology, the sources of statistical data and computational procedures (Section 3). Afterwards, the resulting figures will be used to measure the efficiency of the two reform scenarios, in particular its fiscal, social and redistributive functions. To this end, the focus will be made on investment in microelectronics and the geothermal industry (Section 4). Then we are going to discuss the relevance and adequacy of the resulting data, in other words, their capability to reflect the real-life processes (Section 5). The final section will consider the political aspects of the ongoing reform and its further prospects.

2. Regulatory characteristics of personal income taxation: literature review

Before presenting our calculations of the reform's economic effects in Russia, we are going to consider the already established approaches and describe the current state of research on personal income taxation as a fiscal instrument.

2.1. International approaches to evaluating the efficiency of personal income taxation

There are two types of the personal income tax – flat and progressive. The flat tax on personal income is based on withholding a certain portion of the income, regardless of its size. The progressive tax relies on the piecewise linear scale with tax rates depending on the size of income. As a rule, a progressive scale is introduced because the government seeks to reduce income inequality and shift a heavier tax burden to the shoulders of wealthier taxpayers since they are in a better position to bear this burden.

The personal income tax performs two kinds of regulatory functions – fiscal, that is, the tax acts as a source of income for

[2] https://sozd.duma.gov.ru/bill/1126364-7

[3] https://www.rbc.ru/economics/24/06/2020/5ef226b29a794766cc4d2343

the government, and social, which means that the tax helps reduce social inequality. Thus, we can differentiate between the fiscal and social efficiency of the PIT.

There is a considerable body of research discussing each of these aspects. Most researchers [3–5] subscribe to the view that the readjustment of the PIT system is particularly effective in countries where this tax makes a large share of the government's revenue. On the contrary, if this share is small, it means that this country has a low level of income and wages. The Russian government was obviously aware of this important fact while planning the reform and thus set the higher rate for a very small but wealthy group of taxpayers.

It should be clear that governments in Russia and other countries experimented with income taxation mostly because specific tax preferences and regimes for different types of income mitigated the redistributive and progressive effects of the income tax [6; 7]. Model calculations of the effects of such reforms in the early 2000s have shown that despite the fact that the PIT contributed to the equalization of wages, its redistributive effect was insignificant [8].

Moreover, the research in this field shed light on the relationship between the progressivity of the tax and the rates of tax evasion among high-income taxpayers. The history of research on progressivity in income taxation goes back to the 1970s (see, for example, [9–11]) and is still relevant nowadays [12]. In Russia, there is evidence that the limitations of the progressive tax scale stem from poor tax administration [13]. When the marginal tax rate on earnings is rising, more incentives are generated for high-income groups to evade taxes.

In international research, the problem of tax evasion is usually examined from the cross-disciplinary perspective. For example, in [14], income tax evasion dynamics was analyzed from the perspective of econophysics by using the E. Ising model of ferromagnetism, which significantly expanded the possibilities of studying behavioural processes in a heterogeneous (consisting of at least four interacting types of agents) society. Another study found the connection between tax evasion and morality: the higher is the degree of morality, the less inclined are high-income taxpayers to evade, thus making the tax system more progressive and efficient [15].

An important milestone in the development of modern tax theory was the study of J. Mirrlees [16], which was followed by multiple studies of the non-linear PIT and its properties. One of such studies was [17], which uses the game model of progressive income taxation with special connector equations, resulting in an optimal PIT scale based on verifiable statistical indicators. Some works consider the progressive PIT scale and the amount of the tax by looking at the parameters of its distribution among the taxpayers [18].

A large number of studies are concerned with the social and economic aspects of progressive taxation. These studies, however, often report contradictory results that in some cases go against the theoretical assumptions. For example, there is evidence that increasing tax progressivity is not an efficient way to reduce inequality [19; 20]. Of particular interest in this respect are the outcomes of the large-scale reform conducted in the USA in the 1980s: as the PIT became less progressive, the inequality grew (for instance, between 1980 and 1990, the Gini coefficient rose from 0.403 to 0.428) [21]. The reform also led to decreasing tax receipts and to a fall in the provision of public goods (by 23%). This trend coincided with the growth in social welfare and in the welfare of certain decile groups due to higher levels of consumption, which, in their turn, compensated for the decline in public goods [22; 23]. Other factors in favour of the lower progressivity of the PIT include population ageing and the shrinking gender gap [22].

Most Russian studies focus on the impact of the PIT on income inequality. For example, in [24], a function describing income distribution is proposed, which can be used to calculate the key parameters of the income Lorentz curve. A similar study measured the income gap by analyzing income distribution in Russia and in Moscow and found that in 1998 there was a 2.6 times income gap [25]. This line of research was continued in [26], which described a spe-

cial function of the PIT redistribution to compare different scenarios of taxation.

One more line of research is the analysis of the risks resulting from tax reforms. The existing understandings of what constitutes tax risks and their characteristics are examined in [27; 28]. Despite the diversity of approaches to tax risks, there is a general agreement that these risks may entail economic losses both for governments and taxpayers [29]. Moreover, higher tax risks are often linked to a heavier tax burden. This situation disincentivizes tax compliance and is conducive to the expansion of the shadow economy [30; 31], which is one of the key arguments in favour of the flat scale. In the case of Russia, the transition to the flat tax scale in 2001 not only resulted in an increase in tax revenue but also stabilized tax collections [19].

Article [32] is one of the most relevant studies, which considers three hypothetical scenarios of the PIT reform and provides a qualitative and quantitative analysis of the opportunities provided by progressive personal income taxation. The study models the income distribution curve to show that the introduction of a progressive scale will not have a significant impact on inequality in Russia. However, there is another study, which focuses on the case of Romania and analyzes two scenarios of progressive taxation. It shows a positive, although modest effect upon income inequalities in the country, the fiscal effect being negative [33].

