

Journal of Tax Reform

T. 10, № 1

2024

Vol. 10, no. 1

Научно-аналитический журнал
Выходит 3 раз в год
Основан в 2015 г.

Scientific and Analytical Journal
Three times a year
Founded in 2015

Учредители и издатели журнала

Федеральное государственное автономное образовательное учреждение высшего образования «Уральский федеральный университет имени первого Президента России Б.Н. Ельцина» (620002, г. Екатеринбург, ул. Мира, 19)

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Издание зарегистрировано Федеральной службой по надзору в сфере связи, информационных технологий и массовых коммуникаций.
Свидетельство о регистрации ЭЛ № ФС 77-84599 от 10.02.2023 г.

Founder and publisher

Ural Federal University named after the first President of Russia B.N. Yeltsin (19 Mira St., 620002, Yekaterinburg, Russian Federation)

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In the period 2015–2022 the *Journal of Tax Reform* was published in print and electronic formats (ISSN 2412-8872, eISSN 2414-9497).

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Journal of Tax Reform

T. 10, № 1

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Original Paper

<https://doi.org/10.15826/jtr.2024.10.1.153>




The Impact of the Real Estate Tax Reforms on the Tax Burden in the Czech Republic

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ABSTRACT

The article deals with the evaluation of the impact of real estate tax reforms on their tax burden in the Czech Republic in the years 1993–2024. Real estate tax is one of the direct taxes, and in comparison, with income taxes, its importance lies mainly in providing income for local budgets. The unit type of tax rate specifically determines real estate rates. Facts, that tax reform in the area or real estate tax are minimal, the tax burden is often decreasing. As the tax burden decreases, so does the tax revenue. However, when tax reform occurs, this reform is often characterized by a significant increase in the tax burden. This is also evidenced by the last implemented tax reform in 2024 when rates increased by approximately 80%. The previous tax reform occurred in 2010 and increased rates by 100%. Despite this increase, the real tax burden decreased compared to the first analysed year 1993 and the last year 2024. The results of the regression analysis show that inflation is the factor that negatively affects tax revenue. To minimize a decrease in tax revenue from 2024, a provision containing an inflation coefficient is implemented in the legislation as part of the 2024 reform. Conversely, a reduction in the tax burden was not found for real estate intended for permanent housing in small municipalities with up to 600 inhabitants. On the contrary, there was an increase in the tax burden. Scientific methods such as analysis and comparison, as well as regression and correlation analysis are used to achieve the paper's goals.



KEYWORDS

inflation, property tax, rate indexation, tax revenue, tax reform; tax rate

JEL C50; H20; H71; K34


УДК 336.201

Влияние реформы налога на недвижимость на налоговую нагрузку в Чешской Республике

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АННОТАЦИЯ

В статье рассматривается оценка влияния налоговых реформ по налогу на недвижимость на налоговую нагрузку по недвижимости в Чешской Республике в 1993–2024 гг. Налог на недвижимость является одним из прямых налогов и по сравнению с налогами на прибыль его значение заключается в основном в обеспечении доходов местных бюджетов. В налоге на недвижимость используются твердые ставки. Несмотря на то, что налоговая реформа в области обложения

недвижимости и сам налог минимальны, налоговая нагрузка зачастую снижается. По мере снижения налоговой нагрузки уменьшаются налоговые поступления. Однако, когда происходит налоговая реформа, она сопровождается значительным увеличением налоговой нагрузки. Об этом свидетельствует последняя реализованная налоговая реформа в 2024 г., когда ставки выросли примерно на 80 %. Предыдущая налоговая реформа была проведена в 2010 г. и повысила ставки на 100 %. Несмотря на рост ставок, реальная налоговая нагрузка снизилась по сравнению с первым анализируемым 1993 г. и последним 2024 г. Результаты регрессионного анализа показывают, что инфляция является фактором, негативно влияющим на налоговые поступления. Для минимизации снижения налоговых поступлений с 2024 г. в законодательство в рамках реформы 2024 г. внедряется норма, содержащая коэффициент инфляции. И наоборот, снижение налоговой нагрузки не было обнаружено для недвижимости, предназначенной для постоянного проживания в небольших муниципалитетах с численностью населения до 600 человек. Там произошло увеличение налоговой нагрузки. Для достижения поставленных целей работы используются такие научные методы, как анализ и сравнение, а также регрессионный и корреляционный анализ.

КЛЮЧЕВЫЕ СЛОВА

инфляция, налог на имущество, индексация ставок, налоговые поступления, налоговая реформа, налоговая ставка

1. Introduction

Real estate tax has been part of the tax system of the Czech Republic since its inception in 1993. According to Radvan [1], this year was one of the most uncomplicated tax reforms in the world. During the entire period of validity of the Real Estate Tax Act, only two major tax reforms took place in this area. The first reform took place in 2010. All applicable tax rates were increased by 100% as part of this reform.

The second tax reform, which occurred at the beginning of 2024, was slightly different. In addition to the increase in tax rates by approximately 75%, the law implemented the so-called inflation coefficient. This coefficient should automatically consider the change in the price level in the economy.

The reason for its implementation was also so that further reforms in the area of tax rates would not be necessary in the future. The reason for inflation coefficient is the fact that most real estate tax rates are of the unit type. This causes the real revenue of this tax to decrease when the price level increases.

The question is whether the tax reform in 2024 has compensated for this real rate decrease or whether the tax burden is still falling despite the increase in rates by more than three-quarters of the origi-

nal values. One of the arguments for tax reform was to return the tax burden to its original value when the real estate tax law entered into force in 1993. Another reason was also an international comparison when the real estate tax revenue was compared to other countries, not only in Europe, and was firmly below average¹.

While personal income tax shares for almost a fifth of the total tax revenue, real estate tax shares for only about 2% [2]. Due to the different budgetary purposes of this tax, real estate tax is still an essential part of the tax system of the Czech Republic. The reason is that the tax revenue does not go as stated by Singh et al. [3] or Zhu & Dale-Johnson [4] to the central budget but to the territorial budgets of the municipalities where the real estate is located. Moreover, compared to income taxes [5], property taxes are less prone to tax evasion and have lower tax distortion. These facts also emphasize the high importance of property taxes and the relevance of this study.

The article aims to evaluate the development of the tax burden on the real estate tax in the Czech Republic from 1993 to 2024 in the context of the implemented tax reforms.

¹ Tax on Property. Paris: OECD, 2024. Available at: <https://data.oecd.org/tax/tax-on-property.htm#indicator-chart> (accessed: 13.01.2024).

Since the tax rates were not indexed to inflation until 2024, *another goal* is to assess whether the inflation affects the tax revenue. If it has these effects, then whether it is positive or negative. Compared with other direct taxes, e.g., personal income tax, the share of real estate tax in the tax revenue, as mentioned above, is lower.

The following hypotheses are formulated:

H1: The tax burden on real estate is the same as in 1993 based on the 2024 tax reform.

H2: the resulting tax rate takes into account inflation in the economy from 2024.

The article's structure is in accordance with the chosen objective as follows. In the introduction, the meaning of the research topic is defined. Subsequently, a section deals with an overview of research studies in real estate taxation. In the next part, the used methodology and input data are characterized. The text's main part is analysing the development of the tax burden and the relationship between tax revenue and inflation in the economy. The results are summarized in the conclusion, or limitations of the study and other possible research proposals on real estate tax topics are presented.

2. Literature

Various research studies have analysed aspects of real estate taxation in the past. The studies primarily focused on the tax rate, the tax burden on real estate or the harmonization of this tax. The importance of real estate tax was also discussed, both in the context of the municipalities budget and in the context of the state budget.

Two possible approaches can be applied in the field of real estate taxation.

Perez [6] mentions that it is an approach of taxation by area or value. In European countries, the principle of taxation by area is more often used, i.e. the basis of the tax is usually the size of the real estate.

Balíková et al. [7] state that there is a specific real estate where the tax liability is determined based on the value of the real estate. This situation is typical, especially in forests or agricultural land. In most cases, the tax rates are of the unit type [8].

Relatively broad competencies in the field of tax rates are offered to the municipalities or cities in whose territory the immovable property is located.

Turley [9] states that the tax reform of real estate taxation carried out in Ireland after the financial crisis in 2008 could become an inspiration for other countries as well. The reason for this is the existence of self-assessment and valuation bands. A progressive tax rate is typical for income taxes. More about income tax and rates, e.g. Istok et al. [10] or Kirschnerova & Janouskova [11]. However, this is not typical of real estate tax. The tax rate is not uniform, but it differs depending on the location of the real estate.

Taranu & Verbeek [12] or Kresch et al. [13] found that urban sprawl can be prevented by using higher property tax rates in large cities. At the same time, high rates create pressure to use the space as efficiently as possible. Similar conclusions regarding tax rates were also found by Grover & Walacik [14], who analyse these aspects in European and Asian countries.

Felis & Roslaniec [15] dealt with tax rates in Poland. Even these conclusions of the study confirm that it is desirable to have more tax rates and options for adjusting these rates.

Malkowska et al. [16] emphasize that tax rates for permanent housing should be lower than rates for immovable property used for business. They point out that a tax burden that is too high is not desirable, and the possibility of increasing the revenue of municipal budgets is also through the use of fees. Also, in the context of tax evasion, this tax is relatively resistant, a real estate is visible, and it is thus challenging to conceal the ownership.

Yildirim & Ural [17] or Senavi & Osmani [18] confirm the very high significance of the real estate tax as income for municipal budgets.

The principle of real estate tax in most countries allows local governments relatively wide possibilities for adjustments, which can significantly increase the tax burden. According to Decker [19] or Cohen & Fedele [20], the reason is, for example, considering the lower attractive-

ness of some parts of municipalities or cities or the infrastructure, which is also at a lower level.

Compared with other taxes, real estate tax reforms are less frequent. For example, a relatively often amended tax is the value-added tax [21; 22]. Real estate tax reforms are done rarely. This means that if the reform is implemented, there is a higher increase in the tax burden.

Ding & Hwang [23] examined the effects of real estate tax reform on the tax burden in Philadelphia. According to the results of their research, this reform in 2013 caused a tax shock.

Ramajo et al. [24] carried out in the Spanish environment from 2006 to 2015 found relative rigidity in real estate tax rates. It follows that legislative changes in the area of taxation of real estate tax are rare in this state too.

Surico & Trezzi [25] confirm that the Italian tax system also shows relatively rare changes in tax reforms related to real estate taxation. However, if they occur, a significant increase in the tax burden is also typical. One of the ideas in which direction the tax burden on real estate in Italy could go is an increase in the tax burden on property.

Moscarola et al. [26] say that if this were to happen, the tax burden of income taxes would be reduced. This would better fulfil the tax principle of equality and justice. This justice is also ensured by the fact that there are immovable things which are exempt from tax. Mayburov & Leontyeva [27] mention a public road as an example.

Mishra et al. [28] examined aspects of real estate taxation in India. It is also recommended that this state carry out tax reform. Changes are proposed not only in the area of tax rates but also in the method of determining the tax base. The implementation of property taxes can also affect investment construction.

Wang et al. [29] mention that due to the tax reform in China, there was a decline in the construction of family houses. This decrease was, according to Wu et al. [30], especially in big cities. This fact proves the already mentioned, that there

is a need to have tax rates graded according to the attractiveness of the locality or the level of public services provided. Taxes finance these services. For this reason, even at the level of tax theories, the justification and existence of taxes are very often emphasized [31; 32].

In the Czech Republic, as already mentioned, real estate tax has been part of the tax system since the founding of the Republic. In the past, in addition to this tax, a tax on the acquisition of immovable property was also collected.

Smrzová [33] states that as a result of the tax reform in 2020, this tax was abolished. Also, in the Czech Republic, municipalities can influence the tax revenue for real estate tax.

Janoušková & Sobotovičová [34] confirm the above with their research. On the contrary, research by Romanová et al. [35] states that the possibility of adjusting the tax revenue is low in the Czech Republic.

Sedmíhradská & Bakos [36] state that in 2014, less than a tenth of municipalities in the Czech Republic used the possibility to increase the coefficients. Not only for this reason, but the real estate tax also does not fulfil a fully redistributive function from the point of view of tax principles in the Czech Republic. On the contrary, it fully ensures this according to Gencev et al. [37] personal income tax.

The review of research studies thus shows the clear potential of this research study. Eliminating the research gap lies on the one hand in how long the period is analysed. Furthermore, the fact that it considered the changing price level in the economy, from which several studies conducted in the past deviated. Another uniqueness is the methodology used to verify or refute the hypotheses formulated in the introduction.

3. Data and Methodology

3.1. Data

The input data for the analysis is from the following sources:

1. Data on tax rates from Act No. 338/1992 Coll., on real estate tax.

2. Data on the rate of inflation in the economy from the website of the Czech Statistical Office².

3. Data on the tax revenue from real estate tax from the Financial Administration website³.

The input data is thus made up of a database for 1993–2024 in the case of real estate tax rates. About the availability of data, the time series of data on tax revenue ends in 2022, in the case of inflation in the economy, the last data was available for November 2023.

All data have been monitored since 1993, i.e., since the Czech Republic's founding. Such a long research period creates a long enough time series to carry out the analysis, as the data are usually for 30 years.

3.2. Methodology

The article uses the methods of description, analysis and comparison. To evaluate the development of the tax burden, the difference in the amount of tax liability between the first and the last analysed year is compared, generally determined by formula (1):

$$AD = X_1 - X_2, \quad (1)$$

where AD is the difference in tax liability, X_1 is the tax liability in the first analysed year and X_2 is the tax liability in the last analysed year.

In addition to these basic methods mentioned above, regression and correlation analysis are used to evaluate dependence. The correlation coefficient is used to assess the strength of the dependence between the analysed variables. The aim of the study is also to analyse whether changes in the price level affect the tax revenue from real estate tax. In general, the equation is determined by (2):

$$Y = b_0 + b_1 \cdot X_1, \quad (2)$$

² Inflation. Prague: Czech Statistical Office, 2024. Available at: <https://www.czso.cz/csu/czso/cri/indexy-spotrebitelskych-cen-inflace-prosinec-2023> (accessed: 13.01.2024).

³ Tax Revenue. Financial Administration, 2024. Available at: <https://www.financnisprava.cz/cs/dane/analyzy-a-statistiky/udaje-z-vyberu-dani> (accessed: 13.01.2024).

where Y is the inflation rate, X_1 is the real estate tax revenue. As mentioned in the introduction, the valorisation of tax rates took place during the period of validity of the Real Estate Tax Act only in 2010 and 2024.

The regression analysis will be used to determine whether inflation has a negative or positive effect on tax revenue. A prerequisite for applying the regression model is, for example, verifying the absence of autocorrelation, as mentioned by Ho et al. [38] or Sabab et al. [39].

4. Evaluation of the tax burden

4.1. Evaluation of the development of tax rates for the period 1993–2024

The rate for real estate tax is determined by the type of unit tax rate for buildings. This type of tax rate is also used for most lands. Table 1 shows the CZK rates for the subject to tax in the Czech Republic in the first analysed year, 1993, and the last year, 2024. Given that there are no tax reliefs or deductible items for the real estate tax, the nominal tax rate is a reliable indicator showing the actual tax burden [40; 41].

The data in Table 1 shows that in comparing the first and last analysed year, tax rates increased by at least 3.5 times the value of the rate in the first analysed year, i.e., in 1993.

A relatively discussed topic of reforms in the real estate tax is the question of indexation of tax rates according to the rate of inflation or the market value of property. A comparison of what the rate should be if it were to be indexed to the inflation and how it is also shown in Table 1. The data in the last column of this table indicates that if inflation were to be considered, tax rates should be in larger amounts. In all cases, the real estate tax rate has decreased.

This phenomenon occurred despite the tax reform implemented in January 2024, when there was a significant increase in the tax burden. This leads to the same conclusion as the study by Turley [42], that the tax burden of real estate taxes is decreasing globally. The main reason is the fact that the states do not have an indexation of rates based on inflation implemented into the legislative regulation.

Over the analysed period, tax rates were reformed twice, in 2010 and again in 2024. While most rates increased by 100% in 2010, the reform implemented in 2024 increased tax rates by approximately 75–83%, depending on the type of real estate. This finding agrees with the results of foreign studies [21; 22; 24]. The smallest increase was for real estate intended for permanent residence.

