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The Impact of Indirect Taxation on Inequality in Russia

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ABSTRACT

The purpose of this study is to consider the effects of indirect taxes, VAT in particular, on inequality. The study tests the hypothesis that indirect taxation in Russia does not have a significant impact on inequality but has a potential to reduce it. Methodologically, the study relies on correlation regression analysis, time series analysis, structural analysis and the index method. The data used for the analysis are provided by the Federal State Statistics Service (Rosstat) and Federal Tax Service for the period from 1992 to 2021. Calculations were conducted with the help of Data Analysis ToolPak in MS Excel. A classification of the types of economic inequality is proposed together with the corresponding fiscal instruments used to tackle each type. Indirect taxes are considered to be capable of reducing consumption inequality. To evaluate the influence of indirect taxation on inequality, the following parameters were considered: VAT-to-GDP ratio and the share of VAT in total tax revenues of the consolidated budget, share of revenue raised through 10% VAT in the total volume of VAT, and the decile ratio of consumption spending. It was found that indirect taxes in Russia do not have a significant impact on inequality. Although in some years VAT receipts accounted for a larger share in total tax revenues and in GDP and this trend was accompanied by lower levels of inequality, this happened because of the influence of other factors, for example, the use of the progressive scale of the personal income tax in the 1990s. To reduce inequality, a viable solution for the government would be to apply a system of differentiated VAT rates to balance disparities in consumption of the wealthiest and poorest households (these differences are reflected in Rosstat data on consumption). Moreover, since utilities, telecommunications and food constitute up to 70% of the poor's expenditures, it would make sense to lower the VAT rate for these categories of goods and services while raising the rate for such categories as hospitality services, cafes and restaurants, recreation and leisure services because in total, these categories account for 13.2% of the expenditures of the wealthiest households. Unfortunately, in 2022, the government took the decision to apply zero-rated VAT to these services as part of the anti-crisis program.

KEYWORDS

indirect taxes, VAT, inequality, monetary inequality, differentiation, stratification, equalization

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Оценка влияния косвенного налогообложения на неравенство граждан в России

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АННОТАЦИЯ

Цель исследования – определение возможностей сглаживания неравенства граждан с помощью косвенного налогообложения на основе оценки их взаимосвязи. Гипотеза исследования: косвенное налогообложение в России не

оказывает существенного влияния на неравенство граждан, но обладает потенциалом его сглаживания. В рамках проверки гипотезы применен корреляционно-регрессионный анализ, анализ рядов динамики, структурный анализ и индексный метод. Расчеты проведены с использованием пакета «Анализ данных» в MS Excel за период с 1992 по 2021 г. на основе данных Росстата и Федеральной налоговой службы. В рамках разработанной классификации экономического неравенства граждан обосновано, что именно косвенные налоги направлены на сглаживание неравенства потребления. Для оценки влияния косвенного налогообложения на неравенство проведен расчет доли НДС в ВВП и совокупных налоговых доходах консолидированного бюджета РФ, доли облагаемых НДС товаров по ставке 10% в общем объеме НДС, а также децильного коэффициента фондов по расходам на потребление. Установлено, что косвенные налоги в России не оказывают существенного влияния на сглаживание неравенства, а более высокий удельный вес НДС в сумме налоговых доходов и ВВП в отдельные годы при более низких показателях неравенства в это время является следствием иных факторов, например, прогрессивной шкалы подоходного налога в 1990-е гг. Для сглаживания неравенства целесообразна дифференциация ставок НДС с учетом структуры потребления наиболее и наименее обеспеченных граждан, которая определена на основе данных Росстата о неравенстве потребления в России. Кроме того, сглаживанию неравенства поспособствовало бы снижение ставки НДС по жилищно-коммунальным услугам и связи, которые наряду с питанием составляют до 70% расходов бедных граждан, и повышение НДС по гостиницам, кафе, ресторанам и отдыху (в совокупности 13,2% расходов наиболее обеспеченных граждан), по которым в рамках антикризисной программы 2022 г. введена ставка НДС 0%.

КЛЮЧЕВЫЕ СЛОВА

косвенные налоги, налог на добавленную стоимость, неравенство, монетарное неравенство, дифференциация, расслоение, сглаживание

1. Introduction

In many countries inequality is seen as a major threat to the economic security of the state. Inequality reduction was included by the United Nations as one of the goals into its 2030 Agenda for Sustainable Development¹. According to the World Economic Forum², inequality in the wealthiest countries has now reached its highest level in the last fifty years. In Russia, inequality has remained consistently high in the last 30 years, that is, since the beginning of the market reforms.

Given the rise of the consumer economy, the gross divide between the rich and the poor manifested most starkly in consumption inequality. It also makes consumption taxes, such as VAT and excise duties, a potentially suitable tool for tackling the inequality problem.

The questions this study seeks to address are as follows. How can different

fiscal tools be used to counteract different types of economic inequality? Does VAT affect inequality in Russia? What are the differences in the final consumption patterns of the highest- and lowest-income households in Russia? How can these differences be taken into account by policy-makers to develop measures and policies that could keep inequality in check? How can indirect taxes be used to curb inequality?