An important aspect in the evaluation of the social efficiency of progressive taxation is its stabilizing function. In recession periods, some individuals' income slumps, and thus they move from higher tax brackets to lower ones and pay less in taxes. As their financial situation improves, their tax burden grows again [34; 35].

2.2. Personal income tax as a fiscal reserve of the Russian economy

At present, Russia belongs to the group of countries where the personal income tax plays only a secondary role in governments' receipts. For example, in 2016, in Russia, the share of the PIT in the overall tax revenue was 10.8% while in India and the USA it was 25.3% and 48.8% respectively [19]. Thus, this fiscal instrument has been largely seen as auxiliary by the Russian government. Other, more significant taxes such as the VAT, corporate income tax, export and import duties have mostly exhausted their fiscal and stimulating potential, which leaves the PIT as the only instrument left that still holds some promise in this respect. If the PIT starts playing a larger role in the national economy, it will be possible to modernize Russia's macro-regulation model and move to a more advanced level of macro-economic management of developed countries.

Thus, the current PIT reform in Russia marks the first hesitant step owards building a progressive PIT system. As of today, the country has a two-tiered PIT scale – 13% and 15%, which quite obviously is not enough to meet the modern requirements of income taxation. To put this in context, Italy has a five-tiered system (23, 27, 38, 41 and 43%) and China, a seven-tiered system (3, 10, 20, 25, 30, 35 and 45%)[4].

The current fiscal system in Russia is quite peculiar, which, in its turn, creates opportunities for obtaining substantial tax revenue and thus ensure a fair and reasonable redistribution of these funds, for example, to finance the needs of the high-tech economy and new innovative industries.

3. Effects of the tax reform in Russia: input data and methodology

The tax reform of 2021 signified the country's transition from the flat to progressive tax system and gave rise to conflicting views regarding the effects of this measure. There are manifold differences between the government's and alternative experts' estimates, which means that a more detailed analysis is needed to clarify this matter.

3.1. Statistical base for evaluating the effects of the reform

However paradoxical it may sound, it was quite difficult to assess the fiscal effect produced by the reformed tax system

[4] https://zarplata-es.com/category/nalogi-po-stranam/

in Russia. For instance, the government's expectations articulated by President Putin in his 2020 address are as follows[5]: in 2021, the tax revenue should be 60 billion roubles; in 2022, 64 million; and in 2023, 68.5 million[6].

So far neither Rosstat nor the Federal Tax Service (FNS) have provided any statistical data that could be used to measure the fiscal effect of the new tax regime. As a result, in Russian media, diverging opinions were expressed regarding the reform.

For example, in 2020, online source *Meduza* published the following alternative estimates based on the data from the *World Inequality Database* (WID)[7]: in 2018, the higher PIT rate would have applied to about 570 thousand rich and super-rich taxpayers while the average annual income of the 0.5% of the super rich tax residents was slightly less than 16.5 million roubles[8]. Further calculations made by *Meduza's* analysts resulted in the figure of 131 million roubles of extra tax revenue, which is 2.2 times higher than the corresponding government's estimates of 60 billion roubles for 2021[9].

Such a large disparity in estimates raises the question as to how reliable are the measurements made on the basis of the WID data and the estimation procedure used by *Meduza's* experts.

The WID database, created in 2011, aims to provide open access to the statistics on income distribution across the globe. It relies on the combined effort of over 100 researchers from 70 countries. The WID is maintained and expanded by the World Inequality Lab (WIL), which comprises 20 researchers and is funded by public and non-profit organizations such as the European Research Council, Economic and Social Research Council, Department for International Development of the United Kingdom, United Nations Development Programme, the University of California, Berkeley, Ford Foundation and Alfred P. Sloan Foundation as well as other universities, research centres and statistical agencies. In light of the above-described considerations, the WID data may be deemed worthy of trust, which is important since the official Rosstat data on income diverge significantly from the WID data and seem to be at odds with the real-life situation in the country. This circumstance to a great extent explains the manifold difference in the estimates of the Russian government and *Meduza* experts.

In 2020, one more attempt was made to evaluate the effect of the reform by the Center for Macroeconomic Research of the Financial University under the Government of the Russian Federation [36]. The study used the WID data to analyze the average income of the top decile group and its percentage breakdown. The calculated share of top earners in Russia or those with income above 5 million roubles was 0.8% of the workforce (601.8 thousand people) while, according to *Meduza*, this figure is 0.5% (or 570 thousand people). The average annual income of the super-rich was estimated as 18.8 million roubles – according to *Meduza*, it is less than 16.5 million [36]. The study used the data for 2015. Taking into account inflation, which in 2015–2020 was at least 15–20%, the effect from the transition to the progressive scale should reach 200–216 billion roubles in 2021, which is approximately 3.5 higher than the government's estimates for the same year. Thus, another attempt to estimate the expected revenue yield has resulted in an even greater discrepancy with official figures.