It is shown in more detail in Table 2. In the Czech Republic, the tax rate policy is set in such a way that the tax burden for buildings intended for housing is lower, and on the contrary, rates used in business activities have a higher tax burden. The recommendation of the study [16] is thus respected.

For the period 1993–2009, the average rate of inflation in the Czech Republic was 5.75%. At this average annual inflation rate, the rates in 2010 increased to double value, i.e. the increase was 100%.

For 2010–2023, the average rate of inflation is lower, namely 3.6%. The increase was thus lower from 75 to 83%.

The reform on January 1, 2024, increased tax rates in such a way as to preserve the principle of lower taxation of real estate for permanent housing and, conversely, the highest taxation of real estate intended for business activity.

The above conclusion is also supported by the correlation matrix, a selected part of which is shown in Table 3.

There is a direct dependence for all real estate, as the value of the Pearson correlation coefficient is close to 1. Both reforms in 2010 and in 2024 preserve the principle of distributing the tax burden set by the Property Tax Act since 1993. This does not mean that, for example, only the tax burden on business buildings would increase at the expense of reducing the tax burden on other real estate.

Table 1. Comparison of rates in 1993 and 2024 in CZK

A type of immovable	Nominal rate in 1993	Nominal rate in 2024	Multiply the increase for the period 1993–2024	Rate adjusted for inflation in 2024
Building plots, buildings, housing units	1.0	3.50	3.50	4.10
Built-up areas, other areas	0.1	0.35	3.50	0.40
Buildings for business	5.0	18.00	3.60	20.50
Buildings for recreation	3.0	11.00	3.67	12.50
Garages	4.0	14.50	3.63	16.50

Table 2. Inflation and increase in tax rates in %

Period	Inflation average per year	For Permanent housing	For business	For recreation	Garage	Built-up and other area
1993–2009	5.75	100	100	100	100	100
2010–2023	3.60	75	80	83	81.25	75

Table 3. Correlation matrix

Type of real estate	For Permanent housing	For business	For recreation	Garage	Built-up and other area
For Permanent housing	1				
For business	0.999739	1			
For recreation	0.999292	0.999891	1		
Garage	0.999596	0.999984	0.999958	1	
Built-up and other area	1	0.999739	0.999292	0.999596	1

4.2. Tax burden on real estate for permanent residence

The next part of the analysis deals with the taxation of building plots, residential buildings and units for permanent housing. Typically, the tax burden is lower for this real estate than real estate intended for recreation or business. For real estate intended for permanent residence, coefficients according to the size of the municipality are used for taxation. The principle of these coefficients is set so that the more inhabitants the municipality has, the higher the value of the coefficient.

The coefficient, according to the number of inhabitants, affects the resulting tax rate. The principle of adjusting the tax rate is captured (3):

$$TR = BTR \cdot C, \quad (3)$$

where TR is the tax rate, BTR is the basic tax rate and C is the coefficient according to the size of the municipality.

For further analysis, it will be assumed that the area of the building plot is 100m². The real estate size very often determines the tax base. A comparison of the tax burden in 1993 and 2024 is shown in Table 4. This comparison is made not only over time but also across the size of municipalities according to the number of inhabitants. The more inhabitants there are in the municipality, the higher the coefficient according to the number of inhabitants is used.

The results in the Table 4 show that if the burden on real estate should respect inflation in the economy, the tax liability after recalculation of inflation (TLAI) should be higher in most cases. With the location of the real estate in a larger mu-

nicipality, the difference between the actual tax burden and the tax burden if the tax rate were indexed to the rate of inflation (AD) also widens. If AD is positive, it means that the real tax burden is falling. In most cases, the percentage difference (PD) is less than 1, which also confirms that the tax burden on real estate intended for permanent residence has decreased over the entire period of validity of the law. This is despite two major tax reforms that significantly increased tax rates.

The real decrease in the tax quota for real estate tax is approximately 35%. This fact thus confirms that the tax burden on real estate is developing regressively in the Czech Republic. The stated findings agree with the results of foreign studies, e.g. [24; 44].

However, the value of the PD difference higher than 1 is based on real estate in municipalities up to 300, resp. 600 inhabitants. In this case, the conclusion is the opposite, and the tax burden has increased more than the price level in the economy. These conclusions agree with [45].

How the tax burden should develop if the tax rates were indexed according to the rate of inflation is shown for real estate intended for permanent residence in Figure 1.

In reality between 1993–2009, the tax burden remained the same in nominal value, and the tax burden decreased in real terms. The 2010 reform increased the tax rates, but these rates were unchanged until the end of 2023. The implementation of the inflation coefficient was included in the real estate tax by the tax reform in 2024.

Table 4. The development of the tax burden in CZK and the results of the analysis

Population	Up to 300	Up to 600	Up to 1 000	Up to 6 000	Up to 10 000	Up to 25 000	Up to 50 000	Statutory city	Prague
1993	30	60	100	140	160	200	250	350	450
2024	350	350	350	490	560	700	875	1 225	1 575
TLAI	158.8	317.7	529.5	741.2	847.1	1058.9	1323.6	1853.1	2382.5
AD	-191.0	-32.3	179.5	251.2	287.1	358.9	448.6	628.1	807.5
PD	2.204	1.102	0.661	0.661	0.661	0.661	0.661	0.661	0.661

4.3. Does inflation affect tax revenue?

Using regression analysis, the next part of the study will examine the relationship between the inflation rate and the real estate tax revenue. The amount of the tax revenue is significantly lower compared to other direct and indirect taxes. The real estate tax revenue, as mentioned by, for example, Espinosa et al. or Bocci et al. [46; 47] not only in the Czech Republic is an important income item for the municipalities where the real estate is located.

More detailed results of the regression analysis are shown in Table 5. The general form of the regression model is shown in part 3, which deals with the essential characteristics of the used methodology. The explained variable in the regression equation is tax revenue. Regarding the availability of data on tax revenue, the last examined period is 2022. The analysis is carried out for the period

1993–2022. With regard to the tax reform in 2010, the study is carried out not only for the entire period 1993–2022 (model 1) but also for the period 1993–2009 (model 2) and 2010–2022 (model 3). The regression models are consistent with studies by Noguchi et al., or Kim & Choi [48; 49] at the 5% significance level.

The first regression model determined (4) shows the tax revenue’s dependence on the inflation rate for the entire analysed period 1993–2022. The years 2023 and 2024 are not included in the analysis because the data on the tax revenue for these years are unavailable. Equation (4) has the following form:

$$Y_1 = -0.00047 X_1 + 7.897. \quad (4)$$

Based on the value of the x_1 coefficient of equation (4), it can be concluded that inflation affects tax revenue negatively. The reason is, on the one hand, the unit tax rates, which cause their real value to

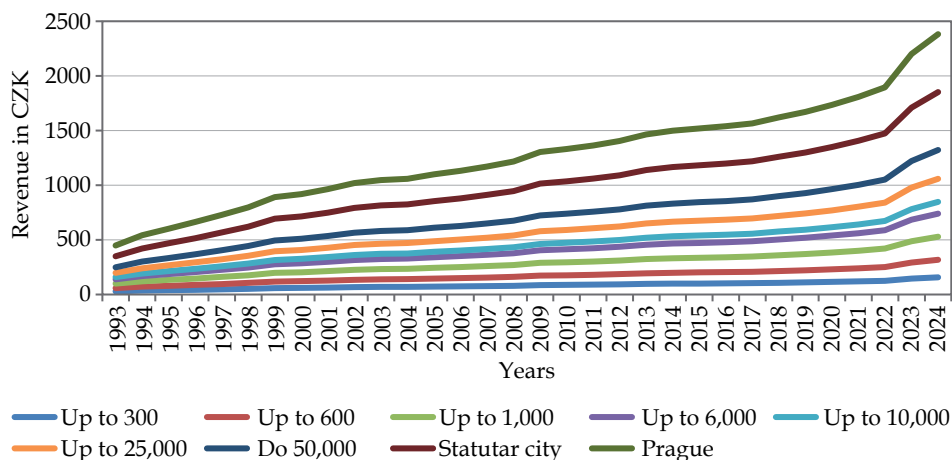


Figure 1. Tax burden based on inflation indexation

Table 5. Regression analysis

	Model 1: 1993–2022		Model 2: 1993–2009		Model 3: 2010–2022	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
X_1 revenue	-0.00047	0.0098	-0.00527	0.0008	-0.00202	0.028
Constant	7.897	0.0009	29.687	0.0001	18.130	0.045
Observation	30		17		13	
R^2	0.302		0.731		0.604	
F-test	2.91	0.0098	17.23	0.0008	6.325	0.028
DW test	1.675		2.062		2.045	

decrease when the price level increases. Another reason is the fact that tax reforms in the area of real estate taxation are minimal, and this fact also has a negative effect on tax revenue. The conclusions of the analysis are consistent with the results of studies [23–25].

For each regression equation, it is also verified whether the conditions for the reliability of the regression model are met. Since the model has only one variable, it is not necessary according to Gokmen et al. [50] to test the multicollinearity of the data.

Another assumption of the regression model is to verify that the data has no autocorrelation. According to the results of the Durbin-Watson test, this assumption is fulfilled, as can also be seen from the DW value in Table 5.

The principle of the Durbin-Watson test is discussed in more detail by, for example, Ozdilek [51]. In equation (4), the value of the F test, or the significance level (Sig) for the constant and variable, also is under 0.05. A slight problem, however, is the coefficient of determination R^2 , which only takes a value of 0.302.

For this reason, the following procedure is chosen so that 1993–2022 is divided into two sub-sections, where the dividing point is the year 2010, i.e. the year when the tax reform regulating tax rates was carried out. The equation for the period 1993–2009 is determined by (5):

$$Y_2 = -0.00527X_2 + 29.687. \quad (5)$$

In this case, all the conditions for using the least squares method to model dependence are met. It is also confirmed here that inflation affects tax revenue negatively. What is positive about this model is that the value of the determination index R^2 has significantly increased.

The last, third regression equation examines the dependence of the tax revenue on inflation for the period 2010–2022. The coefficient for the variable X is based on equation (6) of the same type as in equations (4) and (5). This also confirms the negative influence of this macroeconomic indicator on the tax revenue from real estate tax:

$$Y_3 = -0.00202X_3 + 18.130. \quad (6)$$

Therefore, these conclusions of the analysis are not very optimal findings, especially from the point of view of the recipient of this tax, i.e., the municipalities and cities where these real estates are located. Not only abroad but also in the Czech Republic, this tax is included in local governments' budget.

5. Discussion

The real estate tax burden in the Czech Republic decreased in most cases over the analysed period 1993–2024. The main reason for this fact is minimal tax reforms in the area of tax rates. These took place only in 2010 and in 2024.

Even though the increase in these rates was by 100% or by approx. 75%, the real tax burden on real estate has fallen, and if inflation were to be indexed to this period, the rate increase in 2024 would also have to be 100%. It follows that the formulated hypothesis $H1$ was not confirmed.

To minimize a decrease in the tax burden from 2024 and thus also a decrease in tax revenue, an inflation coefficient was implemented in the legislation regulating real estate taxation as part of the tax reform. This coefficient will multiply the tax liability calculated according to the rates valid for 2024.

It will also not be necessary to carry out another tax reform in the area of rates in the future, using the inflation coefficient will result in the fact that the tax burden will also remain unchanged in real terms. This area, i.e., the inflation coefficient, is frequently debated.

The conclusions of several studies, e.g. [24; 25; 28], about the main reason why the tax revenue from real estate is decreasing in most countries is the almost unchanging legislation, and the unit type of tax rate have been confirmed. Increasing the tax burden is not a popular step from the taxpayers' point of view. Due to the fact that the reforms are taking place only minimally, the rate increase is rare. But if it happened the level of increasing is very high. Although taxpayers may believe their tax burden is increasing, the study results show the opposite conclusion. On the contrary, the implementation

of the inflation coefficient confirms the validity of hypothesis *H2*. However, its validity is only partial because, in the case of agricultural land, the inflation coefficient has a permanent value of 1.

An increase in tax rates can also affect investment in real estate. This may be reflected in the fact that the construction of new houses in smaller cities, where the tax burden is lower, will be preferred. At the same time, in larger cities, where there is often a shortage of space, this can be reflected in an increase in the efficiency of use.

Studies [14] and [15] confirmed that in the Czech Republic, there is not just one same rate for all real estates; on the contrary, there are more rates. The amount of these rates is graded according to the real estate's use or location.

The factor causing the decrease in tax revenue is inflation. The results of the regression analysis confirmed this in all regression models. Municipalities and cities in the Czech Republic can apply a local coefficient or increase the coefficient for real estate for permanent housing according to the number of inhabitants. According to [34] and [36], most municipalities do not use this because citizens do not perceive this fact positively. The way to achieve stable tax revenue is to reflect inflation in the calculation of tax liability. This is exactly what the tax reform ensures from 2024.

It is also justified that real estate that used for business activity should have a higher tax burden. According to Dinterman & Katchova [52], the increased tax burden can also be transferred to another entity in the case of real estate for housing. In renting, it can be a transfer from the landlord to the tenant in the form of a higher rent.

The tax reform of the real estate tax in 2024 increased the tax burden, but if the goal was to ensure that the tax burden returned to the values of 1993, i.e. the first year when the real estate tax law was in force, then it can be stated that the tax reform did not meet this goal. The second goal of the reform was to implement into the law a measure that would take inflation into account when calculating the tax burden. On the contrary, this goal was completely fulfilled by the tax reform.

A limiting factor must be considered in the study. This is mainly due to the availability of data on tax revenue when the last is for the year 2022. The Financial Administration of the Czech Republic has not published the data for a more recent period. From the point of view of the first part of the analysis dealing with aspects of tax rates. This limitation doesn't occurred at this section, data are available for the entire analysed period of 31 years. The second limiting factor of this study is that it is abstracted from applying the local coefficient when calculating the tax because, as stated in the study [34; 36], more than 80% of municipalities do not use this coefficient.

6. Conclusion

The aim of the study was to evaluate the development of the tax burden on the real estate tax in the Czech Republic from 1993 to 2024 in the context of tax reforms. The analysis results show that the tax burden on real estate has decreased with minor exceptions. On the other hand, the tax burden increased for real estate intended for permanent housing in small municipalities with up to 600 inhabitants. Other real estate shows a reduction in the tax burden in a comparison between 1993 and 2024 despite two tax reforms.

The reform in 2010 doubled the tax rates, in 2024 there was another increase of around 80%. The reason for the decrease in the tax burden was that until the end of 2023, issues of indexation of tax rates according to inflation were not implemented into the law.

According to the regression analysis results, inflation is the factor that negatively affected the tax revenue. This caused an ever-declining share of real estate tax in the total tax revenue. This fact is particularly negative from the point of view of the municipalities or cities in whose territory the real estate is located. This is because the tax revenue is not directed to the central but, on the contrary, to the regional budgets.

In the area of real estate tax, tax reforms are not often carried out, e.g. in comparison with income tax or value-added tax. This does not mean that the real estate tax research area has been complete-

ly examined. The evaluation of the effect of implementing the inflation coefficient or the increase in tax rates in 2024 on tax revenue may be the subject of another study.

Even though, as already mentioned, real estate tax shares a tiny percentage of

the total tax revenue, the real estate tax is a significant part of the tax system of the Czech Republic. By this tax, the principle of horizontal justice is fulfilled, and the importance of this tax as revenue for local governments' budgets is unquestionable.

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For citation

Krajiňák M. The Impact of the Real Estate Tax Reforms on the Tax Burden in the Czech Republic. *Journal of Tax Reform*. 2024;10(1):6–18. <https://doi.org/10.15826/jtr.2024.10.1.153>

Article info

Received January 31, 2024; Revised February 25, 2024; Accepted March 10, 2024

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Для цитирования

Krajiňák M. The Impact of the Real Estate Tax Reforms on the Tax Burden in the Czech Republic. *Journal of Tax Reform*. 2024;10(1):6–18. <https://doi.org/10.15826/jtr.2024.10.1.153>

Информация о статье

Дата поступления 31 января 2024 г.; дата поступления после рецензирования 25 февраля 2024 г.; дата принятия к печати 10 марта 2024 г.