The purpose of this study is to consider the potential of indirect taxes as tools to reduce inequality by evaluating the relationship between VAT and inequality in Russia.

The hypothesis is that indirect taxation in Russia does not have a significant impact on inequality but has a potential to reduce it.

The paper is structured as follows. The section “Literature Review” surveys the most up-to-date scholarly knowledge on the impact of indirect taxation on inequality in different countries. The section “Methodology and Materials” describes

¹ <https://www.un.org/sustainabledevelopment/ru/sustainable-development-goals/>

² https://www3.weforum.org/docs/WEF_Global_Risk_Report_2020.pdf

the methodological framework and data used in this study. The section "Results" presents the study's key findings. The section "Discussion" compares the results with the evidence provided by prior research and examines the potential of indirect taxes as tools for tackling inequality. The conclusions are drawn in the final section of the article.

2. Literature review

In contemporary financial and economic research, much scholarly attention is focused on the relationship between taxation, including indirect taxation, and inequality.

A seminal work on the topic of inequality was written by Simon Kuznets, a Nobel Prize Laureate in Economics [1]. Kuznets hypothesized that in the era of industrialization, economic growth went hand in hand with increasing inequality; this trend continued until the 1920s, after which inequality started to decline while economic growth continued, accompanied by a rise in real income. To describe this process, he proposed the inverted U-shaped curve called the Kuznets Curve, which related income inequality with economic growth.

Piketty [2] extrapolated this curve with new data to show that if 19th century data are included into analysis, the graph takes a horizontal S shape, rather than an inverted U-shape. Piketty also demonstrated that since the 1970s, the income gap has been widening and the concentration of wealth has been increasing.

Yurevich [3] has empirically shown the negative influence of inequality on economic growth. There are, however, other points of view. For instance, Brückner & Lederman [4] argue that in poor countries inequality has a significant positive effect on gross domestic product per capita.

Stiglitz [5] argues that inequality is a phenomenon that is inherent in a market economy and that once inequality emerges, it keeps reproducing itself. To achieve greater equality, it is necessary to "rewrite the rules" governing the market economy through government regulation and in particular fiscal regulation.

Atkinson [6] believes that in order to reduce inequality, new tools are needed in addition to taxes and state support for the poor. Atkinson identified five main areas of policy to tackle inequality: technology, employment, social security, the sharing of capital, and taxation.

In the spectrum of studies on inequality and taxation, income taxation is one of the key research areas. Alvaredo et al. [7], Piketty et al. [8], Auten & Splinter [9] agree on the ability of direct taxes to curb inequality, although they have some disagreements as to what extent.

Of special interest in this respect are the cases of countries with flat income tax systems, primarily Eastern European and Middle Asian countries, former members of the Socialist bloc. Moździerz [10] has demonstrated a decrease in inequality in Slovakia after the country's government decided to return to the progressive tax. Mihaescu & Voinea [11] and Ilie [12] argue that in Romania the use of proportional taxation has led to an increase in inequality. Tanchev [13] used economic-mathematical modeling to show that proportional income taxation in Bulgaria contributes to inequality. Pugachev [14] argues that the tax system that existed in Russia before 2021 increased monetary inequality while income taxation as part of the tax system exacerbated this situation.

Let us now look at the current state of research on the effects of indirect taxes on inequality.

Martorano et al. [15] studied 14 Latin American countries in the period between 1990 and 2010 and found that an increase in the proportion of direct taxes in comparison with indirect taxes contributes to inequality reduction. Martorano [16] investigated the relationship between fiscal policy and inequality in Latin America in the 1970s and found that an increase in indirect taxes causes an increase in inequality. This happened, for example, in El Salvador and Honduras, where inequality was growing while the general tax burden remained low and indirect taxes prevailed over direct taxes.

Interestingly, earlier studies of Latin American countries, for example, Hanni

et al. [17] and Goñi et al. [18], on the contrary, demonstrated that due to the large share of indirect taxes in the tax system, taxation in general has a modest or regressive impact on income distribution.

Ciminelli et al. [19] found that indirect taxes significantly contributed to the reduction in income inequality in 16 OECD countries (in the period between 1978 and 2012). Indirect tax increase hits poor people the hardest because their marginal propensity to consume is higher.

Ilaboya & Ohomba [20] examined the impact of taxation on inequality in Nigeria in a 30-year period starting from the 1980s and found that a decrease in the share of indirect taxes in total tax revenues contributes to inequality.

Webber & Thomas [21], in their study of the influence of taxes on inequality in the UK in 1977–2014, using the data on the progressivity and the average rate (in proportion of income) of indirect taxes, have shown that in this period, indirect taxes were regressive, which contributed to income inequality.

Similar evidence regarding the correlation between indirect taxation and inequality was obtained by Barnard [22] for the UK; Martinez-Vazquez et al. [23] for a large panel of countries; Cuceu & Văidean [24] for Romania; and Gornia [25] for Latin America.