Another study conducted in 2021 aimed to measure the effect of the reform by using the statistics of the WID database for 2015 and 2019 [37]. The study found that in 2019, the share of wealthy taxpayers subject to progressive rates was 0.9%. Not surprisingly, the estimated extra tax

[5] https://www.rbc.ru/economics/24/06/2020/5ef226b29a794766cc4d2343

[6] https://tass.ru/ekonomika/10375027

[7] https://wid.world/data/

[8] https://meduza.io/feature/2020/06/24/dlya-lyudey-godovye-dohody-kotoryh-bolshe-5-millionov-rubley-podohodnyy-nalog-povysyat-s-13-do-15-takih-lyudey-mnogo-bolnym-detyam-ih-deneg-hvatit

[9] https://meduza.io/feature/2020/06/24/dlya-lyudey-godovye-dohody-kotoryh-bolshe-5-millionov-rubley-podohodnyy-nalog-povysyat-s-13-do-15-takih-lyudey-mnogo-bolnym-detyam-ih-deneg-hvatit

revenue calculated by using the more recent data of 2019 grew and reached 181 billion roubles. When adjusted for economic growth and inflation, this figure gives an estimate of 200 billion roubles of extra revenue in 2021 [37]. This is about 3.3 times higher than the government's estimates and agrees with the previous calculations in [36]. In addition to the quantitative evaluation of the extra tax revenue, the study also measured its redistributive potential [37]. To this end, the notions of *global* and *local* fiscal efficiency were introduced. It was shown that the PIT reform in Russia does not display global fiscal efficiency but has local efficiency. This approach would be further adjusted to test the possibilities of reallocation of the extra PIT revenue from health to high-tech industries.

3.2. Algorithm for the evaluation of the effects of the tax reform and calculation results

Before we consider the redistributive potential of the PIT, it is necessary to evaluate the amount of extra revenue that could be generated through the ongoing or proposed reform. To this end, we are going to consider two scenarios of the reform – the current system and the project proposed by the LDPR. Table 1 provides an overview of these scenarios.

Table 1

Fiscal parameters of the two reform scenarios in Russia

Reform scenario	Taxpayer's income (*D*), mln rbs	Tax rate (*q*), %
Current system	$D \le 5$	13
	$D > 5$	15
LDPR's project	$D \le 5$	13
	$10 \ge D > 5$	15
	$100 \ge D > 10$	25
	$D > 100$	35

It is evident that the reform proposed by the LDPR will result in a more elaborate and sophisticated but at the same time quite balanced system. According to this project, the category of wealthy taxpayers should be broken into three income subgroups, which makes perfect sense. In this case, the two-tiered scale is turned into a four-tiered one and thus it to a certain extent starts to resemble modern fiscal systems of developed countries. In view of the above, we are going to consider the LDPR's project as a minimal regulatory reserve in the formation of revenue based on the progressive PIT scale.

To compare the two scenarios of the reform, we are going to calculate income groups. The WID statistics show that only 1% of the population, which is the highest-income group, has per capita income exceeding the threshold (D^* = 5 mln roubles). Within this group, the income of 9 out of 10 subgroups is above the threshold ($D > D^*$) and there is high inequality in the distribution of income across the subgroups.

It can be said that the identification of the highest-income group (1% of the wealthiest taxpayers) in the nine abovementioned subgroups is the *zero step* of the algorithm for creating the data set for further calculations. Then, the *first step* will be to evaluate the extra base of the personal income tax according to the formula: $\Delta D = D - D^*$. It is this value that is taxed at the additional rate of 2% (Δq = 2%), which results in the following value of the extra per capita PIT in the *second step* of our computations: (ΔQ): $\Delta Q = (D - D^*) \cdot \Delta q$. In the *third step*, we are going to move from the share of extra tax receipts to the total amount of tax, taking into account the size of taxpayer subgroups: $\Delta W = (D - D^*) \cdot L \cdot \Delta q$, where L is the size of the corresponding subgroup of taxpayers. If we introduce the index of the *ith* subgroup of taxpayers, then the *fourth step* will be to add up the extra tax revenue from all subgroups and measure the general effect of the reform (ΔT): $\Delta T = \sum_i \Delta W_i$. It should be noted that we need to add up 9 subgroups of the top 1% of high-income earners.

The results of the calculations made for the first scenario are shown in Table 2.

Similar but slightly lengthier calculations can be made for the second scenario (see Table 3).

Comparison of the computation results from Tables 2 and 3 lead us to the following conclusions.

Table 2

Income- and tax-related parameters of the current PIT system in Russia, 2019 (in current prices and at the exchange rate of 2019)

High-income groups,%	Average annual per capita income before tax (*D*), mln rbs	Number of taxpayers (*L*), ths people	Extra tax base (Δ*D*), bln rbs	Extra per capita PIT revenue (Δ*Q*), ths rbs	Extra PIT collected from the whole group (Δ*W*), mln rbs
99.1–99.2	5.4	75.4	0.4	7.6	576.7
99.2–99.3	6.0	75.4	1.0	20.9	1,574.3
99.3–99.4	7.0	75.4	2.0	40.3	3,039.0
99.4–99.5	8.4	75.4	3.4	68.0	5,126.9
99.5–99.6	10.3	75.4	5.3	106.1	7,999.6
99.6–99.7	12.9	75.4	7.9	157.0	11,839.0
99.7–99.8	16.1	75.4	11.1	222.5	16,778.3
99.8–99.9	20.9	75.4	15.9	318.9	24,043.4
99.9–100.0	82.5	75.4	77.5	1,549.5	116,825.4
Extra PIT revenue from the highest-income taxpayers (Δ*T*), bln rbs					187,225.9

Source: compiled and calculated by using the WID data.