Taxes and Customs Duties as Instruments for Extracting Oil Rent into the State Budget: The Case of Russia

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ABSTRACT

For countries focused on the extraction and processing of natural resources, including Russia, a crucial task is to ensure the rational extraction and distribution of natural rent. The tax model applied to natural rent should facilitate its optimal allocation to the budget without undermining the motivation of resource users to invest. This study seeks to gauge the extent of oil rent extraction into the Russian budget and suggest strategies to enhance the efficacy of redistributing oil rent to the state budget. Our hypothesis proposes that export customs duties, compared to the mineral extraction tax, prove more effective in achieving the desired redistribution from resource users to the budget. To assess the extent of oil rent extraction, we devised a methodology based on calculating the oil rent generated in Russia. This method involves measuring the difference between the income generated by the oil industry and the total expenses incurred by oil sector companies. Our analysis reveals that, from 2005 to 2022, up to 87% of the oil rent generated in Russia was extracted through rent payments to the state budget. However, in recent years, the degree of oil rent extraction has decreased to 56%. This decline can be attributed to the tax maneuver initiated in Russia since 2015, entailing a reduction and eventual elimination of export customs duties, coupled with an increase in the mineral extraction tax rate. Our results indicate a diminishing effectiveness of rent-based taxation in Russia due to the reduced fiscal significance of rent payments. Furthermore, their regulatory function, designed to incentivize taxpayers for investment contributions, has weakened. These findings offer valuable insights for shaping fiscal policies and lay the groundwork for further research in this domain.

KEYWORDS

tax, oil rent, customs duty, mineral extraction tax, tax maneuver, investments, budget

JEL E62; H21

УДК 336.244


Налоговые и таможенно-тарифные инструменты изъятия нефтяной ренты в доход бюджета: опыт России

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АННОТАЦИЯ

Для стран, ориентированных на добычу и переработку полезных ископаемых, включая Россию, важной проблемой является обеспечение рационального изъятия и распределения природной ренты. Модель налогообложения природной ренты должна обеспечить наиболее полное изъятие природной ренты в бюджет, и не снижать склонность к инвестированию недропользователей.

Целью исследования является измерение величины изъятия нефтяной ренты в российский бюджет и разработка путей повышения качества перераспределения нефтяной ренты в доход государства. Гипотезой исследования является предположение о том, что вывозные таможенные пошлины лучше, чем налог на добычу полезных ископаемых справляются с задачей перераспределения нефтяной ренты от недропользователей в российский бюджет. Для того, чтобы выявить уровень изъятия нефтяной ренты в бюджет была разработана авторская методика расчета величины нефтяной ренты, создаваемой в России, в основе которой заложено измерение разницы между суммой дохода, полученной нефтяной отраслью, и суммой затрат, произведенных компаниями нефтяной отрасли. Был проведен корреляционный анализ между величиной нефтяной ренты и поступлением рентных платежей. Установлено, что посредством применения рентных платежей в доход государства в период 2005–2022 гг. изымалось до 87 % создаваемой в России нефтяной ренты. Однако в последние годы степень изъятия нефтяной ренты снизилась до 56 %. Выявлено, что причиной этого стало проведение с 2015 г. налогового маневра, заключающегося в снижении ставки вывозных таможенных пошлин, вплоть до обнуления, и увеличении ставки налога на добычу полезных ископаемых. Полученные результаты позволили сделать вывод о снижении эффективности рентного налогообложения в России из-за того, что сокращается фискальное значение рентных платежей, а также ослабляется их регулирующая функция, направленная на стимулирование налогоплательщиков к осуществлению инвестиционных вложений. Результаты исследования могут быть применены при осуществлении налоговой политики в России и проведении дальнейших научных исследований.

КЛЮЧЕВЫЕ СЛОВА

налог, нефтяная рента, таможенная пошлина, налог на добычу полезных ископаемых, налоговый маневр, инвестиции, бюджет

1. Introduction

Contemporary nations draw revenue from diverse channels, including taxes and compulsory contributions to the budget. The principal source is the national income generated by companies and individual entrepreneurs through their economic activities. In countries endowed with abundant natural resources, such as Russia, natural rent is an important source for budgetary augmentation, complementing the national income.

Russian companies specializing in natural resource extraction and processing derive a significant share of their earnings not from efficient business processes or innovative technologies but mainly from their right to extract rare minerals. The value of these minerals significantly surpasses the associated extraction costs. The additional income earned by these companies exceeds the normal level of economic profitability and constitutes natural rent, which is a significant source of revenue for the state budget.

For research on economic relationships associated with the generation and

redistribution of natural rent, it is essential to establish an optimal model for natural rent taxation. The taxation model, on the one hand, should channel most of the natural rent into the state budget; on the other hand, it must not suppress business activity in the extractive industries and should not discourage taxpayers' from investing. It is crucial to ensure the neutrality of the natural rent taxation system in this regard.

To extract natural rent, the government can choose from a variety of methods, including financial instruments that help redistribute surplus revenues generated by subsoil users – taxes, customs duties, and other special payments.

Figure 1 shows a list of mandatory payments in Russia used to collect natural resource rent.

Each type of rent payment allows for the extraction of natural rent at different stages of the production process:

- the mineral extraction tax (MET) and other subsoil use payments extract rent at the stage of mineral extraction;
- the personal income tax extracts a portion of the rent embedded in the in-

creased wages of employees of extracting companies during the production process;

- excise taxes capture rent upon the sale of finished products, such as petroleum products;

- corporate income tax and additional income tax are mechanisms that capture rent in the form of additional profits generated by companies during the finalization of their financial results;

- export customs duties result in the extraction of natural rent at the moment of exporting valuable minerals abroad.

Therefore, a company involved in extracting natural resources is responsible for making several rent payments, which collectively contribute to extracting a portion of the natural rent into the state budget.

Most natural rent in Russia is generated through oil extraction. This study examines the flow of payments into the consolidated budget, originating from oil extraction and processing, to assess the extent of oil rent being contributed to the budget.

Recent reforms in the taxation of oil rent in Russia have included a tax maneuver, initiated in 2015. This maneuver involves replacing the extraction of oil rent through export customs duties on crude oil and petroleum products with the MET. The tax maneuver concluded on January 1, 2024, when the export customs duty rates on oil and petroleum products were reduced to zero. Since 2019, the MET has been supplemented by the tax

on additional income, which is imposed on the super profits of certain oil and gas companies.

Various types of rent payment differ in their efficiency in extracting oil rent into the budget. In recent years, the bulk of oil rent has been extracted through the MET and export customs duties, yet their capacity to channel oil rent into the state budget revenue differs.

The *aim of the study* is to measure the extent of oil rent extraction into the Russian budget and explore strategies to enhance its effectiveness.

The *hypothesis of the study* is that export customs duties, as indirect mandatory payments, are more effective than the MET in redistributing oil rent from subsoil users to the state budget. In our view, this happens because, when shifted onto foreign consumers, export customs duties are less likely to be perceived as a tax burden by taxpayers. The latter are also less likely to evade payment of export customs duties compared to the mineral extraction tax.

2. Review of contemporary approaches to oil rent taxation

Contemporary research literature covers diverse aspects of acquiring, distributing, and taxing natural rent.

Shi et al. [1] argue that revenue from mineral extraction is positively correlated with GDP growth and effective governance, which they associate with control over corruption.

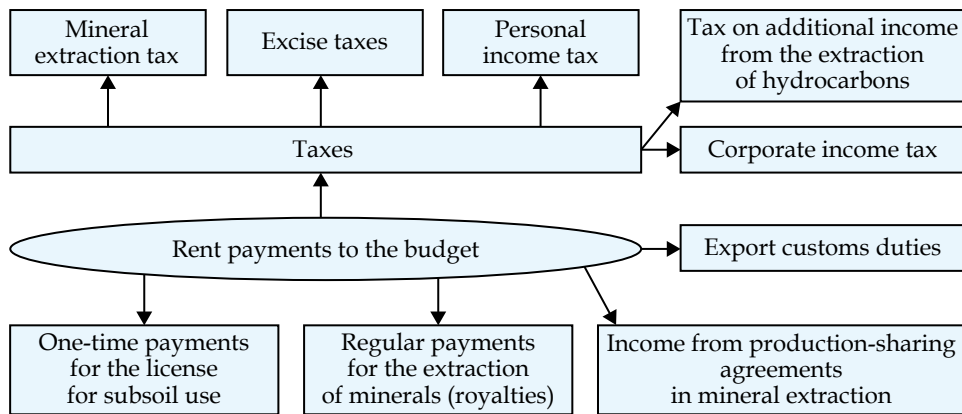


Figure 1. Compulsory payments contributing to the extraction of natural rent in Russia

In their analysis of 19 countries, encompassing both developed and developing economies from 1997 to 2019, Hoang et al. [2] discovered a consistent “Dutch disease” effect attributed to natural resource rent. Moreover, they observed variations in the impact of economic policy uncertainty, geopolitical instability, and natural resource rent on economic complexity across all the countries in their study.

Alsagr [3] shed light on the detrimental effects of oil rent on the economic growth of developing nations.

Nkoa et al. [4], employing an econometric research method based on the two-stage least squares (2SLS) approach, found that resource rent increases global instability in developing countries.

On the one hand, having the ability to extract natural rent is advantageous as it provides additional national income, but on the other hand, an economic policy centered on rent extraction can lead to stagnation in the national economy, a phenomenon commonly known as the “resource curse”.

Masi et al. [5] tested the resource curse hypothesis across 62 developing countries from 1995 to 2015, arguing that it is possible to develop the natural resource sector without harming the budgetary potential.

Canh et al. [6] tested the resource curse hypothesis across 90 developed and developing countries from 2002 to 2017, examining various types of mineral resources. They demonstrated that an increase in the level of economic development reduces the impact of natural rent from the extraction of minerals and gas but increases the impact of natural rent from coal extraction.

Sun et al. [7], focusing on the case of China, assessed the impact of resource taxation on the resource curse and showed that resource taxation policies in China exacerbated the country’s resource curse.

Mehlum et al. [8] insist that the quality of a country’s institutions determines the quality of natural resource exploitation. The resource curse is more likely to occur in countries with poorly developed institutions such as Nigeria, Zambia, and Sier-

ra Leone, facing issues like corruption, bureaucracy, and non-compliance with laws. These problems result in resource users trying to appropriate oil rent instead of improving their production. Conversely, in countries with good institutions (such as Norway and Botswana), the exploitation of natural rent contributes to economic development and the well-being of the population.

Similar conclusions are made by Robinson et al. [9], who show that in countries with good institutions, the extraction of mineral resources contributes to economic growth, while countries with poor institutions face the resource curse.

Numerous studies focus on quantifying the rent generated in production activities, in particular oil rent.

Pitelin [10] devised a method to calculate oil rent by measuring the value-added contribution of oil extraction to GDP and showed the variation in GDP in two scenarios: the current state and a hypothetical scenario where the country has no oil production.

Costa & Garcia-Cintado [11] developed and applied a DSGE model to calculate the natural rent generated by extracting enterprises in Brazil.

Jović et al. [12] calculated natural rent using soft computing methods and assessed the impact of natural rent on GDP growth. Their findings suggest that forest rent has the greatest influence on GDP growth.

Leiva [13] assessed natural rent using the example of copper mining in Chile.

Yuva & Filimonova [14] developed a model for calculating oil rent using an analysis of components constituting the rent (MET, customs duties, profits of oil companies, etc.), which were aggregated.

Osmundsen & Lovas [15] demonstrate that there is no one-size-fits-all model for taxing natural resources worldwide and that the construction of the optimal tax system depends on the individual characteristics of each country.

Until recently, Russia was actively using tax instruments alongside customs and tariff tools for extracting natural rent. A decade ago, these instruments held the

largest share among all means of extracting natural rent in the budget. Export duties are usually designed to steer clear of taxing oil and gas to prevent distorting export prices. However, Russia stands out as an exception to this norm, as noted by Tordo [16].

According to Yang et al. [17], Russia is experiencing the resource curse, mainly linked to positive shocks in natural gas rent. However, shocks in oil rent are considered a blessing due to their positive impact on GDP growth.

Korkmaz [18] and Hasanov et al. [19] also confirmed the positive impact of oil rent on economic growth in Russia.

Zakharov [20] found that the increase in oil revenues negatively impacts the quality of institutions in Russia. He argues that the rise in tax revenues due to exogenous positive shocks in oil prices does not alter regional incomes but exacerbates corruption and diminishes regional democracy and the quality of governance.

Many researchers have analyzed the taxation of extracting companies in various countries around the world.

Daubanes & Lasserre [21] argue that carbon emission taxation in non-renewable energy sources should be increased when there is a need for government revenue. They propose a tax formula that is an augmented, dynamic version of the standard Ramsey tax rule.

Balde [22] investigates the impact of taxation on the duration of the period starting from the discovery to the development of a deposit by estimating a duration model. He empirically demonstrated that this period depends on the fiscal regime applied by the country to secure its share of revenue in the form of natural rent.

Beer & Loepric [23] identified internal channels for profit shifting among hydrocarbon companies and concluded that profit shifting within the country constitutes approximately one-third of the total hidden income.

Kjær et al. [24] argued that it is often difficult to establish an effective tax mechanism for extracting natural rent in developing countries.

Keller [25] investigated the effect of oil revenues on non-resource taxation for 19 oil-exporting countries using the synthetic control methodology. He demonstrated that the effect is heterogeneous and arises only in oil-exporting countries with a low level of institutional quality that heavily depend on oil and prefer using tax instruments rather than non-tax instruments. Additionally, the dynamics of the effect differ in countries with a state-owned oil sector compared to those with a private oil sector.

Cordella & Onder [26] investigated how unforeseen oil revenues can impact political conflicts in a country and showed that direct payments to the population are the most effective means of preventing conflicts.

Ishak & Farzanegan [27] examined the connection between oil rent and tax revenues, emphasizing the significance of the shadow economy as a restraining factor in these relationships. They found that the reduction of oil rent due to negative oil price shocks ceases to have a significantly positive impact on tax revenues in countries where the shadow economy constitutes more than 35% of GDP.

Brown et al. [28] assessed the consequences of changes in oil extraction taxation in several U.S. states and found that an increase in the tax burden reduces the profitability of oil extraction to a greater extent than a decline in the selling price of oil.

Wolfson & Koopmans [29] identified tax methods that may help stimulate environmentally friendly resource use.

There is a separate group of publications dedicated to the distorting impact of rent taxation.

Smith [30] conducted an analysis of methods used to study tax distortions in resource-extracting industries.

Lund [31] examined the distorting impact of rent taxation and proposed a model to assess how higher tax rates on subsoil users reduce their motivation for investment and business development.

Nakhle [32] investigated the neutrality of rent taxation in the UK and showed that oil-extracting enterprises on the continental shelf are less willing to invest after an increase in the tax burden.

Lund [33] examined the effective restructuring of taxation in Norway in 1986, leading to the establishment of a neutral model for the taxation of oil extraction.

Our review of the research literature has showed that diverse approaches are employed for the measurement of natural rent. Ample reserves of natural resources and the potential extraction of resulting natural rent may have a different impact on a country's economic growth. In some nations, natural rent acts as a catalyst for economic growth, while in others, it serves as a constraint on economic development.

Developing countries often experience the resource curse, understood as the inefficiency of economies focused on resource extraction. A number of studies highlight the ineffectiveness of Russia's current model for taxing oil rent, which relies on levying the mineral extraction tax (known as NDPI) on oil-extracting companies.

3. Methodology

3.1. Evaluation of the total oil rent

At the first stage of our study, we calculated the amount of the oil rent generated in Russia by applying a methodology based on the approaches outlined in [13].

The oil rent in Russia comprises two components: the rent generated during the primary extraction of crude oil and rent generated during the processing of crude oil. Therefore, the total amount of oil rent was calculated by using Formula (1):

$$R_o = R_{co} + R_p, \quad (1)$$

where R_o is the amount of oil rent; R_{co} is the amount of rent on crude oil; and is the amount of rent on petroleum products.