On the other hand, there are studies that show the absence of any significant influence of indirect taxes on inequality. For example, Blasco et al. [26] argue that indirect taxes have an insignificant influence on inequality. The redistributive effect of indirect taxes varies across countries due to the differences in the average tax rate. They also emphasize that in countries with insignificant influence of indirect taxes on inequality, inequality reduction cannot be used to justify tax cuts.

Muinelo-Gallo & Roca-Sagalés [27] conducted an empirical study of OECD countries, covering the period of 1972–2006, and found that in comparison with direct taxes, indirect taxes are less effective at reducing inequality. They tend to be used more often in poor countries to

minimize the negative influence on economic growth. There is evidence showing the important role of income inequality in the development of budget policy (see, for example, Bénabou [28]).

Hindriks & Myles [29] believe that indirect taxes do not have a significant impact on inequality because the same rates are applied to such categories of goods as essential goods and luxury goods.

Guillaud et al. [30] examined 22 OECD countries between 1999 and 2013 and found an insignificant influence of indirect taxes on inequality in comparison with direct taxes.

Decoster et al. [31] demonstrate that indirect taxes are regressive with respect to disposable income but proportional or progressive with respect to total expenditures. Thus, indirect taxes are less significant for inequality reduction than direct taxes.

Similar conclusions were made by Figari & Paulus [32] for European countries, Savage [33] for Ireland, Bargain et al. [34] for the USA for the period of 1978–2009.

Thus, despite the vast body of research on the influence of indirect taxes on inequality, there is still no consensus on this matter: while some scholars are convinced of the considerable potential that indirect taxes hold to curb inequality, others, on the contrary, believe that this effect is insignificant at best, especially in the light of the regressive nature of indirect taxes and the absence of differentiated rates for different groups of commodities.

As far as Russia is concerned, there is still a perceived lack of scholarly inquiry into the influence of indirect taxes on inequality in this country, which means that more research is necessary to gain insights into the specific aspects of this problem. For instance, it is still unclear what direct vs indirect tax ratio should be in the tax burden structure to ensure an inequality-reducing impact. Another question concerns the impact of differentiated indirect taxes on inequality reduction. All of the above determines the relevance of this study.

3. Methodology and materials

To study the impact of indirect taxation on inequality, first and foremost, it is necessary to clarify our understanding of inequality as contemporary economic science offers no uniform approach to this concept. Economic inequality means the unequal distribution of income (earnings) or wealth in a society.

This study proposes a classification of types of economic inequality (income inequality, wealth inequality or monetary inequality, and consumption inequality) and identifies fiscal tools that can be used to better tackle each specific type (see Table 1).

The proposed classification shows that, in order to tackle the problem of inequality, it is necessary to go beyond personal income taxation and take a broader view of the fiscal tools that could be used for this purpose. Personal income tax (PIT) can help reduce income inequality but some of the wealthiest citizens may not have current earnings but have large amounts of accumulated capital. This means that such tools as property taxes may be needed to deal with inequality of this kind.

This paper tests the hypothesis about the influence of indirect taxes on inequality in Russia on the macro-economic level with the help of correlation regression analysis. The following parameters will be used for this purpose:

(1) Relationship between the Gini coefficient and the share of VAT in total tax revenues of the consolidated budget in a 30-year period – from 1992 to 2021.

(2) VAT-to-GDP ratio in a 27-year period – from 1995 to 2021.

(3) The share of revenue raised through VAT levied at 10% (reduced-rate VAT) in the total volume of VAT in a 12-year period, from 2010 to 2021.

(4) The decile ratio of consumption spending and the share of reduced-rate VAT in the total volume of VAT in a 10-year period, from 2012 to 2021.

The analysis relies on the official statistical data provided by Rosstat and the data of the Federal Tax Service from 1-NDS Report “Report about the Structure of Value Added Tax Charges”. These indicators are listed and described in Table 2.

To evaluate the possible impact of VAT on consumption inequality, we need to conduct a structural analysis of the consumption patterns of the richest and poorest households by using Rosstat statistics by deciles. Our calculations of the structure and dynamics of final consumption expenditures in the first and tenth decile groups in Russia in 2012 and 2021 will help us reveal the consumption disparities for specific categories of goods and services between the lowest- and highest-income households.

The average rate of VAT on aggregate spending of decile groups was calculated by applying the formula of weighted arithmetic mean. The shares of expenditure categories in the total volume of expenditures were taken as weights under the assumption that the general VAT rate (20, 10 or 0%) for each category applies to all expenditures in this category.

Table 1

Classification of the types of economic inequality and corresponding fiscal tools

Types of economic inequality	Description	Fiscal tools to reduce inequality
Income inequality	Disparities in the distribution of current income – wages, pensions, welfare payments, interest payments, rent income, etc.	Personal income taxation
Monetary inequality – inequality by the level of capital accumulated or wealth	Disparities in the distribution of accumulated capital – property, vehicles, financial assets, securities, etc.	Personal income taxation
Consumption inequality	Disparities in consumption	Indirect taxation

Compiled by the author.