Table 3

Income- and tax-related parameters of the LDPR's project in Russia, 2019 (in current prices and at the exchange rate of 2019)

High-income groups,%	Average annual per capita income before tax (*D*), mln rbs	Number of taxpayers (*L*), ths people	Extra tax base (Δ*D*), bln rbs	Extra per capita PIT(Δ*Q*), ths rbs	Extra PIT collected from the whole group (Δ*W*), mln rbs
99.1–99.2	5.4	75.4	0.4	7.6	576.7
99.2–99.3	6.0	75.4	1.0	20.9	1,574.3
99.3–99.4	7.0	75.4	2.0	40.3	3,039.0
99.4–99.5	8.4	75.4	3.4	68.0	5,126.9
99.5–99.6	10.3	75.4	5.0 + 0.3	136.6	10,298.4
99.6–99.7	12.9	75.4	5.0 + 2.9	442.1	33,335.1
99.7–99.8	16.1	75.4	5.0 + 6.1	835.2	62,971.0
99.8–99.9	20.9	75.4	5.0 + 10.9	1,413.3	106,561.7
99.90–99.91	27.1	7.5	5.0 + 17.1	2,156.1	16,256.9
99.91–99.92	30.0	7.5	5.0 + 20.0	2,502.9	18,871.2
99.92–99.93	34.0	7.5	5.0 + 24.0	2,974.9	22,430.4
99.93–99.94	39.2	7.5	5.0 + 29.2	3,601.3	27,152.9
99.94–99.95	45.9	7.5	5.0 + 35.9	4,413.9	33,279.9
99.95–99.96	54.5	7.5	5.0 + 44.5	5,438.0	41,001.4
99.96–99.97	64.9	7.5	5.0 + 54.9	6,682.1	50,381.3
99.97–99.98	77.2	7.5	5.0 + 67.2	8,159.2	61,518.7
99.98–99.99	98.3	7.5	5.0 + 88.3	10,701.4	80,686.7
99.990–99.991	134.2	0.8	5.0 + 90.0 + 34.2	18,423.2	13,890.7
99.991–99.992	152.2	0.8	5.0 + 90.0 + 52.2	22,390.2	16,881.8
99.992–99.993	176.7	0.8	5.0 + 90.0 + 76.7	27,767.6	20,936.2
99.993–99.994	208.0	0.8	5.0 + 90.0 + 108.0	34,658.5	26,131.8
99.994–99.995	246.4	0.8	5.0 + 90.0 + 146.4	43,118.7	32,510.6
99.995–99.996	290.8	0.8	5.0 + 90.0 + 190.8	52,878.8	39,869.5
99.996–99.997	335.8	0.8	5.0 + 90.0 + 235.8	62,774.4	47,330.6
99.997–99.998	376.0	0.8	5.0 + 90.0 + 276.0	71,627.3	54,005.5
99.998–99.999	464.3	0.8	5.0 + 90.0 + 364.3	91,050.2	68,649.9
99.999–100.00	1,151.9	0.8	5.0 + 90.0 + 1,051.9	242,326.5	182,709.1
Extra PIT revenue from the highest-income taxpayers (Δ*T*), bln rbs					1,077,978.1

Source: compiled and calculated by using the WID data.

First, a more careful analysis of income based on the more recent data of 2019 confirms the previous evidence of the extra revenue generated by the reform – 187.2 billion against 181.1 billion roubles [37]. This figure is still 3 times higher than the government's estimates for 2021.

Second, the thorough analysis of the distribution of rich taxpayers by income even with quite modest tax rates reveals the considerable potential of this tax. A more rigorous control over the income of 0.1% of taxpayers – the super-rich – will help the government raise extra revenue from 187.2 billion to 1.1 trillion roubles, that is, a 5.8 times increase in tax receipts. These figures speak for themselves: even though the group of the super-rich in the country is very small, taxing them will bring a massive extra revenue to the state budget.

The previous conclusion sheds some light on the reason why a quite moderate and balanced bill of the LDPR met resistance and was eventually declined by the State Duma – this scenario of the reform would have meant extracting really large amounts of money from the wealthiest and the most influential people in the country.

4. Results

The above-described calculations shed some light on the effects of the tax reform and will be used to test our hypothesis regarding its redistributive potential. Before drawing more concrete conclusions, however, we need to perform a series of additional calculations described below.

4.1. Global and local efficiency of the tax reform: concepts and estimations

In our discussion of the effects of the tax reform, we are going to rely on the terms introduced in [37]. Let us assume that the ongoing reform possesses the quality of *global fiscal efficiency* if the amount of extra tax revenue is above 1% of GDP; otherwise, the reform does not display this quality.

This obviously is a tentative classification but it shows the scale of the economic phenomenon in question. In our case GDP in 2019 was 110.0 trillion roubles. If the absolute value ΔT is supplemented with the estimation of its relative value (b) in comparison with national GDP (Y) ($b = \Delta T/Y$), then we will obtain the parameters shown in Table 4.

Table 4

Parameters of GDP of Russia and extra tax revenue (in prices of 2019)

Scenario	GDP (Y), trillion rbs	Extra revenue from the PIT (ΔT), bln rbs	Share of extra revenue from the PIT in percentage of GDP (b), %
Current system	110.0	187.2	0.17
LDPR's project	110.0	1,078.0	0.98

Source: compiled and calculated by using the WID and Rosstat data.

This research outcome is particularly worthy of interest. The new PIT system does not have global fiscal efficiency while the system described in the LDPR's project does (with accuracy to one decimal place). Therefore, the PIT system holds a considerable macro-economic potential and if a more elaborate progressive scale is built, this tax could become a significant instrument of state regulation.

Apart from the fiscal function, the PIT performs a social role – it reduces inequality, especially income inequality. To estimate income inequality, we are going to use the coefficient of funds (K) – the ratio of the average income of the top decile group (10^{th}) to that of the bottom decile group (1^{st}). In our case this coefficient K alone is enough since the fiscal measures involved in the reform in both scenarios cover only a part of the top (10th) decile. If the reform continues on a larger scale and encompasses different decile groups, the Gini index can be used for this purpose.