In 2005–2022, approximately half of the oil extracted in Russia was exported, while the remaining part was processed at oil refineries inside the country. A significant portion of the country's oil products was also exported. Therefore, when calculating the total oil rent, we took into account the revenues from both the extraction of crude oil and the production of oil products, considering both domestic consumption and exports.

3.2. Evaluation of crude oil rent

When calculating the crude oil rent, we considered all revenues associated with selling crude oil, including those directed for domestic consumption and export. The calculations were made according to Formula (2):

$$I_{co} = Q_d \cdot P_d + Q_e \cdot P_e, \quad (2)$$

where I_{co} is the total income from crude oil sales; Q_d is the volume of domestically processed oil; Q_e is the quantity of exported oil; P_d is the domestic price of oil; and P_e is the export price of oil.

In calculating the costs of oil extraction and marketing, the following were taken into account: (1) material costs associated with oil extraction, storage, and transportation; (2) labor expenses; (3) wage accruals; (4) depreciation expenses, which reflect the amount of investment sufficient to renew the production capacities of oil-producing enterprises.

We did not include other expenses such as taxes and other mandatory payments in the calculations because we intended to measure the total oil rent before taxation, from which mandatory payments to the budget would be deducted later.

Furthermore, other expenses include a range of non-production expenditures, such as representation and managerial costs, for example, supporting professional sports teams and other "charitable" expenditures. These types of expenditures are traditionally inflated in the oil industry. Oil extraction enterprises can afford and tend to incur these expenses, primarily due to the substantial oil rent.

Labor expenses were calculated through an alternative method. When determining the amount of wage costs and contributions to wage payment, paid to off-budget funds, we considered not the actual expenses incurred by oil extraction enterprises for these purposes but the number of workers in the oil extraction industry and the average monthly wage in Russia. This way we were able to determine the "normal" expenses for a production factor like labor, incurred by average Russian enterprises lacking oil rent to artificially inflate wage costs.

A peculiarity of statistical accounting in Russia is that expenses for oil extraction enterprises are not tracked separately. Their indicators were included in the extraction of fuel and energy minerals until 2017, and since 2017, they have been accounted for in the total costs of oil and natural gas extraction.

Therefore, the cost of oil extraction was calculated based on the share of the cost of oil extraction in the total costs of oil and natural gas extraction (this share varied annually within the range of 75.1% to 87.7%); and in the costs of extracting fuel and energy minerals (ranging from 58.6% to 63.6%).

Considering the aforementioned conditions, the cost of oil extraction and marketing was calculated by using Formula (3):

$$C_{co} = C_{mo} + W_{ao} + A_{ao} + D_o, \quad (3)$$

where C_{co} stands for the costs for oil extraction and sale; C_{mo} for material expenses linked to oil extraction; W_{ao} for the labor costs calculated through an alternative method using the country's average wage and the industry's workforce; A_{ao} accruals for labor remuneration derived from the calculated wage (D_o); and W_{ao} depreciation allowances.

Using the input data we obtained, we were able to calculate crude oil rent by applying Formula (4):

$$R_{co} = I_{co} - C_{co} - P_{ao}, \quad (4)$$

where R_{co} is crude oil rent; C_{co} is the costs associated with oil extraction and sale; and P_{ao} is the calculated profit of oil-producing enterprises based on the average level of profitability in the country.

According to Formula (4), the amount of rent is determined by subtracting the total revenues of oil extraction enterprises from the expenses for oil extraction and marketing, and the "normal" profit level in the Russian economy. Since most of the oil rent settles into the profits of oil extraction enterprises, the profitability of companies in this industry exceed the average Russian level by 2-3 times, reaching up to 35% in the given period. Therefore, we calculated the "normal"

profit using the average Russian level of profitability, enabling a satisfactory return on capital in the national economy, without considering the oil rent.

3.3. Assessment of oil rent from oil processing

In a similar manner, we calculated the amount of rent derived from the processing, production, and sale of petroleum products.

Revenue from the sale of petroleum products (I_p) is determined by using official statistical data on the cost of shipped oil products. The calculation of the costs for the production of oil products was based on Formula (5):

$$C_p = C_{mp} + W_{ap} + A_{ap} + D_p, \quad (5)$$

where C_p corresponds to expenses for oil processing; C_{mp} to material costs associated with oil processing; W_{ap} the labor costs calculated through an alternative method based on the average wage in the country and the industry's workforce; A_{ap} accruals for labor payment based on the calculated wage (W_{ap}); and D_p depreciation deductions.

In Formula (5), material costs (C_{mp}) include all material expenses associated with oil processing, including the cost of crude oil purchased for processing, which constitutes a predominant portion of material costs for raw materials and supplies.

Labor costs (W_{ap}) are calculated by using the average number of employees in oil processing plants and the established average wage nationwide. The salary in the oil refining industry is not as high as in the oil extraction sector – it exceeds the average Russian level by only 1.5-2.0 times. It should be noted, however, that people working in the oil refining industry tend to have higher wages because they have the opportunity to receive a share of the oil rent, given the relative scarcity of this resource.

Rosstat – the Federal State Statistics Service – accounts for the expenses of oil production as part of the overall costs of the category "Production of coke and petroleum products". Hence, the calculation of oil production costs was based on the

annual proportion of the cost of shipped oil products in the total volume of shipped products under the category “Production of coke and petroleum products”. The share of oil products in this sector is dominant and changes annually within the range of 97.2% to 98.9%.

Oil rent derived from oil processing was calculated by using Formula (6), which is similar to Formula (4) we used for calculating crude oil rent:

$$R_p = I_p - C_p - P_{ap}, \quad (6)$$

where R_p corresponds to the amount of rent from oil products; C_p denotes costs for oil processing; and P_{ap} is the profit of oil processing enterprises, calculated by using the data on the average level of profitability in the country.

In Formula (6), the income obtained from oil processing was reduced by the profit calculated by an alternative method, based on the average level of profitability. This adjustment was made to account for the amount of oil rent embedded in the profits of oil processing enterprises.

The suggested methodology for calculating oil rent enables us to measure the added value generated during the extraction and processing of oil beyond the “normal” level anticipated from a similar application of production factors like labor and capital in other sectors of the Russian economy.

The “normal” level is considered as the average return in the form of capital profit and the average level of labor remuneration in the form of wages in the economy and the country, respectively.

3.4. Assessment of the degree of oil rent extraction into the budget

To gauge the extent of oil rent extraction into the budget, we gathered and analyzed mandatory payments in the national budgetary system, through which oil rent is extracted.

These include 7 types of taxes and other mandatory payments to the consolidated budget:

- 1) mineral extraction tax on crude oil;
- 2) excise taxes on petroleum products.

Excise taxes on petroleum products are

levied domestically (exported goods are exempt from excise taxes), and these taxes are paid when petroleum products are sold within the country. However, starting from 2019, Russia has introduced a system of reverse excise tax on crude oil. Under this mechanism, oil processing enterprises receive a reimbursement from the federal budget for the excise tax imposed on the portion of petroleum products intended for domestic consumption;

3) income generated through agreements on the allocation of production during oil extraction (corporate income tax, regular payments for mineral extraction (royalties), and the state’s share of profitable production);

4) tax on additional income from the extraction of hydrocarbons;

5) one-time payments for the license for subsoil use;

6) export customs duties on crude oil;

7) export customs duties on petroleum products.

The data were sourced from the Treasury’s reports on the execution of the country’s consolidated budget ([www. roskazna.ru](http://www roskazna.ru)). We did not consider tax payments imposed on the ongoing activities of all economic entities, including those unrelated to rent incomes. These include the following taxes: corporate income tax, value-added tax (VAT), personal income tax, water tax, business property tax, transport tax, gambling tax, and land tax.

In addition, the study relied on statistics from the official websites of the Federal State Statistics Service (Rosstat) and the Ministry of Economic Development of the Russian Federation. Official documents, including the Tax Code of Russia and the Law of the Russian Federation on the Execution of the Federal Budget for 2022, were obtained from the legal reference system *Consultant+*.

Due to the restrictions imposed by Western countries on Russian oil exports, since 2022, Rosstat has ceased publishing official data on Russian oil and petroleum product exports. The information for the year 2022 was derived from the data cited in interviews by the Deputy Chair-

man of the Russian government Alexander Novak¹.

To assess the adequacy of oil rent extraction for the needs of the national economy, a correlation analysis was conducted. This analysis explored the relationship between oil rent and the receipt of associated payments, including taxes and mandatory fees paid by companies specializing in oil extraction and processing.

4. Results

4.1. Total oil rent generated in Russia

We calculated the oil rent generated in Russia between 2005 and 2022 (see Figure 2).

In the given period, the absolute amount of oil rent increased from 3.2 to 14.6 trillion rubles. The maximum amount of oil rent was generated in 2021 when it reached 16.2 trillion rubles.

Oil rent constitutes the part of added value that is generated due to the scarcity of this resource and its ability to generate income while being processed. Therefore, it is interesting to compare oil rent with the total amount of value added, formed by the country's GDP.

¹ <http://tass.ru/ekonomika/17248419?ysclid=lppnrok5g387669797/>

The share of oil rent in Russia's GDP is shrinking steadily: over the given period, it reduced from 14.7% to 9.5%. As the absolute size of oil rent was increasing, the relative amount of oil rent was falling. Therefore, it can be concluded that the reduction in the share of oil rent in GDP was the result of the increased diversification in the Russian economy. In other words, the share of the oil industry decreased due to the increase in the share of other sectors in the Russian economy.

4.2. Analysis of oil rent extraction to the Russian budget

The bulk of the natural rent is channeled into the budget through taxes imposed on oil companies. For the purposes of this study, customs duties are included in the overall tax payments, although under Russian budgetary legislation, they are not classified as taxes.

The comparison of budgetary revenues from oil rent with the proportion of oil rent extraction is illustrated by Figure 3.

In the given period, the degree of tax extraction of oil rent varied within the range of 51-87% of the generated rent, with the maximum degree of extraction observed in 2008 and 2014.

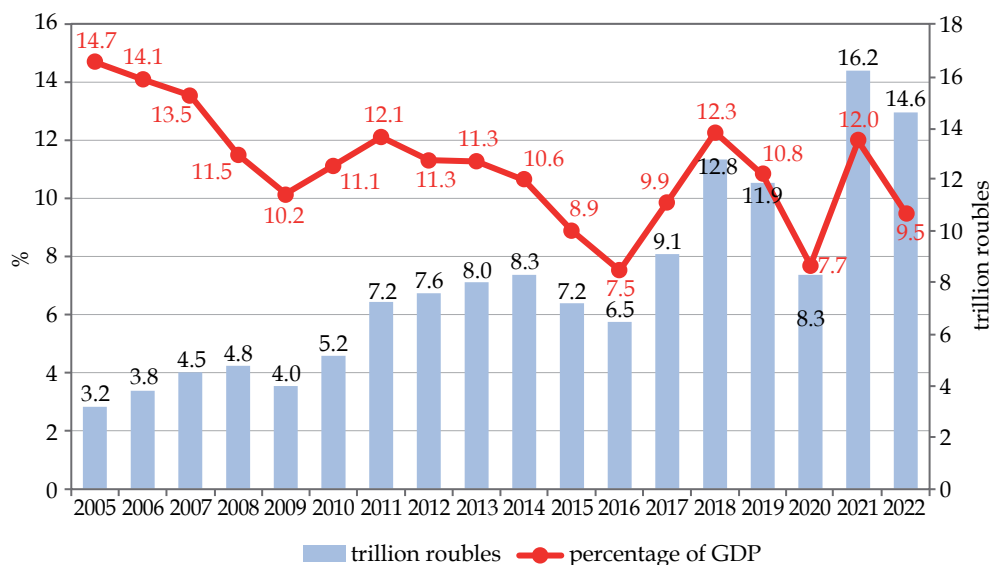


Figure 2. Oil rent in Russia in 2005-2022

Note: Compiled by the authors based on Rosstat data

In 2005–2014, there was an increase in the degree of oil rent extraction into the state budget, reaching 86.5% of the generated oil rent by 2014, with the average annual value being 74.3%. In the subsequent years, there was a steady decline in the degree of oil rent extraction – the average annual value in this period decreased to 62.4%.

Moreover, due to the increase in the overall volume of generated oil rent, the absolute amount of rent payments to the budget increased year by year. Some decrease in the inflow of rent payments was observed in certain years, for example, in the crisis year 2020.

The analysis of payments from oil rent into the consolidated budget of Russia is presented in Table 1.

The country’s tax system cannot be expected to fully capture all generated oil rent and, what is more, such a scenario is undesirable. As discussed earlier, the prospect of obtaining a share of natural rent is a key motivator for entrepreneurs in specific sectors of the economy, stimulating investment inflow into these industries. It is also essential to preserve the differential rent II, generated through innovation and technological advancements, for the benefit of subsoil users as it encourages modernization in production and enhances investments in fixed capital.

If the reduction in the degree of oil rent extraction is accompanied by higher rates of real investment growth, such trends can be considered positive. However, further analysis will show that the picture is quite the opposite.

The majority of researchers agree that absolute rent and differential rent I should primarily contribute to the state’s income. Absolute rent arises during the extraction, processing, and sale of oil obtained from any deposit due to the rarity and value of this valuable resource. Subsoil users receive differential rent I from the exploitation of more productive and economically advantageous deposits.

At the same time, a significant reduction in the share of oil rent extraction into the budget in recent years (less than 2/3 of its volume) points to the fact that the current model of subsoil use taxation in the country is inefficient. A large portion of oil rent should be directed to the state budget because this income arises from exploiting mineral resources owned by the government. This share of oil rent is acquired by oil companies not through superior business organization, enhanced management skills, or a more capable workforce, but primarily due to their privileged position granted when awarded the right to exploit these resources. When it comes to rent-based revenues, this situation is quite common.

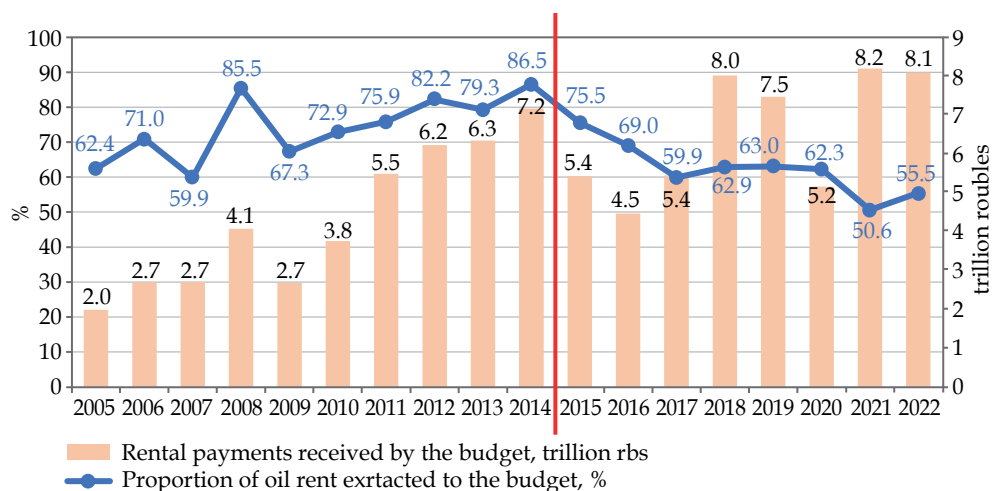


Figure 3. Rent payments to the consolidated budget and the share of oil rent extraction from 2005 to 2022

Note: Compiled by the authors based on data from Rosstat and the Treasury of Russia

Table 1. The inflow of payments from oil rent into the consolidated budget of Russia in 2005–2022, billion rubles

Payment type	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Mineral extraction tax on crude oil	761.3	986.5	1017.3	1493.0	887.6	1266.8	1845.8	2132.6	2190.2	2463.6	2703.5	2343.1	3352.2	5232.3	5175.5	3198.3	6295.7	8391.5	
Excise taxes on petroleum products produced in the country	123.3	124.6	130.3	138.4	144.6	166.5	277.4	359.9	413.3	368.6	280.0	448.2	524.0	332.2	258.4	791.4	-537.6	-3248.9	
Income generated through agreements on the allocation of production during oil extraction (corporate income tax, regular payments for mineral extraction (royalties), and the state's share of profitable production)	2.6	4.7	23.2	42.3	21.0	26.5	47.0	70.3	91.4	170.2	220.9	139.7	127.7	233.4	310.6	277.4	263.5	350.4	
Tax on additional income from the extraction of hydrocarbons	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	101.1	149.0	1008.7	1 685.0
One-time payments for the license for subsoil use	26.4	61.1	46.6	91.8	39.7	18.0	47.2	44.8	108.7	55.9	40.1	53.5	66.3	25.7	44.9	48.6	67.8	38.9	
Export customs duties on crude oil	871.4	1201.9	1151.5	1784.8	1203.0	1672.4	2332.4	2489.7	2333.6	2620.0	1431.2	1030.8	976.2	1550.0	1115.5	436.0	707.8	606.8	
Export customs duties on petroleum products	197.5	314.4	330.5	522.6	378.8	603.8	936.5	1130.3	1206.8	1489.4	748.5	446.8	397.9	648.7	464.9	256.4	391.4	269.5	
Total rental payments received	1982.5	2693.2	2699.4	4072.9	2674.7	3754.0	5486.3	6227.6	6344.0	7167.7	5424.2	4462.1	5444.3	8022.3	7470.9	5157.1	8197.3	8093.2	

Note: The table is based on the data from the Treasury of the Russian Federation (www.roskazna.ru) and the report on the execution of the federal budget for the year 2022 from the legal reference system "Consultant+".