Table 2

**Macro-economic indicators reflecting the impact of indirect taxation
on income inequality in Russia**

Indicators	Identifier	Description	Formula	Source of data and the period for which data are available
Gini coefficient	G	Universal measure of income inequality and income distribution. Takes values [0; 1], where 0 expresses perfect equality and 1, perfect inequality.	$G = \frac{\sum_{i=1}^n \sum_{j=1}^n x_i - x_j }{2n^2 \cdot \bar{x}},$ <p>where x is the share of the income of a given household in the total volume of income of all households, n is the number of households</p>	Rosstat ¹ 1992–2021
Share of VAT in total tax revenues of the consolidated budget	d_1	Shows the role of VAT in the generation of tax revenues of the consolidated budget	$d_1 = \frac{VAT}{TR},$ <p>where VAT is VAT receipts and TR stands for tax revenues of the consolidated budget.</p>	Rosstat ² 1992–2021
VAT revenue as a percentage of GDP (tax-to-GDP ratio)	d_2	Measure of the government's revenue from VAT relative to the size of national economy	$d_2 = \frac{VAT}{GDP}$	Rosstat ³ 1995–2021
Share of revenue raised through reduced-rate VAT (10%) in the total volume of VAT	d_3	Shows the share of reduced-rate VAT applied to essentials (10%) in the total volume of VAT. We assume that there is no difference between VAT charged and paid.	$d_3 = \frac{VAT_{charged} 10\%}{VAT_{charged}},$ <p>where $VAT_{charged}$ is the amount of VAT charged, $VAT_{charged} 10\%$ is the amount of VAT charged at the rate of 10%.</p>	Federal Tax Service of the Russian Federation ⁴ 2010–2021
Decile ratio of consumption spending	k_1	Ratio of final consumption expenditures per capita of the richest 10% to that of the poorest 10 %.	$k_1 = \frac{\bar{x}_{10}}{x_1},$ <p>where \bar{x}_{10} is PIT receipts per capita in the 10% of regions with the highest tax revenues, x_1 PIT receipts per capita in the 10% of regions with the lowest tax revenues</p>	Rosstat ⁵ 2012–2021

Note.

¹ <https://www.fedstat.ru/indicator/31165>;

² https://gks.ru/bgd/regl/b06_13/Main.htm, <https://www.fedstat.ru/indicator/42547>;

³ https://gks.ru/bgd/regl/b06_13/Main.htm, <https://www.fedstat.ru/indicator/42547>, <https://www.fedstat.ru/indicator/30946>, <https://www.fedstat.ru/indicator/57319>;

⁴ https://www.nalog.gov.ru/rn77/related_activities/statistics_and_analytics/forms/;

⁵ <https://rosstat.gov.ru/folder/13723>

Compiled by the author.

4. Results

As Figure 1 illustrates, there is a strong inverse correlation between the share of VAT in total tax revenues of the consolidated budget and the Gini coefficient in 1992–2021. The higher is the share of indirect taxes in comparison with direct taxes and property taxes, the lower is income inequality.

An even stronger correlation is found between the VAT-to-GDP ratio and Gini coefficient (see Fig. 2).

Based on these findings, we can suppose that differentiated VAT rates may hold considerable potential to reduce inequality, especially regarding the reduced rate (10%) of VAT applied to specific categories of essentials – food, medications, and children’s goods. However, the evaluation of the relationship between the share of reduced-rate VAT (goods taxed at 10%) in the total volume of VAT and the Gini coefficient in Russia in 2010–2021 has shown a moderate inverse correlation

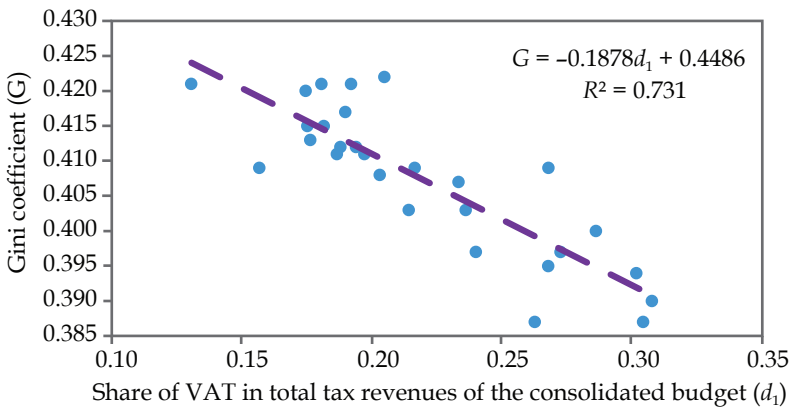


Figure 1. Relationship between the share of VAT in total tax revenues of the consolidated budget and the Gini coefficient in 1992–2021

Note. Here and elsewhere in the figures the indicator values are given in percentages and points are labelled with years

Compiled by the author by using Rosstat data (<https://www.fedstat.ru/indicator/31165>, https://gks.ru/bgd/regl/b06_13/Main.htm, <https://www.fedstat.ru/indicator/42547>)