Following the above-described line of analysis, we are going to refer to one more concept from [37]. We will assume that the reform displays *global social efficiency* if, after its realization, the coefficient of funds changes by more than 25% in comparison with its original value; otherwise, the reform's social effect will be deemed insignificant.

The coefficient of funds before and after the introduction of the progressive PIT can be calculated by using the data from Tables 2 and 3 (see Table 5).

Table 5

Coefficient of funds (*K*) in Russia (in prices of 2019)

Scenario	Before the introduction of the progressive PIT system	After the introduction of the progressive PIT system
Current system	155.0	154.0
LDPR's project	155.0	149.0

Source: compiled and calculated by using the data from Tables 2 and 3.

As Table 5 shows, for both scenarios, the progressive PIT scale is incapable of substantially reducing the coefficient of funds. Even if, in measuring the global social efficiency of the PIT, we lower the threshold level from 25% to 10%, the tax will still show no sign of this quality, which once again proves that progressive income taxation has an almost negligible impact on income redistribution.

This holds true for the analysis of the national economic system, although there is one more key aspect to the reform – its local effects. Importantly, the extra revenue generated by the reform is at the moment earmarked for social purposes, more specifically, for health care. This purpose, however, may be changed, at least partially. For example, we can consider the prospect of redirecting the extra tax revenue to finance the advancement of high-tech industries in Russia. Then, as in [37], we may draw the following heuristic conclusion: the PIT reform may be described as having *local economic* (and at the same time *fiscal) efficiency* if the extra revenue can be used to increase manifold (more than twice) the state funding targeted at catalyzing the transformations in specific sectors of the national economy.

Therefore, speaking of the reform's local economic efficiency, we may indicate whether it will be able to drive the development of the high-tech sector through the redistribution of funds in favour of certain industries or not.

In the following sections we are going to address the question as to what extent it is possible to tax the income of the super-rich more in order to gain resources for financing the technological leap of the country's high-tech industries.

4.2 Innovation and technological programs in Russia and the redistributive potential of the PIT

The Russian economy is currently lagging behind the economies of developed countries. Among the measures taken by the Russian government to tackle this situation, there are special state programs targeted specifically at economic modernization. Table 6 provides an overview of these programs.

To estimate the investment potential of the extra tax revenue, let us consider the second scenario based on the LDPR's project. This scenario brings to light the opportunities inherent in this fiscal instrument. Moreover, if the government proceeds with the PIT reform, the tax revenue will show an even more impressive growth. Table 6 illustrates that in 2019 the government spent 2.06 trillion roubles on programs aimed at catalyzing technological modernization of the national economy. The extra revenue generated through the PIT reform is 1.08 trillion, which means that even a comparatively modest reform in Russia can generate a revenue that could cover at least half of the spending plan on modernization efforts. This fact supports our previous conclusion about the global fiscal efficiency of the PIT and its potential, which becomes even more obvious in the light of the reduction or abolition of corporate taxes to support high-tech manufacturers. Since it is no longer possible to raise tax revenue by increasing the rates of the VAT and corporate income tax or import and export duties, the policy-makers inevitably turn their attention to the PIT.

Let us now consider the local economic efficiency of the PIT in more detail. In fact, it is enough to compare the extra revenue from the PIT reform in the second scenario with the amount of state funds for the program 'Development of the

Aviation Industry'. The tax revenue exceeds 1.5 times the total amount of funding meant for this program and 18.0 times, its annual amount. The corresponding figures for similar programs regarding the pharmaceutical and medical industry are 8.1 times and 96.2 times (Table 6). Thus, the extra tax revenue is a sign of local economic efficiency. The PIT has now gained sufficient redistributive potential to act as a driver behind the investment into the high-tech sector of the national economy.

4.3. The role of the PIT in funding the development of the electronics industry in Russia

The above-described calculations may create an illusion that the progressive PIT scale alone can solve the problem of the lag in Russia's technological development. This, however, is not quite the case. This general thesis requires solid evidence to support it. Let us take a closer look at the electronics industry, which is currently one of the weak spots in the national economy. The lack of sufficient quality and quantity of semi-conductors and integrated microcircuits impedes the development of aircraft engineering, automobile construction, aerospace manufacturing and other technologically advanced industries. 90–250 nm process technologies are necessary for the development of the Internet of Things[10]. In other words, the development of the electronics industry based on the recent advances in nanotechnology is considered crucial to ensure the technological modernization of the national economy.

[10] https://news.rambler.ru/other/42808953-velichie-rossiyskoy-elektronnoy-promyshlennosti-poka-suschestvuet-tolko-v-nesbytochnyh-proektah/

Table 6

Ongoing state programs within the Policy Direction Framework 'Innovation-Driven Development and Economic Modernization'