The year 2015 marked a turning point in oil rent extraction as it started decreasing due to various factors. We believe that the decisive factor triggering this process was the launch of the tax maneuver.

Since 2015, there has been a steady decline in export customs duties on oil and oil products, accompanied by an increase in the mineral extraction tax rates for oil extraction. The decrease in revenue from export customs duties, according to the reformers' plans, should be offset by an increase in the revenue from this tax.

Since 2024, zero-rates of export customs duties on crude oil and petroleum products have been implemented. According to the Russian Ministry of Finance, "this maneuver not only diminishes the budget's reliance on oil prices but also alleviates the effects of their decline on the oil industry"².

Before the tax maneuver began, it had been expected to reduce the budget's reliance on the fluctuating trends in oil prices. The Russian Ministry of Finance considers the MET to be a more stable source of income than export customs duties. Additionally, the Ministry of Finance anticipated an increase in budget revenues from oil extraction and processing, as well as a reduction in the tax burden on the oil industry amid low oil prices.

During the tax reform in the oil industry, in 2005–2022, the share of the MET in oil rent taxation increased from 38% to 74% of the total oil revenues. This shift resulted from the shrinking share of export customs duties on crude oil – from 44% to 5%.

The proportion of export customs duties on petroleum products decreased from 10% to 2%, despite having reached 21% in 2014. Annual variations are observed in the revenues from excise taxes on petroleum products, which in certain periods contributed up to 10–15% to the country's overall tax income.

Since 2021, the tax on additional income from the extraction of hydrocarbon raw materials has played a substantial role in the taxation of oil rent, reaching

a share of 15%. The role of other sources of income in capturing oil rent is less significant.

As the structure of oil-related tax revenues in the Russian budget evolved, the proportion of oil rent extraction in Russia fluctuated across various tax instruments, including export customs duties.

The highest proportion of oil rent extraction for the MET was observed in 2022, reaching 57.6%, while for export customs duties on crude oil, this figure peaked in 2008 at 37.5%.

The MET and export customs duties are the two main alternatives of capturing oil rent in the state budget, and the growth of one revenue source occurs at the expense of the other.

The dynamics of the share of oil rent extraction in Russia by specific types of tax instruments in 2005–2022 are presented in Figure 4.

The state possesses a substantial toolbox of instruments for taxing oil rent (see Figure 4). To evaluate how effectively they capture oil rent, we analyzed the correlation between the amount of oil rent and the revenue generated from specific mandatory payments flowing into Russia's consolidated budget. The calculated linear correlation coefficients are presented in Table 2.

Throughout the entire period, we observed a strong correlation between the generated rent and its extraction through rent payments to the budget – the correlation coefficient is 0.9225. This figure remains high regardless of the tax maneuver. The MET for crude oil has a high correlation with the rent throughout the entire period, with the correlation coefficient approaching 1.

Customs duties on crude oil and petroleum products had a close correlation with the rent before the start of the tax maneuver. After the start of the tax maneuver, due to the annual reduction in customs tariff rates, their correlation coefficients became negative and have low values: -0.2155 and -0.2528 , respectively. Thus, we see a decrease in the stability of the correlation with the tax base of these two income sources, which previously

² https://minfin.gov.ru/ru/press-center/?id_4=33077

played a key role in regulating Russia’s external trade.

Excise taxes on petroleum products had a close correlation with the oil rent before the start of the tax maneuver. After the beginning of the tax maneuver, the correlation relationship became inverse, which can be explained by the introduc-

tion of a tax cushion, which provides compensation from the budget for excise amounts to companies supplying petroleum products to the domestic market.

Our analysis indicates that the MET and export customs duties, which are the key rent payments, can effectively capture oil rent in accordance with its fluctuations.

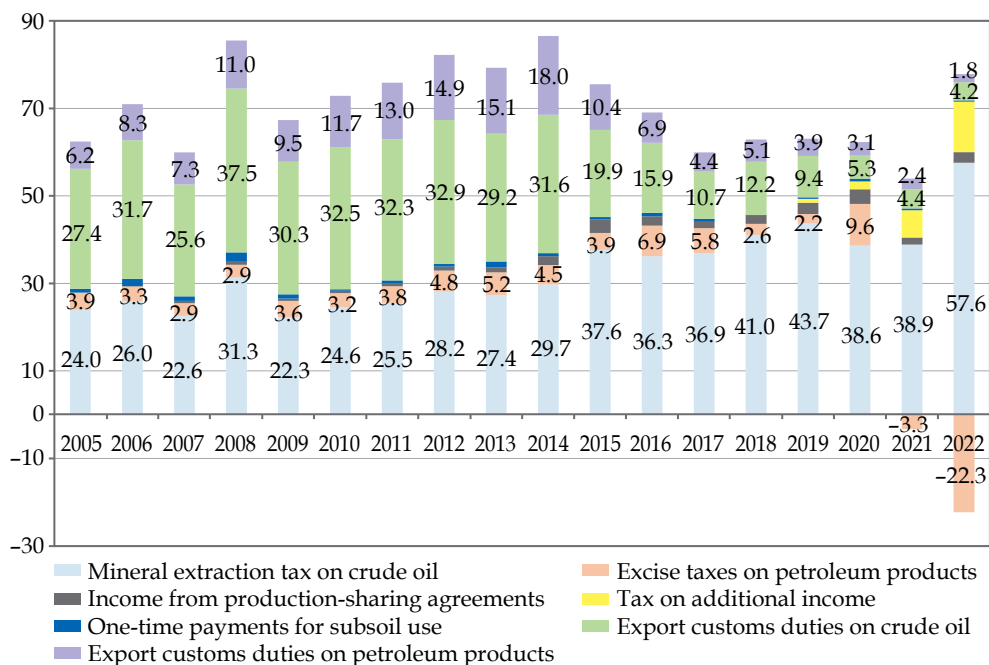


Figure 4. The proportion of oil rent extraction in Russia by specific types of tax instruments in 2005–2022, %.

Note: Compiled by the authors based on data from Rosstat and the Treasury of Russia

Table 2. Coefficient of correlation of oil rent with individual rent payments from 2005 to 2022

Comparable indicator	For the entire period	In 2005–2014 (before the start of the tax maneuver)	Since 2015 (during the tax maneuver)
Rent payments received	0.9225	0.9846	0.9539
Mineral extraction tax on crude oil	0.9518	0.9773	0.9161
Export customs duties on crude oil	-0.2175	0.9702	-0.2155
Export customs duties on petroleum products	0.0257	0.9797	-0.2528
One-time payments for the license for subsoil use	0.0295	0.3686	-0.0068
Income from production-sharing agreements in oil extraction	0.8551	0.8518	0.6211
Excise taxes on petroleum products	-0.4795	0.9594	-0.6122

However, due to the fact that since the beginning of the tax maneuver, the increase in the tax burden created by the MET did not fully compensate for the reduction in the tax burden created by export customs duties, there was a decline in oil companies' rent payments.

The average annual extraction of oil rent to the budget after the beginning of the tax maneuver decreased by 31.0 percentage points. In the given period, by the end of 2022, the export customs duty rate on crude oil had decreased by 10 times compared to 2011 (when the highest rate was in effect), and the export customs duty on gasoline had fallen by 17 times.

In the same period, the rate of the MET for crude oil increased by only 2.2 times (from 419 rubles per ton to 919 rubles). However, it should be noted that there is a significant difference in the calculation methods of the MET and export customs duties, which impedes a full-fledged comparison of the changes in the tax burden of these rent payments to the budget.

4.3. The level of neutrality in the Russian oil extraction tax system

It is important to ensure the neutrality of the natural resource rent taxation system so that it does not discourage investments in the extraction and processing of natural resources.

Figure 5 shows data on the dynamics of investments in the oil industry in Rus-

sia from 2005 to 2022, in comparison with the extent of oil rent extraction.

The tax maneuver has led to a reduction in the investment growth rates for extracting and processing enterprises. While for oil extraction companies, after 2014, the average annual growth rates of investments in fixed capital decreased by only 0.4 percentage points, for oil refining companies, this decline was 19.9 percentage points. This happened despite the fact that in this period, oil companies saved significant funds due to the substantial reduction in export customs duties on petroleum products.

We can suppose that there are accompanying factors that have influenced the decrease in investments. The shift from export customs duties to the mineral extraction tax did not prompt taxpayers to increase investments in expansion or modernization of their production, despite the reduced tax burden on oil rent.

It can be assumed that after the start of the tax maneuver, the investment attractiveness of the oil refining industry decreased. In 2005–2014 the average annual profitability of oil refining enterprises was 18.0%, and after 2015 it fell to 9.0%. With the onset of the tax maneuver, enterprises in this industry are compelled to purchase raw materials (crude oil) at a higher price due to the increased rate of the mineral extraction tax, which is embedded into the price of the oil they acquire.

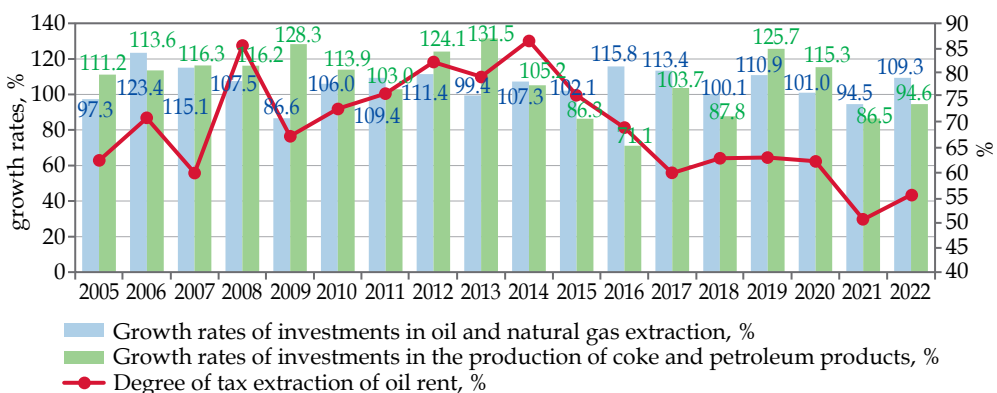


Figure 5. Comparison of the growth rates of investments in the oil industry with the extent of oil rent extraction in Russia from 2005 to 2022

Note: Compiled by the authors based on data from Rosstat and the Treasury of Russia

Our analysis shows that the taxation model for oil rent emerging as a result of the tax maneuver is less efficient compared to the previous model that was in force before 2015. Fiscal and regulatory functions in rent taxation are enhanced by extracting oil rent through export customs duties on oil and petroleum products (the latter accounted for more than half of the rent payments). Under a taxation system that is primarily focused on natural rent, both overall budgetary rent revenues and investments tend to decrease.

Unlike the MET, export customs duties do not have a distorting influence on the production process. They are paid by the taxpayers not at the stage of extracting natural resources. Customs duties are not linked to the production costs of extracting and processing oil; instead, they primarily depend on the price dynamics in the global markets for crude oil.

Payers of export customs duties receive practically no benefits from the reduction in the amount of their payments, as the burden of payment is effectively shifted to foreign consumers. They must pay this surcharge on top of the base price of the exported goods, as is always the case with indirect taxes. Therefore, payers of export customs duties are largely unwilling to seek legal or illegal ways to reduce these rent payments to the budget. The funds saved by taxpayers as unpaid customs duties, calculated during the export of goods from the country, cannot be spent on their own needs, unlike the unpaid amounts of the MET, which companies retain for their own use.

An advantage of customs duties is that they are more difficult to conceal from regulatory authorities (such as the Federal Customs Service). Since the exporter settles customs duties when the goods cross the country's customs border, it becomes more challenging for them to conceal any part of the exported products from supervisory authorities to evade customs duty payments. Meanwhile, in the case of the MET, taxpayers have more opportunities and motives not to report to regulatory authorities (such as the federal tax service) the full volume of extracted oil.

5. Discussion

Our research findings show that a substantial amount of oil rent, reaching 16 trillion rubles annually, is generated in Russia during the extraction of natural resources.

To calculate the oil rent generated in Russia, we developed a methodology based on the correlation between the income of the oil industry and the total expenses incurred by enterprises in the oil sector. This way we were able to achieve the research goal – measuring the extent of oil rent extraction into the state budget.

A significant portion of the oil rent generated in the country is transferred to the state budget through rent payments – in this process a key role is played by the MET and export customs duties on crude oil and petroleum products. Under the national rent taxation system, a significant 87% of the generated oil rent is directed into the budget.

Since 2015, Russia has implemented a tax maneuver, involving the gradual replacement of export customs duties by an increasing share of the MET. As a result, the tax maneuver has consistently reduced the level of oil rent extraction into the state revenue. As of 2022, the share of oil rent extraction into the budget fell to 56%.

Oil extraction and processing companies, despite gaining additional income from the reduction in export customs duties, are unwilling to channel the remaining portion of oil rent into the development of their own enterprises. After the start of the tax maneuver, investments in fixed capital in these sectors of the economy have declined.

The oil rent generated in the country depends on the global market conditions for oil and petroleum products. Considering that a substantial amount of the country's oil is exported, the most effective method to capture this rent is through export customs duties. In this case, the amount of export customs duties is determined depending on the global market price of oil. The tax base of the natural resource rent tax is a physical quantity – the amount of extracted oil, measured in tons. As for the adjustment coefficient applied

to calculate the rate of the natural resource rent tax based on the measurement of global prices for Urals crude oil, it can only to some extent capture the dynamics of price trends in the global commodity markets.

As a result, the oil differential rent I, governed by market mechanisms, cannot be entirely captured in the budget through MET, as its calculation prioritizes natural elements over price factors. Therefore, in contrast to customs duties, the MET can only partially capture the excess profit arising from the difference between oil prices in external markets and the costs of its extraction through a price-adjustment coefficient.

The tax maneuver in Russia was not entirely harmonized with the economic and political factors related to the integration of the Russian economy with other EAEU countries. Establishing a unified customs space is intended to facilitate smoother trade between EAEU members by removing customs and tariff regulation measures. Therefore, export customs duties should not be applied to deliveries of crude oil from Russia to other EAEU countries. These countries, in turn, import this oil from Russia, process it in their oil refineries, and export it to other countries. As a result, some portion of the oil rent generated in Russia is extracted as income in the other EAEU countries.

However, the transition from export customs duties to the MET has been detrimental to the quality of rent taxation, resulting in decreased budget revenues.

In these conditions, in our view, it is more practical to abandon the tax maneuver and reintroduce export customs duties on oil and petroleum products. At the same time, it is necessary to adjust the previously applied taxation model, based on the parity between export customs duties and the MET, to the customs regulations within the Eurasian Economic Union.