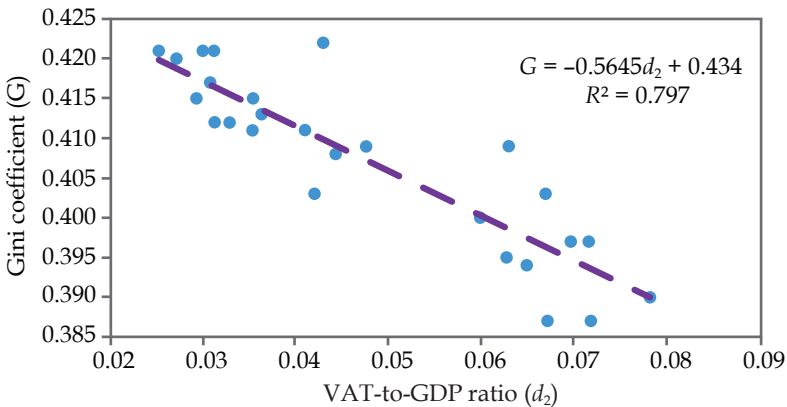


Figure 2. Relationship between the VAT-to-GDP ratio and Gini coefficient in 1995–2021

Compiled by the author by using Rosstat data (<https://www.fedstat.ru/indicator/31165>, https://gks.ru/bgd/regl/b06_13/Main.htm, <https://www.fedstat.ru/indicator/42547>, <https://www.fedstat.ru/indicator/30946>, <https://www.fedstat.ru/indicator/57319>)

($r = -0.613$, $R^2 = 0.3757$) (see Fig. 3), which means that this supposition is false. In our estimation of the share of reduced-rate VAT in the total volume of VAT, we assume that this figure is the same for VAT charged and VAT paid.

Since indirect taxes are mostly aimed at reducing consumption inequality, it makes sense to look at the relationship between the share of reduced-rate VAT (goods taxed at the rate of 10%) in the total volume of VAT and the decile ratio of con-

sumption spending (see Fig. 4). Correlation coefficient $r = -0,1129$ points to a weak inverse correlation, which means that the application of reduced-rate VAT in Russia has virtually no effect on consumption. This might be explained by the fact that the goods taxed at the reduced rate are the basic necessities such as food, medications, and children’s goods. These goods exhibit low price elasticity of demand, which is why VAT is distributed evenly among the consumers – both wealthy and poor.

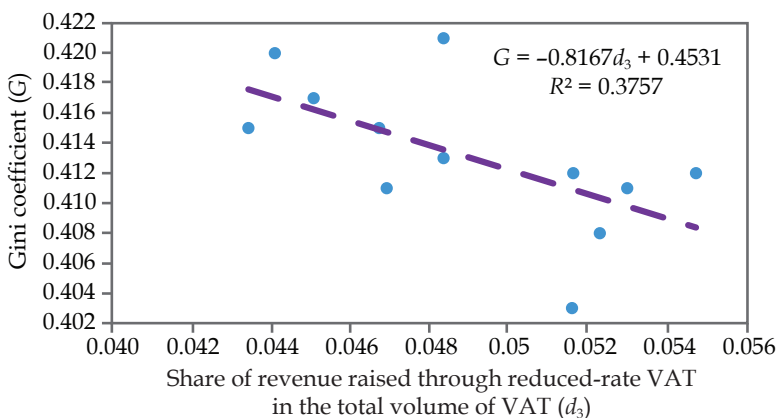


Figure 3. Relationship between the share of revenue raised through reduced-rate VAT in the total volume of VAT and the Gini coefficient in Russia in 2010–2021

Compiled by the author by using the data of Rosstat (<https://www.fedstat.ru/indicator/31165>) and the Federal Tax Service

(https://www.nalog.gov.ru/rn77/related_activities/statistics_and_analytics/forms/)

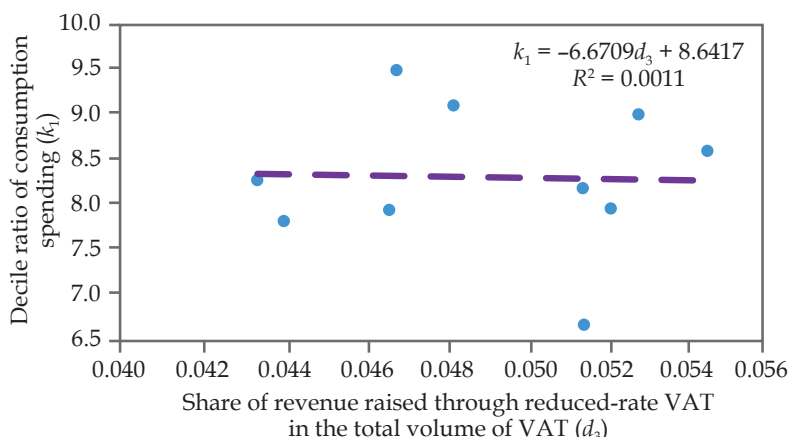


Figure 4. Relationship between the share of revenue raised through reduced-rate VAT in the total volume of VAT and the decile ratio of consumption spending in 2010–2021

Compiled by the author by using the data from Rosstat (<https://rosstat.gov.ru/folder/13723>) and the Federal Tax Service

(https://www.nalog.gov.ru/rn77/related_activities/statistics_and_analytics/forms/)

Table 3 summarizes the results of the correlation regression analysis of the impact of indirect taxes on inequality in Russia reflected in the macro-economic indicators.