№	State programs	Timeline	Amount of funding, mln rbs	
			total	2019
1	Development of Science and Technology in the Russian Federation	2019–2030	10,580,909.6	688,318.1
2	Development of the Military Industrial Complex	2016–2027	125,055.2	5,235.0
3	Development of the Nuclear Power Industry	2012–2027	1,653,248.0	66,219.3
4	Stimulation of Foreign Trade	2013–2030	1,378,773.3	74,168.9
5	Development of Agriculture and Regulation of the Markets of Agricultural Goods, Raw Materials and Food	2018–2025	5,278,263.3	311,557.7
6	Economic Development and Innovation Economy	2013–024	1,762,075.4	145,124.0
7	Development of the Aviation Industry	2013-2025	862,897.0	59,929.6
8	Development of the Pharmaceutical and Medical Industry	2013–2024	132,604.8	11,204.4
9	Information Society	2011–2024	2,042,760.2	216,940.6
10	Reproduction and Use of Natural Resources	2013–2014	654,651.3	50,741.3
11	State Program for Efficient Development of Agricultural Lands and the Land-Improvement Complex of the Russian Federation	2022–2031	754,048.6	51,532.8 (2022)
12	Industrial Development and Creation of Competitive Advantage	2013–2030	3,742,458.6	313,312.2
13	Development of Ship and Equipment Building for Offshore Mining	2013–2030	414,505.0	8,907.9
14	Development of the Fishing Industry	2013–2024	155,901.1	13,842.5
15	Development of the Forestry Sector	2013–2024	423,984.9	39,031.9
TOTAL			**24,683,873.0**	**2,056,066.2**

Present-day electronics deals primarily with design and manufacturing of electronic (including radio-electronic) products and their components (integrated circuits, semiconductor and vacuum devices, optoelectronic and photonic devices; quantum piezotronic devices; passive electronic components; radio-electronic devices and SoCs). Lately, the semiconductor and microelectronics industry has been recovering faster than the global economy, its rates of growth exceeding the average growth rates. In other words, this industry may serve as a barometer of the economy[11].

The key priorities in this area are described by the Strategy of Development of the Electronics Industry of the Russian Federation until 2030, adopted by the Decree of the Russian Government No. 20-p of 17.01.2020. The detailed roadmap, however, is still being drafted. Nevertheless, the general figures are already known: overall, the government is planning to spend 226 billion roubles (≈3,6 billion dollars) until 2024, including 210 billion on state programs and 56 billion, through the so-called 'institutions of development'[12]. In 2019, the total revenue of all enterprises of the radioelectronics industry was 149.8 billion roubles[13]. At present the electronics industry in Russia is fairly underdeveloped and undersized; its revenue has a little impact on national GDP.

By our estimates, in view of the government's planned expenditures on microelectronics, the extra annual revenue from the PIT reform would be enough to finance four such programs. The proposed tax reform will thus make a great difference to the development of the Russian industrial sector by significantly increasing investment into its technological modernization.

It should be mentioned, however, that such optimistic scenario is based entirely on the Russian statistics and does not take into account modern international standards. For the purpose of this article, instead of analyzing the qualitative parameters of the Russian and international chipmaking plants, it would be sufficient simply to look at their general estimated costs. For instance, to build two new chipmaking plants in Arizona (USA), which will be producing latest-generation 5-nanometre chips, the companies *Taiwan Semiconductor Manufacturing Company* (TSMC) and *Intel* are going to spend about 55 billion dollars[14], that is, the cost of one cutting-edge facility is about 27.5 billion dollars. In Japan, the TSMC and *Sony Group* are going to invest about 9.2 billion dollars to build the country's first 20-nanometre chip plant; the construction will take about 1.5–2 years. Moreover, the US government has reached an agreement with the TSMC to build new production lines in Arizona to boost chip manufacturing for the automobile industry and other spheres. The US government is planning to spend 100 billion dollars on R&D and construction of six facilities[15], which means that the average cost of one plant is 10–15 billion dollars.

Thus, construction costs of a microchip manufacturing facility may vary from 9 to 27 billion dollars depending on the type and level of technology they are harnessing. Taking the average exchange rate of the rouble to US dollar as 1 USD = 64 roubles as of 2019, the extra PIT revenue can be estimated as 16.8 billion dollars. This is a large sum of money even by international standards and can cover the costs of building one cutting-edge microchip manufacturing plant and one older-generation plant and thus boost the performance of this high-tech industry.

It should be noted, however, that here we do not take into account various technical problems that may arise in the process of construction as well as the need for some extra assistance on the part of the government to the electronics industry. For example, in China, zero-percent

[11] https://russianelectronics.ru/mikroelektronika-2020-1/

[12] http://government.ru/news/39266/

[13] http://elcomdesign.ru/wp-content/uploads/2021/01/06.pdf

[14] https://russianelectronics.ru/poluprovodnikovaya-promyshlennost/

[15] https://trends.rbc.ru/trends/industry/60ed32189a7947381fb9771e

export duties are applied for semiconductor manufacturers while imported microelectronics products are taxed at 30%; in South Korea, 0% import duties apply to microelectronic components; and Taiwanese producers of microelectronics pay no income tax[16].

As we discussed above, if the second scenario is implemented, the PIT reform will provide the Russian government with approximately 16.8 billion dollars of extra revenue every year. In 5 years, these funds will be enough to cover the full technical re-equipment and modernization of the microelectronics industry to help it make a tremendous technological leap.

4.4. Personal income tax as a driver for the development of geothermal power industry in Russia

For the Russian economy, modernization means that the country will catch up with the global trends, in particular the transition to renewable energy sources. Resource depletion, climate change, environmental degradation and, as a consequence, the transition to the so-called circular economy (closed-loop economy) are the main factors contributing to the search for new energy sources. According to the UN, by 2040 there will be a rise in the primary energy demand by 37% worldwide and the key energy sources will be solar (18%), water (30%) and wind (34%) energy[17]. Despite the dominance of these renewable energy sources, there are other viable alternatives such as geothermal energy based on the heat derived within the sub-surface of the earth and converted into electricity for human use.

The United States leads the world in terms of installed geothermal capacity, accounting for about a fourth of all the geothermal energy generated in the world. In the Philippines, 27% of the country's power comes from geothermal plants. This sector is well developed in Indonesia, Mexico, Italy, New Zealand, Iceland and Japan. A number of European countries, such as the UK, Belgium, Croatia and Germany, are planning to expand their share on this market. For example, Germany can already boast 37 operating geothermal plants[18].