For exports of oil products to non-EAEU countries, it is recommended to apply export customs duties at rates that were in effect before the start of the tax maneuver. However, these rates should be adjusted to align with the current oil prices in the global markets. It is also ad-

visable to decrease the MET rates to the pre-2015 level. To reduce the outflow of Russian oil rent to the EAEU countries, it would make sense to introduce additional rent payments for the supply of crude oil from Russia to EAEU countries, such as a special licensing fee or royalty payment. In our view, these changes will help enhance the quality of oil rent extraction in Russia and, in general, taxation of the country's oil industry.

Our analysis confirmed the initial research hypothesis about the inefficiency of the tax maneuver implemented in Russia, aimed at reducing export customs duties on crude oil and petroleum products. In recent years, the fiscal role of rent payments has been decreasing, and their regulatory potential to encourage taxpayers to make investment contributions is also weakening.

The lower efficiency of the MET in capturing oil rent compared to export customs duties is explained by the difference in the nature of taxation through direct and indirect taxes on the same object (oil). In the case of the direct tax (mineral extraction tax), taxpayers are inclined to seek ways to reduce mandatory payments. This inclination is lower among indirect taxpayers (that is, those who pay export customs duties) as export customs duties shift the tax burden onto consumers of these goods.

Even though the MET and export customs duties share the same taxable object, there are certain differences in the tax base of these two tax instruments. For the MET, the tax base is the quantity of extracted minerals, i.e., a natural indicator, whereas for the export customs duty, the tax base is the value of the exported oil. Oil rent resulting from disparities in price levels and production costs in domestic and global markets is best captured through export customs duties.

Our findings agree with the previous research, which has identified similar drawbacks of the MET in taxing oil extraction. For example, Alexeev & Chernyavsky [34] found that after this tax was introduced in Russia in 2002, it failed to contribute to economic growth in oil-pro-

ducing regions. Shatalov et al. [35] also highlighted the drawbacks of this measure in taxing oil rent.

Our research has the following limitation: when it comes to taxing extractive industries, including oil, primarily oriented towards export, the MET falls short in capturing natural rent for the budget compared to export customs duties. However, if we look at the system of taxing minerals that are mostly consumed inside the country, there is no viable alternative to the MET in capturing natural rent.

6. Conclusion

Countries, such as Russia, endowed with substantial oil reserves, have the opportunity to gain oil rent through the extraction and processing of this valuable resource. It is advisable to withdraw a significant portion of the oil rent generated in the country into the budget and redistribute it for the needs of the entire state.

Importantly, tax instruments for extracting oil rent should be neutral to the production process; they should not discourage production development and investment.

The existing tax instruments vary in their ability to withdraw oil rent into the state budget.

The purpose of this study is to identify the most effective method of extrac-

ting oil rent in Russia. We developed a methodology based on calculating the difference between the income generated by the Russian oil industry and the sum of expenses incurred by oil companies to achieve this goal.

We conducted a thorough analysis of all tax instruments employed in Russia for extracting oil rent from 2005 to 2022, with a focus on key elements such as the mineral extraction tax applied to oil production and export customs duties on crude oil and petroleum products.

Our results confirmed the initial hypothesis that export customs duties are a more effective tool for extracting oil rent compared to the MET. Export customs duties increase the extent of oil rent extraction into the budget while exerting less distorting influence on the production activities of companies and their willingness to make investments.

Our research holds practical significance for tax policy-makers while its theoretical significance lies in the development of a methodology for measuring oil rent and the analysis of tax instruments used for its extraction into the budget.

Subsequent research will be directed towards finding ways to further improve the taxation of oil rent and developing new approaches to taxing the supply of crude oil from Russia to the EAEU countries.

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Acknowledgements

The research was funded through the state assignment of the Financial University under the Government of the Russian Federation.

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For citation

Fedotov D.Yu., Burov V.Yu. Taxes and Customs Duties as Instruments for Extracting Oil Rent into the State Budget: The Case of Russia. *Journal of Tax Reform*. 2024;10(1):19–37. <https://doi.org/10.15826/jtr.2024.10.1.154>

Article info

Received January 10, 2024; Revised February 22, 2024; Accepted March 8, 2024

Благодарности

Статья подготовлена по результатам исследований, выполненных за счет бюджетных средств по государственному заданию Финансовому университету при Правительстве РФ.

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Для цитирования

Fedotov D.Yu., Burov V.Yu. Taxes and Customs Duties as Instruments for Extracting Oil Rent into the State Budget: The Case of Russia. *Journal of Tax Reform*. 2024;10(1):19–37. <https://doi.org/10.15826/jtr.2024.10.1.154>

Информация о статье

Дата поступления 10 января 2024 г.; дата поступления после рецензирования 22 февраля 2024 г.; дата принятия к печати 8 марта 2024 г.



Reconstruction Concept of The Meaning of Permanent Establishment Physical Presence for Tax Purposes

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ABSTRACT

Technological developments have fostered cross-border e-Commerce transactions. This study aims to reconstruct the concept of the meaning of physical presence in the criteria for identifying foreign individuals and foreign entities as permanent establishments. Reconstruction uses the terminology of physical presence, which is adjusted to the presence of a new post-pandemic order, namely maintaining distance in certain situations. The term maintaining distance is translated as the distance between foreign individuals, foreign entities, and service users. This study proposes a reconstruction of the concepts of physical presence, the subject of permanent establishments, and the objects of permanent establishments. The concept of Significant Economic Presence is relevant to the fulfilment of three criteria: revenue, digital, and user. The reconstruction of permanent establishments involves determining the digital and user aspects. Reconstruction of permanent establishments involves determining the digital aspect of income. This study proves the hypothesis that the addition of Significant Economic Presence criteria to the determination of permanent establishments in e-commerce transactions increases the fairness of taxation rights in the source country. Therefore, it is necessary to review the determination of permanent establishments, especially e-commerce transactions, which are not limited to a physical presence with a wider scope through revenue, digital, and user criteria. This study makes a theoretical contribution to the significance of economic presence by replacing the meaning of the physical presence of a permanent establishment. Thus, the potential for permanent establishment taxation is not limited to the potential value-added tax but can also be on the potential income tax.

KEYWORDS

permanent establishment, physical presence, reconstruction, significant economic presence, fairness, tax reform, tax treaty

JEL H20, H87

УДК 336.22

Концепция реконструкции смысла физического присутствия постоянного представительства в целях налогообложения

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АННОТАЦИЯ

Технологический прогресс способствовал развитию трансграничных операций электронной коммерции. Целью данного исследования является реконструкция концепции значения физического присутствия в критериях идентификации иностранных физических лиц и иностранных организаций в качестве постоянных представительств. Реконструкция использует терминологию физического присутствия, адаптированную к наличию нового пост-пандемического порядка, а именно сохранения дистанции в определенных ситуациях. Термин «поддержание дистанции» переводится как дистанция

между иностранными физическими лицами, иностранными организациями и пользователями услуг. В данном исследовании предлагается реконструкция понятий физического присутствия, субъекта постоянного представительства и объекта постоянного представительства. Концепция значительного экономического присутствия анализируется в разрезе трех факторов: доходов, цифровых технологий и пользователей. Реконструкция постоянных представительств предполагает определение цифровых и пользовательских аспектов, а также цифрового аспекта доходов. Данное исследование доказывает гипотезу о том, что добавление критериев значительного экономического присутствия к определению постоянных представительств в сделках электронной коммерции повышает справедливость налоговых прав в стране происхождения. Соответственно, необходимо пересмотреть определение постоянных представительств, особенно операций электронной коммерции, которые не ограничиваются физическим присутствием с более широким охватом, посредством критериев дохода, цифровых технологий и пользователей. Данное исследование вносит теоретический вклад в понимание значения значительного экономического присутствия, заменяя значение физического присутствия постоянного представительства. Таким образом, потенциал налогообложения постоянных представительств не ограничивается потенциальным налогом на добавленную стоимость, но также может касаться потенциального подоходного налога.

КЛЮЧЕВЫЕ СЛОВА

постоянное представительство, физическое присутствие, реконструкция, значительное экономическое присутствие, справедливость, налоговая реформа, налоговое соглашение, налоговое соглашение

1. Introduction¹

After the pandemic, people have become accustomed to using applications to fulfill their daily needs [1]. This trend of changing consumption patterns has encouraged multinational companies such as Shopee, Spotify, and Netflix to use technology to expand the reach of services across national borders [2; 3]. In 2015, the Organization for Economic Co-operation and Development (OECD), through its Pillar 1 policy, recommended a taxation framework for digital transactions with additional criteria not limited to physical presence [4].

The OECD Pillar 1 policy framework seeks to reduce base and profit-shifting (BEPS) practices. The BEPS practice uses tax-haven countries as the basis for permanent establishment (PE). The OECD proposed a framework to reduce BEPS practices through the additional concept

of significant economic presence (SEP) provisions in determining a PE [5].

The SEP concept is an alternative to expanding taxation rights in the income tax aspect for source countries, which are currently the only objects of value-added tax. The income earned by a company using a marketplace platform is not an object of income tax as long as a PE has not been formed. The formation of a PE determines taxation rights for business profits based on non-resident marketplace platforms [6].

This principle is in accordance with OECD provisions that no PE does not tax [7]. The no PE-no tax concept in the OECD model tax treaty framework is used by digital-based companies to determine their country of domicile, so that they can avoid being taxed by the country of source of income [8].

The terminology of physical presence as a condition for determining PE has become irrelevant in current development. The development of business models that utilize digital platforms needs to be adapted to OECD's SEP concept by reconstructing the concept of the meaning of physical presence in determining a PE [9].

¹ This Report with the title "Reconstruction Concept of The Meaning of Permanent Establishment Physical Presence" was discussed at the conference "International and National Tax Reform" 7th December 2022 Ministry of Finance Republic of Indonesia Jakarta.

The development of digital-based cross-border transactions and the urge to review PE determinations using additional SEP criteria provide opportunities to expand taxation rights for income tax in source countries [10; 11].

This study hypothesizes that the significant economic presence criteria for determining permanent establishments expand income tax taxation rights for the source country.

The research question is how to reconstruct the concept of the meaning of the physical presence of PE.

This study aimed to reconstruct the criteria for determining permanent establishment by using the terminology of physical presence, reconstruction of permanent establishment subjects, and reconstruction of permanent establishment objects.

The research objectives were achieved through the formulation of a reconstruction concept that uses the SEP concept from the OECD for Economic Cooperation and Development. Section a review the literature supporting the concept of reconstruction.

2. Literature Review

2.1. Significant Economic Presence

Minimizing the impact of double taxation results in a set of distributive policies. The OECD Framework Taxation rights on business profits can be imposed in the country of residence or country of source of income. Taxation rights rest with the source country if a PE is formed. PE is not limited to physical presence; the existence of significant economic transactions through online platforms fulfills the meaning of economic presence [6].

Referring to the OECD consultation document, the SEP concept can be used as an alternative for determining PE. The PE concept implies the existence of three criteria for cross-jurisdictional digital transactions, with additional provisions for determining the existence of economic activity that previously implied a physical presence [12]. The first factor of the SEP framework is the income-based factor, the second is the digital factor, and the third is the user-based factor [13].

The Task Force on Digital Economics determined three jurisdictional factors when applying the SEP concept. Income-based factors include the transaction type, income threshold level, and related administration. Digital factors include local domain names, digital platforms, and payment options. User factors are based on data that reflect participation levels, such as the number of monthly active users, number of final online contracts, and volume of digital content collected through digital platforms [14].

2.2. Physical Distancing as a New Order Behavior

Community behavior during and after the Covid-19 pandemic changed to a new order. Social distancing policies are becoming a new habit that influences business development policies [15]. The new habit of keeping your distance becomes an opportunity for business development through services that get closer to the consumers. The new habit of social distancing is being utilized by business actors based on digital platforms to increase the growth of e-commerce transactions across their jurisdictional borders [16].

The development of business models that utilize social distancing policies has resulted in physical presence becoming irrelevant in determining PE. Changes in consumer behavior that provide opportunities for cross-border jurisdictional transactions do not necessarily change the taxation rights of income-source countries [17]. This transformation is driving a global debate regarding the allocation of taxation rights and the nexus. Tax treaty provisions requiring physical presence are irrelevant when applied to digital economic transaction actors [11]. To achieve fair taxation rights for countries involved in cross-border transactions, a synergy of nexus renewal is needed.

The nexus update is an alternative for realizing fair taxation rights for digital transactions to avoid tax avoidance practices that lead to tax avoidance [18]. A nexus indicates that digital transaction actors across jurisdictional borders are committed to their tax obligations. For

source countries, the income tax nexus is the first step for source countries to tax digital transaction actors, even without a physical presence in that country [19]. Digital-based cross-border transactions regulated by the tax treaty are based on the concept of *lex specialist derogate lex generalists* [20]. The next explanation explains the concept of the *lex specialist derogate lex generalist* in tax treaty policies.

2.3. Lex Specialist Derogate Lex Generalist

The principle of *lex specialist derogate lex generalist* in international tax law means that specific provisions trump general provisions [21]. This view was previously expressed by Jeremy Betham, that specific legal provisions are a consideration for adjustments to general legal provisions, considering that special provisions are designed in more detail and rigor [22]. In the context of cross-border transactions, jurisdiction between two countries is regulated in a tax treaty so that the provisions therein trump the provisions that apply nationally in each country's tax treaty [23].

Regulating cross-border transactions that have been regulated in each country's tax treaty still creates some uncertainty in determining tax rights. Frequently changing economic conditions require economic actors to adapt quickly, but regulations governing digital transactions cannot be changed as quickly as in the digital economy [17]. Reflecting on tax evasion cases, digital economy actors take advantage of policy loopholes by playing with profit allocation, so that taxation in the country of source of income can be avoided. Therefore, there is a need to reorganize jurisdiction in taxation.

The complexity of legal arrangements between jurisdictions requires a complete and comprehensive understanding of international legal provisions by considering the legal structure, regulated activities, and behavior of regulated multinational companies [20].

The provisions in the articles of agreements between countries consider the sovereignty of the legal policies of each country, resulting in a comprehensive discussion of a tax treaty considering long-

term relationships. This principle is firmly adhered to by each country in formulating a bilateral tax treaty known as the *lex specialist derogate lex generalist* [24]. This principle is considered when reconstructing the meaning of the physical presence of the determination of a PE, as stated in the articles on tax treaties [25].

3. Reconstruction Methodology

3.1. Research Paradigm

A research paradigm is a way to examine social reality [26]. In this study, the social reality is that the conditions for the development of cross-jurisdictional digital transactions are increasing, but this is not commensurate with taxation rights in the income tax aspect of the source country. This reality does not fully fulfill the fairness of the taxation rights of the source country with the country of domicile [27]. Cross-jurisdictional taxation rights are regulated in tax treaties that consist of various text collections [28].

The collection of text on tax treaties is the main research data, which is then reconstructed in three stages. Reconstruction of the reality of tax texts by providing new meanings can present more relevant and contextual meanings [29]. This study uses a qualitative research approach with in-depth descriptions of the reality of the research object [30; 31].

3.2. Reconstruction Stages

Currently, the concept of determining a PE refers to the Organization for OECD and Development framework with physical presence criteria, in accordance with Article 5. The first stage of reconstruction is to reconstruct the meaning of physical presence in Article 5 using OECD SEP criteria. The next stage is to pay attention to the income earned by the company which has been fulfilled to become a PE.

Referring to the SEP concept, this considers the income, digital, and user aspects associated with the terminology of keeping distance as a new order and considers the *lex specialist derogate lex generalist* principle as the basis for preparing the concept of reconstruction, which is presented in Figure 1.

Based on Figure 1, regarding the stages of reconstruction of the meaning of the physical presence of PE, there are three stages.

The first stage involves the reconstruction of the concept of the meaning of the physical presence of PE. This reconstruction emphasizes the determination of foreign individuals and entities by using the OECD SEP concept.

The second stage is the reconstruction of the subject of PE, which emphasizes the subject of foreign individuals and entities as PE in the digital and user aspects.

In the third stage, the reconstruction of permanent establishments emphasizes the income earned by foreign individuals and entities as permanent establishments.

In the following section, the reconstruction process that begins with the reconstruction of the concept of the physical presence of PE is presented.