Correlation regression analysis has shown a strong inverse correlation between the Gini coefficient and VAT-to-GDP ratio as well as the share of VAT in total tax revenues of the consolidated budget. There is also a weaker correlation between the share of reduced-rate VAT in the total volume of VAT and the inequality indicators – the Gini coefficient and the decile ratio of consumption spending. This means that indirect taxes do not have a significant impact on inequality in Russia while the larger propor-

tion of VAT in total tax revenues and in GDP in some years in combination with lower levels of inequality result from the influence of other factors. If we look at Figures 1 and 2, we can see that the points in the lower right part of the graph mostly correspond to the 1990s, when the progressive PIT scale was in force and the level of inequality was on the rise (Gini coefficient, 0.39-0.40) but had not yet reached its peak (0.41-0.42 in 2000-2020).

If we exclude from the analysis the period when the progressive PIT scale was in force, we will see that the relationship between the share of VAT in total tax revenues of the consolidated budget and the Gini coefficient in 2001-2021 becomes weaker (Fig. 5) (correlation coefficient

Table 3

Results of correlation regression analysis of the impact of indirect taxes on inequality in Russia

Indicator	Factors	Linear regression equation	Correlation coefficient (r)	Coefficient of determination (R ²)	Level of significance (α) in the F-test	Standard error	Strength of correlation on the Chaddock scale
G	d ₁	G = -0.1878d ₁ + 0.4486	-0.855	0.731	0.01	0.0055	Strong
	d ₂	G = -0.5645d ₂ + 0.434	-0.893	0.797	0.01	0.0053	Strong
	d ₃	G = -0.8167d ₃ + 0.4531	-0.613	0.3757	0.01	0.0041	Noticeable
k ₁	d ₃	k ₁ = -6.6709d ₃ + 8.6417	-0.1129	0.0011	0.01	0.8496	Weak

Compiled by the author.

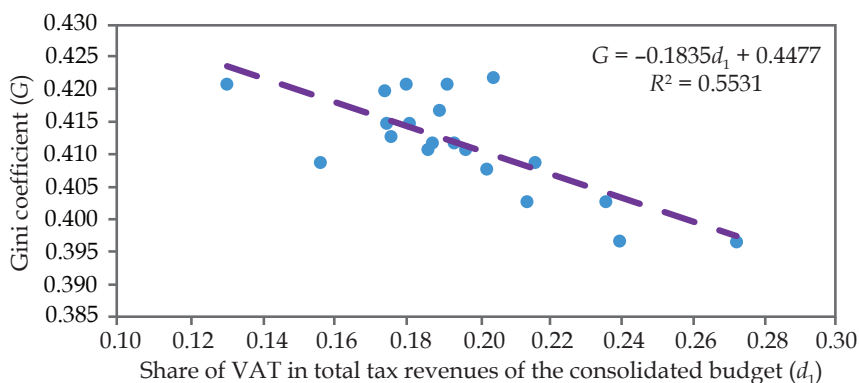


Figure 5. Relationship between the share of VAT in total tax revenues of the consolidated budget and Gini coefficient in 2001-2021

Compiled by the author by using Rosstat data (<https://www.fedstat.ru/indicator/31165>, https://gks.ru/bgd/regl/b06_13/Main.htm, <https://www.fedstat.ru/indicator/42547>)

$r = -0.744$ and determination coefficient $R^2 = 0.553$; in 1992–2021 they were 0.855 and 0.731 respectively).

The exclusion from the analysis of the 1990s, when the progressive PIT was in effect, has decreased the tightness of the relationship between the share of VAT in total tax revenues of the consolidated budget and inequality even though the share of VAT in that period was larger (25–31%). This means that indirect taxes in Russia do not have a significant impact on the income and consumption gaps.

Therefore, in order to reduce inequality, among other things, it is necessary to change the indirect taxation system, taking into account the disparities in consumption. Let us now consider the characteristics of consumption of the wealthiest and poorest households in Russia (see Table 4).

Food makes up the main part of final consumption expenditures of lowest-income earners – 51.3%. For highest-income earners this figure is 19.8%. Most of these goods are taxed at the reduced rate of 10%. The prevalence of expenditures in

this category (goods charged at reduced VAT) leads to a decrease in the tax burden on the lowest-income earners, even though, as we have found earlier, this does not result in a reduction in inequality. This can be explained by the following: first, these are the expenditures that consumers cannot avoid due to their essential character and, second, in absolute values, expenditures in this category remain 3.1 times smaller for the lowest-income earners than for the highest-income earners – 3,561 roubles per month against 10,950 roubles per month per capita.