Geothermal energy has enormous potential and a number of advantages. According to the 2020 forecast of *Rystan Energy*, in the nearest 5 years, there will be a 1.5 times increase in the geothermal power production capacity across the globe: from 16 GW in 2020 to 24 GW in 2025. The number of geothermal wells drilled annually will rise from 223 to 380[19]. In the long-term it is predicted that geothermal energy will account for up to one sixth of global energy production[20].

The key advantages of geothermal energy compared to other renewables are as follows: its *predictability* and *reliability* as it does not depend on weather conditions or the time of day; *compactness* as a geothermal power station with the capacity of 400 GWh/year occupies the area of only 400 sq.m. while a wind farm of a similar capacity, needs the area of 1,340 sq.m. and a solar power station, 3.240 sq.m. (this aspect is crucial for remote territories or limited area sites); and, finally, the *high coefficient of utilization of total installed capacity* (up to 80% or more)[21]. One of the drawbacks of geothermal power plants is the high costs of their construction in comparison with wind and solar power plants – about $2,800/kW against $1,600 and $1,800/kW respectively[22]. However, some companies have already come up with clever solutions to this problem. For example, there is an extremely cost-competitive geothermal system *Eavor-Loop* developed by the Canadian start-up com-

[16] http://government.ru/news/39266/

[17] An OECD Horizon Scan of Megatrends and Technology Trends in the Context of Future Research Policy. URL: https://ufm.dk/en/publications/2016/files/an-oecd-horizon-scan-of-megatrends-and-technology-trends-in-the-context-of-future-research-policy.pdf

[18] https://renen.ru/geotermalnaya-energetika-vyrastet-na-50-do-2025-goda/

[19] https://renen.ru/geotermalnaya-energetika-vyrastet-na-50-do-2025-goda/

[20] https://renen.ru/geothermal-energy-advantages-and-prospects/

[21] https://habr.com/ru/company/toshibarus/blog/442632/

[22] https://habr.com/ru/company/toshibarus/blog/442632/

pany *Eavor*: this system can be used to organize the geothermal production of electricity on an industrial scale while cutting the construction costs to the level of solar power stations[23].

In Russia, geothermal energy is still a largely underused source, which can be explained by the country's heavy reliance on traditional sources of energy[24]. However, as there is a growing momentum for utilizing geothermal resources, the Russian government is showing increasing interest in such projects. The Energy Strategy of the Russian Federation until 2035 was adopted by the Decree of the Russian Government No. 1523-p of 09.06.2020. Among other things, the Strategy sets the goal of increasing the share of renewables in the global and national energy balance. The Decree of the Government of the Russian Federation of 08.01.2009, specifying the key goals for the development of alternative energy sources until 2024, is still in force. If these plans are realized, by 2035 the country's facilities will be able to create sources of renewable energy with the capacity of 6.7 GW[25].

The most promising regions in this respect are the Far Eastern, Siberian, and North-Caucasian federal districts, which are abundant in geothermal energy resources lying close to the earth's surface. In Kamchatka, the authorities claim that the region's geothermal potential will be sufficient to enable its full transition to renewable energy by 2030. Plans for the transition to renewable energy are described in the 'Strategy for the Development of the Energy Sector in Kamchatka Krai until 2025 with an Outlook for 2040'. This Strategy, among other things, includes plans for supplying heat to the cities of Petropavlovsk-Kamchatsky, Yelizovo and Vilyuchinsk from Mutnovsky, Bolshe-Banny and Verkhne-Paratunsky geothermal sources. As a result, electricity and tariffs could be lowered to the average national level, which means that the regions will become less dependent on the federal transfers[26].

One of the projects to be realized as part of the general strategy of geothermal energy development in Russia is the construction of the geothermal power plant 'Okeanskaya-2' on Iturup Island (South Kurils, Sakhalin), which will derive energy from Baransky Volcano. The cost of the geothermal power plant 'Okeanskaya-2' will be 2 billion roubles. Initially, it will have a generation capacity of 5 MW, which could be further increased to 15 MW. When this power plant becomes operational, it will provide energy for inhabitants of Iturup and local industrial facilities and thus make this territory less dependent on the diesel fuel supplied to local diesel power stations, which, in its turn, will save 25 tons of diesel fuel daily[27].

Using the above-mentioned figures as a point of departure, we can conclude that the extra annual revenue from the PIT amounting to 1.1 trillion roubles can be used to build about 500 geothermal power plants with the total capacity of at least 2.5 thousand MW (it can be further increased to 7.5 thousand MW). Thus, it will be possible to save about 4.6 million tons of diesel fuel every year. To put this in context, the installed capacity of the Central Power Generation System of Kamchatka Krai in 2018 was 483.2 MW[28]. Thus, even by the most modest estimates, the PIT reform will generate enough funds to provide electricity for 5 nominal regions such as Kamchatka Krai by building geothermal power plants. These figures speak for themselves, demonstrating the massive potential of the Russian income tax reforms.

5. Discussion

Unfortunately, there is a perceived lack of reliable income data in Russia as the official statistics are not trustworthy enough. On the one hand, there are the

[23] https://hightech.plus/2021/02/18/geotermalnaya-elektrostanciya-daet-energiyu-po-cene-5-centov-za-kvtch

[24] https://ekoenergia.ru/o-probleme/vozobnovlyaemyie-istochniki-energii-v-rossii.html

[25] https://minenergo.gov.ru/node/489

[26] https://www.eprussia.ru/teploenergetika/36/8938411.htm

[27] https://www.interfax.ru/russia/763071

[28] https://rcree.kamgov.ru/images/Docs/sipr-2019-2023.pdf

official statistics provided by Rosstat, which vastly underestimate the real levels of personal income. On the other hand, there are the WID data, which appear to be more reliable but are not officially confirmed by the Russian authorities.