4. Reconstruction Results

4.1. Reconstruction of the Concept of the Meaning of Physical Presence PE

The first of these three stages reconstructs the meaning of physical presence in determining PE by determining foreign individuals and entities. The first stage of reconstruction involves determining the tax subject, followed by determining the tax object. Determining additional criteria for SEP as a development of physical presence is a new challenge, considering that each country has different definitions and jurisdictional provisions [32].

The first stage of reconstruction in the Indonesian context begins with a review of regulatory provisions related to electronic transactions and the concept of tax treaties. In 2022, after the pandemic, Indonesian tax authorities will adjust tax laws by enacting laws on the harmonization of tax regulations. Previously, regarding the regulation of electronic transactions, Indonesian tax authorities were only able to collect taxes on the value-added tax aspect and were not able to explore the income tax aspect.

Furthermore, Article 6, paragraph (6) of Law No. 2 of 2020 states that foreign traders, foreign service providers, and/or foreign PPMSE can be treated as PE and subject to income tax if they meet the provisions of significant economic presence².

The tax authority stipulates three provisions for significant economic presence: consolidated gross turnover of a business group up to a certain amount; sales in Indonesia up to a certain amount; and active users of digital media in Indonesia up to a certain number. Article 6, paragraph 6 of Law No. 2 of 2020 captures digital transactions in Indonesia. According to [33], the implementation of Law No. 2 of 2020 is a unilateral measure that has not yet reached global consensus. Ratification is required at the tax treaty level through

² UU No. 2 Tahun 2020. Penetapan Peraturan Pemerintah Pengganti Undang-Undang Nomor 1 Tahun 2020 Tentang Kebijakan Keuangan Negara dan Stabilitas Sistem Keuangan Untuk Penanganan Pandemi Corona Virus Disease 2019 (COVID-19). Jakarta, 2020.

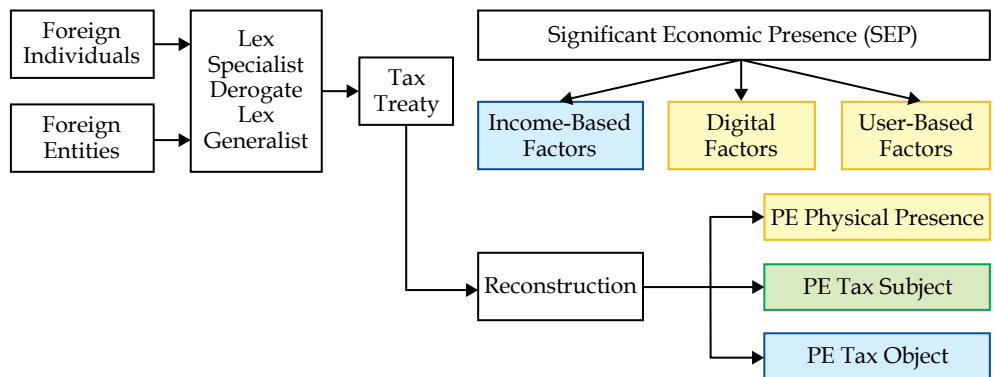


Figure 1. Stages of Reconstruction of the Meaning of PE's Physical Presence

the reconstruction of the meaning of the physical presence of PE.

In the reconstruction stage, the meaning of the physical presence of PE is illustrated by the Indonesian Tax Treaty with Singapore. The ratification of Indonesia's Tax Treaty with Singapore was carried out on February 4, 2020, and it became effective on January 1, 2022. There are several new agreements on the revised tax treaty.

In terms of PE, there is no new agreement regarding its determination using the SEP concept of OCED. The new agreement is limited to changes in dividends, interest, royalties, and branch profit tax rates. Other agreements involve rearranging the exchange of information and anti-tax evasion³. This means that there was no change in Article 5, paragraph 1; therefore, PE refers to a permanent place of business in which all or part of a company's business is carried out. The emphasis in paragraph 1 is on the word place⁴.

In this section, we have reconstructed the meaning of physical presence, highlighting the importance of physical presence terminology adapted to the current context. In the context of the development of digital transactions across jurisdictional boundaries without the physical presence of a transaction. The terminology of physical presence in the digital era should be adjusted to the meaning of economic presence, not just physical presence. After reconstructing the meaning of physical presence, the next explanation reconstructs the concept of a tax subject for cross-border digital transactions to become a tax subject in a country of source of income.

4.2. Reconstruction of PE Tax Subject Concept

After going through the first stage of reconstruction, the second stage involves reconstruction of the subject aspect of income tax. In this reconstruction stage, we use illustrations of companies that use digital transactions across a country's jurisdictional boundaries.

³ DJP. Siaran Pers SP-03/2020 tentang Indonesia Dan Singapura Perbarui Perjanjian Pajak. Jakarta, 2020.

⁴ Republik Indonesia. Tax Treaty Indonesia – Singapura. 2020.

Regarding value-added tax, tax contracts in Indonesia have gradually appointed multinational corporations to collect value-added tax. Considering the limited authority of Indonesian tax authorities in determining a PE, reconstructing the subject of income tax is relevant to creating taxation rights that are not limited to the value-added tax aspect.

Regarding the taxation of Google Asia Pacific Pte. Ltd., Sapore, whose place of business is in press releases no. SP-29 PMSE batch 1 (Google Asia Pacific Pte. Ltd.) was selected as the PMSE VAT collector on August 1, 2020⁵.

A tax is imposed on Google because it is deemed to have complied with the existing regulations, both in terms of transaction value and amount of traffic (access), within 12 months. Google charges 11% of the VAT (previously 10%) to Google accounts of customers who buy digital products or services in Indonesia (Google Workspace Edition). Buyers can provide Google with a taxpayer identification number (TIN) for VAT purposes to be printed on the buyer's invoice. Tax problems arise from the income tax aspect, where the Indonesian-Singapore tax treaty requires physical presence to measure the existence of PE [34].

Although Google Asia Pacific Pte. Ltd is indicated to have an SEP presence, it cannot be subject to income tax because there are no rules for SEP criteria [33]. This is because the two pillars of the discussion on digital economy taxation are agreed upon in an inclusive framework. One thing that is easily visible on pillar one is the right to taxation itself.

The right to tax electronic transactions across jurisdictional boundaries does not yet fulfill a sense of justice for the country of the source of income; currently, the right to tax still rests with the country of domicile. The implication is that the source country seeks to increase its tax potential in the context of local regulations in Indonesia through PMSE. Through the

⁵ DJP. Gelombang Pertama, Enam Perusahaan Ditunjuk Sebagai Pemungut PPN Produk Digital Luar Negeri. Siaran Pers Nomor: SP-29/2020, Jakarta, 7 Juli 2020.

appointment of value-added tax collections, the Indonesian tax authority obtains increased tax revenue; however, this becomes the final burden on consumers.

Ideally, the increase in taxation rights takes the form of taxation rights on income received by digital transaction actors, which is the entity's obligation in the form of corporate tax.

The concept promoted by the OECD through better policies for better lives is relevant in the context of fulfilling a sense of justice in taxation rights for income taxes in source countries [4; 14; 36]. Through the conceptual reconstruction of the meaning of the physical presence of a PE, digital transaction opportunities across jurisdictional boundaries become tax subjects for the source country. Thus, income obtained from cross-border jurisdictional transaction business actors that meet the SEP criteria can become a tax object through the next reconstruction stage, related to the reconstruction of the concept aspect of the tax object.

4.3. Reconstruction of PE Tax Object Concept

The third stage of the reconstruction was the tax-object aspect. Reconstruction at this stage is a reconstruction of the material aspects of the application of tax provisions after a digital transaction fulfills the formation of a PE and becomes a tax subject. In digital economic transactions across a country's jurisdictional boundaries, the income earned by an entity cannot be taxed in terms of income tax if the entity does not meet the requirements of a PE.

In the Indonesian context, taxation of PE is regulated by PMK-35/PMK.03/2019 for the determination of PE⁶. PE has the same tax obligations as corporate tax subjects in Indonesia, which are regulated in Article 2, paragraph (1a)⁷.

⁶ Kementerian Keuangan RI. PMK No. 35/PMK.03/2019 Tentang Penentuan Bentuk Usaha Tetap. Kementerian Keuangan RI, Jakarta, 2019.

⁷ DJP. Susunan dalam Satu Naskah Undang-Undang Perpajakan Edisi 2021 dengan Perubahan UU CIPTAKER. Direktorat P2Humas DJP, Jakarta, 2021.

According to Article 2, paragraph (5) of the Income Tax Law, PE is a form of business that is used by individuals who do not reside in Indonesia: individuals who are in Indonesia for no more than 183 days within a 12 month period, and entities that are not established and are not domiciled in Indonesia to run a business or carry out activities in Indonesia, such as building branch companies, factories, workshops, etc., which have facilities in the form of land and buildings and include equipment, machines, and warehouses owned or used by electronic transaction organizers to carry out business activities through the marketplace and are permanent.

The development of digital economic transactions through online media and the internet has penetrated all levels of social life. The development of digital businesses does not include regional boundaries.

However, from a political perspective, each country still has territorial boundaries, and digital economic activities can be conducted anywhere and anytime. Producers, consumers, and distributors need not be present at one time or place to conduct the buying and selling transactions.

Therefore, it can be said that the flow of money in and out of a country is heavy. The outflow of money was heavy for countries that ruled the digital economy when many were positioned as consumers.

Governments in each country are currently fighting for a company or digital economic activity to be designated as a permanent establishment and carry out tax obligations in consumer countries.

Currently, the issue of digital economy taxes is being intensively discussed, bearing in mind that Indonesia is one of the countries in Southeast Asia with the fastest and most rapid growth in the digital economy, so the government can attract the attention of entrepreneurs or digital economy rulers seeking profits.

In the emergence of this fact, the government has issued several regulations regarding tax regulations on digital economic activities with the aim of obtaining benefits from tax revenues. One is the plan to use the SEP concept with a specific form

of implementation and format, although the government feels the need to wait for a decision and agreement from the OECD.

Each country that has implemented this concept has a different format and form of implementation due to the absence of an official international definition. The government stipulates the provisions of the SEP concept through several specified criteria, including the consolidated turnover or income of business groups, and the ratio of sales in Indonesia to the number of active users of digital media (the Internet). If the determination of the PE cannot be imposed on foreign tax subjects because of a double tax avoidance agreement, foreign tax subjects who meet the SEP criteria are subject to an electronic transaction tax.

Indonesia recently established an Electronic Transaction Tax (PTE) in Law No. 2 of 2020, which refers to the domestic laws made so that they are not included in the tax treaty and result in value-added and income taxes that cannot be imposed in that country.

4.4. Proposed SEP Concept as Criteria for Determining

Three stages of reconstruction have been presented in a structured manner, starting from reconstructing the meaning of the physical presence of a PE, continuing to reconstruct the concept of a PE's tax subject, and finally, reconstructing the concept of a PE's tax object. Reconstructing the meaning of physical presence in determining PE by adopting the SEP concept from OECD.

Tax subject reconstruction is further performed after a company meets the criteria for a PE. Thus, there is a taxation right for the source country of income on a tax subject that has been formed into a PE, through which income becomes a tax object.

The SEP concept proposal as a criterion for determining PE contains three aspects. Physical presence uses a new meaning with the criteria for determining whether there is income flowing from the user country. This means that Article 5, paragraph 1 of the tax treaty regarding PE, according to the illustration between

Indonesia and Singapore after 30 years of revision on February 4, 2020, which became effective on January 1, 2022, should accommodate a proposal from the OECD regarding additional criteria for SEP as a determination of a PE.

In the context of the illustration in Indonesia, the adjustments made to the tax treaty between Indonesia and Singapore have not yet touched upon the terminology of physical presence. It is necessary to consider reviewing it by reflecting on the three stages of reconstruction through the meaning of physical presence, the concept of the tax subject, and the concept of the tax object in the aspect of corporate income tax. Thus, the income obtained by cross-border digital transactions becomes a tax object not only in the country of residence but also in the distributive right of the source country by considering the principle of *lex specialist derogate lex generalists* in the tax treaty concept.

Reconsideration of the criteria for determining PE in Law No. 2 of 2020 needs to be expanded in scope and limited to PPMSE. Improvements, apart from the unilateral limited global consensus level, are required. This can be initiated by reviewing tax treaties with agreement partner countries with potential taxes on digital transactions [34–38]. This review aims to create legal certainty, considering that it is one of the factors considered by investors and encourages tax compliance [39–42].

The proposed reconstruction of the meaning of PE's physical presence using the new meaning of SEP from OECD is presented in Figure 2.

5. Discussion

Through three stages of reconstruction (the meaning of the physical presence, tax subject concept, and tax object concept), the meaning of determining physical presence as a criterion for determining a PE can answer the research hypothesis that additional SEP criteria as a determinant of a PE, the hypothesis of this research is that the SEP criteria in determining PE expand income tax taxation rights for the source country.

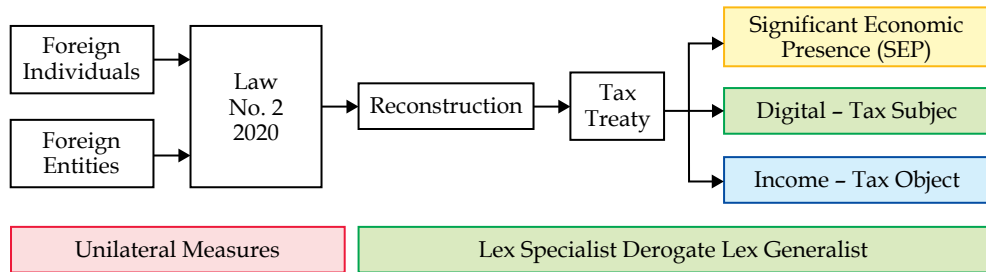


Figure 2. Reconstruction of the Meaning of PE's Physical Presence

The OECD makes PE a special concern in BEPS practices⁸ [4; 13]. Referring to Article 5, paragraph 1 of the OECD Model Tax Treaty, it is stated that *for the purposes of this convention, the term "permanent establishment" means a fixed place of business through which the business of an enterprise is wholly or partly carried on.* The term fixed place of business in digital-based cross-border transactions is no longer relevant [5; 11; 32].

Reflecting on the OECD model, taxation rights for an entity's profits are the country of domicile, unless a PE is formed in the source country [47]. This research hypothesis creates fairness taxation rights in the source country and the country of domicile by reconstructing the determination of a PE by adding SEP criteria, particularly for e-commerce transactions. The fairness taxation rights reflecting the business profit in accordance with Article 7 Tax Treaty OECD model, *profits of an enterprise of a contracting State shall be taxable only in that State unless the enterprise carries on business in the other contracting State through a permanent establishment situated therein.*

The proven hypothesis is that the SEP criteria for determining a PE seek to provide fairness in the taxation rights of the PE's profits. Revisions are needed for articles governing PE in tax treaties and the expansion of jurisdictional coverage, in accordance with research results [50].

The derivative implications of its implementation can be achieved through various tax-incentive policies. It is ne-

cessary to pay attention to research results [51] that tax uncertainty in e-commerce transactions can have a negative impact on the growth of e-commerce transactions. Research [52] confirms that the development of trade leads to a digital-based virtual environment. Therefore, when additional SEP criteria are applied to determine PE, there must be a special policy for the affected entity.

Several studies related to tax incentives to increase investments have been applied to electric cars in renewable energy development and other derivative industries [53–56]. Through additional SEP criteria, determining a PE does not reduce the growth of e-commerce transactions with appropriate tax policy incentives and provides fairer taxation rights to the source country without ignoring the taxation rights of the country of domicile. According to the OECD tag line, better policies for better lives can be reflected through this hypothesis of fairness in taxation rights.

6. Conclusions

Answering research questions related to how to reconstruct the concept of the meaning of the physical presence of a PE is described in three stages. In the first stage, the SEP concept proposed by the OECD was adopted. The second stage goes through further reconstruction after a digital transaction fulfills a PE and is subject to an income tax. After the final reconstruction is fulfilled, it becomes a PE, in accordance with the OECD concept that there is no PE-no tax. Then, the reconstruction leads to the fulfilment of the PE

⁸ OECD. Action plan on base erosion and profit shifting. 2013.

criteria as a subject of income tax, so that income received from the source country becomes an object of income tax.