Transport makes a significant part of the wealthiest citizens' expenditures – 25.8%, which is 4.69 times higher than for the poor. The share of expenditures for the highest-income groups persistently exceeds the share of expenditures for the lowest-income groups in such categories as hotels, cafes and restaurants (7.5 times, 4.5% of expenditures of the 10th decile group) and in recreation and leisure (4.83 times, 8.7% of expenditures of the 10th decile group). To support these sectors, in 2022, the Russian government

Table 4

Structure and dynamics of final consumption expenditures of the first and tenth decile groups in Russia in 2012 and 2021

Expenditure categories	First decile			Tenth decile			Ratio of the tenth decile to the first	
	2012, %	2021, %	Change, in percentage points	2012, %	2021, %	Change, in percentage points	2012, times	2021, times
Groceries	48.0	51.3	3.3	17.1	19.8	2.7	0.36	0.39
Clothing and footwear	8.0	7.7	-0.3	7.8	6.9	-0.9	0.98	0.90
Housing and communal services	15.7	13.5	-2.2	7.8	9.7	0.9	0.50	0.72
Home appliances	2.9	2.9	0	6.6	6.1	-0.5	2.28	2.10
Transport	6.1	5.5	-0.6	35.3	25.8	9.5	5.79	4.69
Telecommunications	4.8	5.6	1.2	2.2	3.5	1.3	0.46	0.63
Health care	2.2	2.9	0.7	3.0	3.5	0.5	1.36	1.21
Education	0.5	1.2	0.7	0.8	0.8	0	1.60	1.14
Recreation and leisure	2.9	1.8	-0.9	6.7	8.7	2.0	2.31	4.83
Hotels, cafes, restaurants	0.8	0.6	-0.2	4.5	4.5	0	5.63	7.50

Compiled by the author by using Rosstat data (<https://rosstat.gov.ru/folder/13723>).

set the rate of VAT to zero for these services. Taking into account the structure of consumption of the wealthiest and poorest households, these anti-crisis measures are likely to widen the inequality gap because the categories where goods and services are zero-rated occupy a significant place in the expenditures structure of the wealthy (13.2%) while remaining quite insignificant for the poor (2.4% or 5.5 times less).

Let us now calculate the average rate of VAT on aggregate spending for the first and tenth decile groups. It should be noted that health care services are zero-rated for VAT. Similarly, since 2022, a zero rate has been set for services of cafes and restaurants as well as for hospitality and tourism services. If we assume that goods from the category "Groceries" are taxed at 10%, goods and services from categories "Health care", "Recreation and leisure", and "Hotels, cafes and restaurants", at 0%, and goods and services from all the other categories, at 20%, then the average rate of VAT on aggregate spending for the first decile group will be 13.81% and for the tenth decile group, 14.68%, that is, it will be by 0.87 percentage points lower. Undoubtedly, the application of the reduced rate for certain categories of essential goods is necessary to lower the tax burden on the poor although this measure is not very helpful in bridging the inequality gap because zero-rated VAT for those goods and services that make up a larger share of rich people's expenditures than those of the poor (leisure, hotels, cafes and restaurants) will inevitably produce the opposite effect and increase inequality.

Differentiated VAT rates could provide a viable solution to the problem of inequality: the VAT rate should be raised for luxury goods as well as for those goods, works and services that are major components of the consumer basket for the wealthiest groups while occupying an insignificant part of the basket of the poorest households. At the same time, reduced VAT rates should be applied to the goods that are considered essential. As Table 4 shows, it would make sense to apply a higher VAT rate to hospitali-

ty services, cafes, restaurants, and transport while at present the services in all of these categories, except for transport, are zero-rated.

To reduce inequality, it would be necessary to lower VAT rate for those items that account for a much larger share of the consumption structure of the first decile group in comparison with the tenth group: groceries, utilities, and telecommunications. Together, these categories will form 70.4% of expenditures of the poorest and only 33% of the wealthiest households.

If we suppose that for cafes and restaurants, for hospitality and leisure services, the VAT rate will be returned to the level of 20% while for utilities and telecommunications, it will be reduced to 10%, similar to reduced-rate VAT charged on essential goods, then, provided that the consumption structure remains the same as in 2021, the average rate of VAT on aggregate spending for the first decile group will be 12.97% (lower by 0.84 percentage points in comparison with the current level) and for the tenth decile group, 16.67% (higher by 1.99% percentage points in comparison with the current level). The difference between average rates will increase from 0.87 to 3.7 percentage points. Thus, the proposed measures can help the government tackle the problem of inequality while avoiding the negative effects on tax revenues collected in the country.

Adjustment of VAT rates should take into account the elasticity of demand and the possibility of tax burden shifts, because for goods, works and services for which the demand is highly elastic (this includes luxury goods, which consumers can quickly choose to stop buying once the price goes up), most of the tax burden resulting from the higher tax rate is borne by the producer or seller. It should also be noted that the marginal propensity to consume in lower-income groups is higher than in the wealthiest groups while the marginal propensity to save is, on the contrary, higher for the wealthy, which is why a rise in consumption taxes will influence primarily the most disadvantaged households.