Therefore, the calculations of the effects of the PIT reform entirely depend on the data set and may produce dramatically different results. For instance, the study using Rosstat data has been quite convincing in showing that the introduction of the progressive PIT scale would neither bring significant tax revenue nor help reduce social inequality, in other words, the reform's positive effect will be negligible [19]. This contradicts the results of the above-cited study based on the WID statistics, which demonstrates that the reform holds a great fiscal potential and will be able to help the country redistribute wealth more efficiently, thus significantly contributing to its economic modernization.

Thus, the findings of the above studies can be considered relevant only on the condition that their input data are accurate, which leads us to the question as to whose data are more trustworthy – Rosstat or the WID. The fundamental differences between these two data sets are easy to see even in the calculations of the coefficient of funds. As was mentioned earlier, there are manifold differences in the estimates of this coefficient depending on the data source [19]. For example, according to Rosstat data, the coefficient of funds in 2019 was 15.6[29] and, according to the WID, it was 155.0 (see Table 5).

In order to determine which source is more reliable, we need to conduct a superficial but quite appropriate examination of these figures on the micro-level, that is, by looking at the wages in specific enterprises. Findings of a journalist investigation have shown that the salary of an engineer working for the state corporation Roskosmos in 2018–2019 was 43–63 thousand roubles a month while the company's CEO earned 2.0–3.7 million roubles a month[30]. The monthly salary of an engineer working for SpaceX at the exchange rate for 26.02.2021 is 585 thousand roubles. The corresponding figure for the *European Space Agency* is 450–720 thousand roubles (on average 585 thousand roubles, like in SpaceX)[31]. CEOs of such companies in the USA and Europe earn about 1.6-1.9 million roubles a month. The above-shown disparity in the salaries points to the disparity which is similar to the disparity between the coefficients of funds (45.3–58.7 in Russia and 2.7–3.2 in the USA and Europe). There is a substantial difference in the levels of income inequality if we compare companies in Russia with their European and American counterparts –16.8 times. Taking into account the fact that the engineers working for space agencies neither belong to the low-level staff nor are poorly paid, it would be quite natural to expect the coefficient of funds to be even higher. Proceeding from this assumption, it can be stated that the WID data are much closer to reality than those of Rosstat. This points indirectly to the fact that the WID income statistics are more accurate in comparison with Rosstat and, therefore, the above-described findings concerning the extra tax revenue can also be considered relevant.

A major finding of this study is that the progressive taxation of the super-rich in Russia can generate resources for investment into the high-tech industries and thus help accelerate their development. Another important result is that our study demonstrates the extremely weak influence of the progressive PIT on income inequality and thus agrees with the results of the previous research [6–8].

Interestingly, the large redistributive capacity of the PIT in Russia is to a great extent determined by the fact that the country still has a way to go in building a progressive PIT system that would meet

[29] https://ac.gov.ru/uploads/2-Publications/rus_feb_2020.pdf

[30] https://zen.yandex.ru/media/fromsiberia/zarplaty-injenera-roskosmosa-i-rabotnika-spacex-sravnim-5fc3e827d57ee92752c29d09

[31] https://www.mk.ru/politics/2019/08/14/zarplaty-sotrudnikov-roskosmosa-porazhayut-voobrazhenie-kosmonavtam-takie-dengi-ne-snilis.html

international standards. This means that this tax has a certain regulatory reserve. The redistributive potential of the system is likely to decrease in the course of its implementation.

The second factor that would contribute to the vast impact of the PIT reform is the new managerial approach associated with tax receipts being earmarked for specific purposes. This would make the money spending process more transparent, preventing the funds from being misappropriated or improperly spent or from being spread too thin across multiple spheres. The practice of earmarking enables the government to set or revise its expenditure priorities: for example, while currently the PIT revenues are earmarked for social purposes, they may be redirected for technological development in specific industries, which, in its turn, will bring radical transformations to the technological landscape of the Russian economy.

6. Conclusion

Our results have confirmed the initial hypothesis that the transition from the flat to progressive PIT scale in Russia will generate extra revenue, which will be enough to finance the advancement of the country's high-tech industries. The extra tax revenue may be invested into microelectronics and geothermal electricity production and thus enhance the overall performance of the country's manufacturing sector and stimulate land development.

Thus, the long-overdue reform of personal income taxation will not only have a high degree of global fiscal efficiency but will also display local economic efficiency. Even a small group of super-rich taxpayers can generate a significant increase in the PIT revenue. It should be noted that, as our calculations have shown, the current 'toothless' progressive two-tiered scale has no global fiscal efficiency and is unable to contribute to economic modernization. If two more tiers are added to the PIT system, which will cover only 0.5% of taxpayers, this measure will generate extra revenue of 187 billion to 1.1 trillion roubles. This way the reform will gain not only global fiscal efficiency but also local economic efficiency, that is, the redistributive capacity of the tax will be substantially improved. Therefore, it is recommended that the transformations of the tax system should go beyond the already established primitive scheme.

All of the above has a great political significance since the government's expectations from the PIT reform are approximately 3 times below the experts' estimations. This means that the authorities do not see the potential of this fiscal instrument. Not only can this mistake constrain the progress of the reform but it can also negatively affect the development of high-tech sectors.

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