5. Discussion

The results of the analysis confirmed the hypothesis that indirect taxation in Russia does not have a significant impact on inequality but has a potential to reduce it.

These findings correspond to those of the previous studies on Latin American countries: for example, Hanni et al. [17]; Goñi et al. [18], whose study covered 22 OECD countries in the period from 1999 to 2013; Guillaud et al. [26]; and Blasco et al. [22]

Within the framework proposed by Muinelo-Gallo & Roca-Sagalés [23], Russia can be classified as belonging to the group of high-income countries that choose not to use indirect taxes to reduce inequality to avoid the negative impact on economic growth.

The proposed classification of the types of economic inequality shows that indirect taxes are aimed at reducing consumption inequality.

Correlation regression analysis has shown that there is a strong inverse relationship between the VAT-to-GDP ratio, the share of VAT in total tax revenues of the consolidated budget and the Gini coefficient ($r = -0.855$ and -0.893 ; $R^2 = 0.797$ and 0.731). The relationship between the share of reduced-rate VAT (10%) in the total volume of VAT and the indicators of inequality (Gini coefficient and decile ratio of consumption spending) is weaker ($r = -0.613$ and -0.1129 ; $R^2 = 0.3757$ and 0.0011). These results point to the absence of any significant impact of indirect taxes on inequality, especially if we pay attention to the fact that after we excluded from the analysis the period of the 1990s, when the progressive PIT scale was in force and the levels of inequality were lower, this relationship became weaker even though in this period the share of VAT in total tax revenues of the consolidated budget was larger (25–31%) than in 2001–2021 (14–24%).

Even though so far indirect taxation has had no significant impact on inequality in Russia, there are grounds to believe that indirect taxes still hold certain potential in

this respect. Studies of other countries (see, for example, Ciminelli et al. [19], Hindriks & Myles [25], Guillaud et al. [26]) provide sufficient evidence to confirm this fact.

The structure of final consumption expenditures of the wealthiest and poorest households, according to official Rosstat data, is different. The largest part of expenditures for the lowest-income households consists of food, utilities, and telecommunications (in total 70%). For the highest-income households, the share of expenditures in such categories as hotels, cafes and restaurants persistently exceeds the corresponding expenditures of the lowest-income households (7.5 times, 4.5% of expenditures of the 10th decile group). We find a somewhat similar picture in the category of recreation and leisure services (4.83 times, 8.7% of expenditures of the 10th decile group).

The average rate of VAT on aggregate spending of the richest and poorest households is 14.68% and 13.875 respectively, that is, the difference is insignificant. In calculating this figure, we proceeded from the assumption that for each category, the general VAT rate (20, 10 or 0%) applies to all of the expenditures in this category.

The anti-crisis measures taken by the Russian government in 2022 included setting the rate of VAT to zero for leisure and recreation services, hospitality services, services of cafes and restaurants. Unfortunately, this step does not lead to a reduction in inequality because the share of expenditures in these categories for the highest-earning households is 4.8–7.5 times higher in comparison with the poorest households.

To reduce inequality in Russia, it would make sense to apply the rate of 10% to utilities and telecommunications the same way as the reduced rate is now applied to essentials. At the same time, the VAT rate should be raised to the standard level of 20% for leisure and hospitality services, cafes and restaurants. This will lead to a decrease in the average VAT rate on aggregate spending of the poor – to 12.97% (this figure will fall by 0.84 per-

centage points in relation to its current level) and to an increase in the average VAT rate for the rich – to 16.67% (a rise by 1.99 percentage points). This way indirect taxation will contribute to inequality reduction in Russia.

6. Conclusions

The above-described results lead us to the following conclusions:

1. Economic inequality comprises income inequality, monetary inequality or inequality in accumulated wealth, and consumption inequality. Each of these types of inequality can be considered in connection to certain fiscal tools that are used to reduce it: income taxes, property taxes and indirect taxes respectively.

2. VAT in Russia does not have a significant influence on consumption inequality. The situation was exacerbated by the introduction of the zero-rated VAT for tourism and hospitality services, cafes and restaurants as an anti-crisis measure, because it decreased the tax burden on the rich: for the rich, the share of spending in these categories exceeds the corresponding expenditures of the poor

4.8–7.5 times. Despite the apparent disparities in consumption of the richest and poorest households, the average rate of VAT on aggregate spending of these groups is virtually the same.

3. To reduce consumption inequality in Russia, a viable solution would be to lower the rate of VAT for utilities and telecommunications, similar to the way the reduced rate is applied to necessities and to raise the rate to the standard level (20%) for leisure and recreation, hospitality services, cafes and restaurants. This will result in a lower average rate of VAT on aggregate spending for the poorest households and in a higher average VAT rate for the richest.

Thus, our initial hypothesis that indirect taxation in Russia does not have a significant impact on inequality but has a potential to reduce it has been confirmed.

On the practical level, these findings can be of interest to policy-makers and government agencies in search of ways to tackle inequality with the help of indirect taxation. This research on the potential of indirect taxes to curb inequality in Russia opens up avenues for further exploration.

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