This study tests a hypothesis regarding the application of the SEP concept to determine a PE that can increase the taxation rights of the income source country. This hypothesis is accepted and proven through three stages of reconstruction: reconstructing the meaning of physical presence, reconstructing the concept of the tax subject, and reconstructing the tax object; taxation rights can be increased in the income tax aspect.

This study makes theoretical and practical contributions to all parties who care about the fairness of taxation rights in transactions across jurisdictional boundaries. The new habit of social distancing created by the pandemic has become a driving force for the growth of digital

transactions across jurisdictional borders and should be used as momentum to ratify tax treaties by presenting SEP terminology as an additional criterion for determining a PE. The OECD considers three factors through the SEP concept: income-based, digital, and user-based factors. The OECD consultation in the form of the SEP concept is a manifestation of the OECD's role in presenting impartial policies to increase the fairness of taxation rights between source and domicile countries by considering the principle of *lex specialist derogate lex generalists* in the tax treaty concept.

This study is only conceptual, and further research more specific to certain subjects, objects, and partner countries is required. The researcher presented this idea to strengthen the view and increase self-confidence in Pajak Kuat Indonesia Hebat.

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Acknowledgments

This study was supported by grant number 162/SPK/D. D4/PPK.01.APTV/VI/2023 from Direktorat Jenderal Pendidikan Vokasi Kementerian Pendidikan, Kebudayaan, Riset dan Teknologi. SP DIPA-023.18.1.690524/2023 dated November 30, 2022, 6th Revision dated September 14, 2023.

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For citation

Darmayasa N., Partika D.M. Reconstruction Concept of The Meaning of Permanent Establishment Physical Presence for Tax Purposes. *Journal of Tax Reform*. 2024;10(1):38–50. <https://doi.org/10.15826/jtr.2024.10.1.155>

Article info

Received August 22, 2023; Revised December 3, 2023; Accepted December 20, 2023

Благодарности

Это исследование было поддержано грантом № 162/SPK/D. D4/PPK.01.APTV/VI/2023 от Direktorat Jenderal Pendidikan Vokasi Kementerian Pendidikan, Kebudayaan, Riset dan Teknologi. № SP DIPA-023.18.1.690524/2023 от 30 ноября 2022 г., 6-я редакция от 14 сентября 2023 г.

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Для цитирования

Darmayasa N., Partika D.M. Reconstruction Concept of The Meaning of Permanent Establishment Physical Presence for Tax Purposes. *Journal of Tax Reform*. 2024;10(1):38–50. <https://doi.org/10.15826/jtr.2024.10.1.155>

Информация о статье

Дата поступления 22 августа 2023 г.; дата поступления после рецензирования 3 декабря 2023 г.; дата принятия к печати 20 декабря 2023 г.



The Consequences of Tax Changes: The Evidence on Tax Multiplier in Russia

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ABSTRACT

The information about tax changes' effects on aggregate output is highly important for economic policy, especially in times of economic contractions. Russian economy underwent the series of tax changes during 2003–2020. For better tax policy design, it is necessary to understand and to evaluate the effects of this changes on aggregate output, which is the purpose of this study. To solve the problem of endogeneity we use two methods – “narrative approach” and “classical” approach. The first one uses data on exogenous, not driven by economic conditions, tax changes from official documents and forecasts. The second one uses cyclical component of the aggregate tax receipts as tax shocks indicator. Using both methods we estimated a VAR model of Russian economy for period 2003–2020. The implementation of “narrative approach” did not provide any significant effect possibly due to vulnerability towards the measurement error. Based on the classic approach we found that tax changes affect output with a 1-year lag and a 1 percentage point shock of aggregate tax receipts to GDP ratio lowers output growth by 0.7–0.88 percentage points. This result is robust to inclusion of additional factors in the model. The results are mostly consistent with existing research. Implementation of “narrative approach” proved to be restricted in Russia. “Classical” approach allows to conclude that tax changes could serve as an appropriate tool of countercyclical policy in Russia. On the other hand, increasing tax burden in times of downturn could be highly harmful for recovery. These results should be interpreted taken into consideration the limitations of the VAR method used.

KEYWORDS

tax multiplier, Russian economy, vector autoregressions, fiscal foresight, narrative approach

JEL C32, E62, H20, H30

УДК 336.027

Последствия изменений в налоговой политике: оценка налогового мультипликатора для России

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АННОТАЦИЯ

Информация о влиянии изменений налоговой политики на совокупный выпуск необходима для осуществления грамотной экономической политики, особенно во времена экономического спада. Российская экономика претерпела

ряд изменений в налоговой политике в период 2003–2020 гг. Для повышения ее эффективности необходимо понять и оценить влияние этих изменений на совокупный выпуск, что и является целью данного исследования. Для решения проблемы эндогенности в работе используется два метода, так называемый, «нарративный подход» и «классический» подход. В рамках первого подхода используются данные об экзогенных, не обусловленных экономической конъюнктурой, налоговых шоках из официальных документов и прогнозов. Во втором методе в качестве индикатора налоговых шоков рассматривается циклическая составляющая совокупных налоговых поступлений. Используя оба метода, была проведена оценка VAR-модели российской экономики на данных за период 2003–2020 гг. Оценка в рамках «нарративного подхода» не выявила значимого эффекта налогового шока на изменение совокупного выпуска. Основной причиной такого результата видится высокая чувствительность метода к ошибке измерения. Оценка в рамках «классического» подхода позволяет сделать вывод, что налоговые изменения влияют на выпуск с лагом в 1 год, а шок отношения совокупных налоговых поступлений к ВВП в размере 1 п.п. снижает прирост совокупного выпуска на 0,7–0,88 п.п. Этот результат устойчив к включению в модель дополнительных факторов. Полученные оценки в основном согласуются с существующими исследованиями. В России реализация «нарративного подхода» имеет существенные ограничения. «Классический» подход позволяет сделать вывод, что налоговая политика может служить подходящим инструментом контрциклической политики в России. В то же время увеличение налогового бремени во времена спада может привести к существенному замедлению восстановления экономики. При использовании полученных результатов необходимо учитывать ограничения VAR моделирования.

КЛЮЧЕВЫЕ СЛОВА

налоговый мультипликатор, экономика России, векторная авторегрессия, бюджетный прогноз, нарративный подход

1. Introduction

The tax changes' effects on aggregate output are of central importance for economic policy. Are tax cuts an effective tool to stimulate GDP during economic downturns? How vulnerable is the aggregate output when the tax rates go up? These empirical questions refer to tax multiplier's calculation.

Russian economy underwent the series of tax changes during 2003–2020. Some of them were motivated by countercyclical policy reasons (like corporate tax rate cut from 24% to 20% in 2009).

Another purpose of tax change was to accumulate more fiscal revenues (typical examples were the limiting of loss carryforward from 100% to 50% of one-year corporate profit in 2017 and the VAT standard rate raise from 18% to 20% in 2019). Finally, there were changes in tax administration in order to make tax collection and compliance cheaper. For better tax policy design, it is necessary to understand and to evaluate the effects of all these changes on aggregate output.

But, surprisingly, the measurement of tax multiplier for Russian economy is quite rare in the research agenda. Evaluation of both spending and tax multipliers for Russian economy is presented in the study [1].

The papers generally focus on spending multiplier's evaluation (for instance, [2–4]). At the same time there is a vast empirical literature concerning the identification of tax shocks' results for other countries (although, it mainly concerns USA [5], the United Kingdom [6] and other OECD countries [7; 8]).

The purpose of this study is to evaluate the tax changes' effects on aggregate output growth in Russia.

The hypothesis is that effects are quite significant for Russian economy. Therefore, tax changes could serve as an appropriate tool of countercyclical policy.

To test the hypothesis, we estimate the vector-autoregressive model (VAR) for Russian economy for period 2003–2020. VARs have a number of empirical problems, which create certain restrictions to our analysis.

First, VARs are reduced form with little theoretical basis.

Second, residuals (or so-called innovations) in the model are not exactly shocks of variables in the model, because it's not exogenous in general.

Third, there is a "curse of dimensionality", which limits the number of variables in the model.

The paper is structured as follows: in the "literature review" section we present how to estimate tax effects on aggregate output; in the second section we describe specific methods and data used; in the "results and discussion" section we present the results of empirical estimation and interpret it; in the last section we make concluding remarks.

2. Literature review

The tax multiplier is the factor by which a change in tax revenues will alter aggregate output [9; 10]. The main difficulty in evaluating the tax multiplier is the potential endogeneity problem. Less tax burden stimulates the components of GDP (the demand-side of aggregate output). Negative effect on investment is mainly attributed to corporate taxation.

For instance, Brockmeyer [11] provided quasi-experimental evidence on negative impact of bigger corporate tax rate on firm investment in the United Kingdom.

Ohrn [12] exploited another quasi-experimental variation in corporate tax rates created by the Domestic Production Activities Deduction in the United States and has found this negative effect.

Liu & Mao [13] have shown the negative impact on investment could be caused additionally by value-added tax rate changes.

Negative effect on consumption due to labor tax rates is studied by Auten & Carroll [14] and due to consumption tax rates is presented by Benzarti & Carloni [15]. Benzarti & Tazhitdinova [16] suggested the modest negative effect of VAT on export.

Moreover, vast of empirical literature has demonstrated the negative effect on aggregate supply-side of GDP. Less tax burden causes rise in labor supply.

Benmarker et al. [17] focused on how the payroll tax reductions boost employment.

Keane [18] provided the extensive survey of income tax rates' impact on labor supply. Thus, changes in tax revenues cause changes in aggregate output both on demand- and supply-sides.

On the other hand, factors, that drive economic downturns, make tax revenues fall as a result of tax bases' shrinkage (for example, less profit and consumption because of aggregate demand's fall, less wages because of additional unemployment). During the period of economic boom one can see the opposite situation: grown aggregate output is followed by gone up tax revenues. Falling to account for these factors in the model will make changes in aggregate output cause changes in tax revenues and lead to endogeneity problem (see Vegh & Vuletin [19]).

There are different ways of solving this reverse causality problem. One is to use another measure of tax change instead of tax revenues.

Riera-Crichton et al. [20] suggested to use tax rates as variable of interest. Unfortunately, this way is of limited practice if statutory tax rates differ from marginal effective tax rates. Changes in tax administration and in tax elements (for example, in deductions) effect tax burden and statutory tax rates stay the same.

Aizenman & Jinjark [21] demonstrated how big this difference it could be considering VAT tax receipts.

Granda-Carvajal & García-Callejas [22] revealed the importance to consider informal sector for tax multiplier estimation.

According to Devereux & Fuest [23], changes in tax deductions and allowances are often the main source of marginal effective corporate tax rates' variation.

Belev et al. [24] provided evidence that in Russia the marginal effective corporate tax rates vary mainly because of tax loss carryforward. The following analysis of the significant changes in Russian Tax Code shows that there had been several tax changes apart from alterations in statutory tax rates).

Another way to solve this reverse causality problem is to find the instrumental variables which treat tax revenues and do not treat aggregate output directly (a possible example of an instrumental variable is provided in Barro & Redlick [25], motivation and limitations of such method use in Gechert & Rannenberg [26]).

The classical variants of potentially valid instruments are lags of tax revenues (used by Mountford & Uhlig [27]) and forecasted tax revenues – so called “fiscal foresight” (applied in Favero & Giavazzi [28]).

According to Blanchard & Perotti [29] and House & Shapiro [30], the first approach requests medium or high-frequent data (at least, on the quarterly basis) to accurate evaluation of timing of tax changes’ effects.

The latter approach (so called “narrative approach”) was suggested by Romer & Romer [31] and has become very popular among researchers (see, for example, Mertens & Ravn [32]).

But at the same time Mertens & Ravn [33] show how this approach is vulnerable to the measurement error. And Hebous & Zimmermann [34] found out the possible weak quality of narrative tax shocks as instrumental variable.

So, the problem of evaluation of the tax changes’ effects on aggregate output is not novel. However, there is no unified approach to solve this problem. Moreover, the attention to this problem with respect to Russian data is quite rare and, to our awareness, the research implementing “narrative approach” to Russian data is absent. In this paper different approaches are implemented.

3. Methods and Data

The natural way to evaluate the tax changes’ effects is to calculate tax multiplier. Following Romer & Romer [31] we will evaluate the effects of the tax changes on the log difference of real GDP (e.g., on output growth) throw estimating the cumulative impulse response functions with VAR model. Our VAR model is defined as follows:

$$Y_t = c + B_1 Y_{t-1} + B_2 Y_{t-2} + \dots + B_p Y_{t-p} + \varepsilon_t, \quad (1)$$

where Y_t is a vector of variables used (e.g., output growth, tax policy shocks etc.) at moment t ; c – constant vector; B_k – coefficient matrix for lag k ; ε_t – vector of model errors, interpreted as a vector of innovations in the system at moment t . According to Ramey [35] these innovations are not shocks in general, because it could be correlated with other current and lagged endogenous variables in the model and with other exogenous shocks. This fact limits the interpretation of the results.

As already been mentioned, there could be an endogeneity problem if there are missed factors that influence both output and tax collections. We used two approaches to solve this problem:

1. “Narrative approach” – data on exogenous, not driven by economic conditions, tax changes (see below).

2. Cyclical component of tax collections as a percentage of GDP (the measure of changes in average tax rates), which is supposed to be much less driven by economic cycle, and its lags.

First approach is very data dependent. Following Romer & Romer [31] we use official documents to outline exogenous, not driven by economic cycle, tax policy changes. To measure the effect of these policy changes on tax collections we used changes in official forecasts of tax collections. Our main source of information was the federal budget law and its explanatory notes.

The main exogenous changes we identified are listed below:

1. Yearly regular increase of excise rates.
2. Oil and gas tax increases followed by lowering customs duty on mineral resources (so-called “tax maneuver”).
3. Customs duty changes due to WTO requirements.
4. Changes in VAT rates (2004, 2019), specific VAT rates and tax benefits.
5. Introduction and changes in loss carry forward system when calculating corporate income tax (CIT), changes in CIT benefits.
6. Changes in definitions of tax bases and collection rates etc.

The diagram below represents the scope of the forecasted tax receipts chang-

es, driven by the exogenous tax policy incentives (Figure 1).

According to Figure 1, exogenous tax changes in first decade of 20th century were relatively small and often lowered tax burden. For example, there were major VAT changes: in 2004 VAT rate was reduced, which led to projected tax receipts loss of 100 billion rubles; in 2006 the process of providing VAT deductions for capital investments was reorganized and some preferential VAT rates were suspended, which led to projected tax receipts increase of 110,5 billion rubles; in 2007 and 2008 there were changes to the process of administration – transition to declarative process of acquiring VAT deductions by exporters and fixing tax administration period to a quarter for all tax payers – which led to projected tax receipts loss of 140 and 228,7 billion rubles respectively.

In 2010s period exogenous tax changes were much higher and in total led to a higher tax burden. Major tax shocks are due to changes in oil and gas income formation legislation. For example, in 2011 export duties on oil products were introduced which increased tax receipts forecasts in 2011 and 2012; in 2012 gas tax rates indexation began; starting from 2012 “tax maneuver” in oil and gas tax legislation

has begun, followed by lowering customs duty on mineral resources and increases tax rates on its extractions, which in total lead to significant tax receipts increase in 2013-2017.

The new stage of “tax maneuver” in oil and gas tax legislation has begun in 2019 and led to moderate tax receipts increase in 2019 and 2020. Another significant tax change in second half of 2010s period is VAT general rate increase from 18% to 20%. The change occurred in 2019 and lead to a projected tax receipts increase of 525,4 billion rubles in the same year and of 64 billion rubles a year after.

The main problem with the data on exogenous tax changes is that it is available only on yearly bases, which is inadequate for the VAR modeling. That is why we divided the forecasted changes in tax receipts into quarters using average proportions of actual corresponding tax receipts for the period 2003–2020. Secondly, the information on forecasted tax changes is reported only for federal taxes. It makes no problem for federal taxes, but it becomes important for CIT receipts, only part of which are federal. To estimate the consolidated effect of CIT policy changes we divided the corresponding receipts changes by the federal budget proportion (specific for different years).

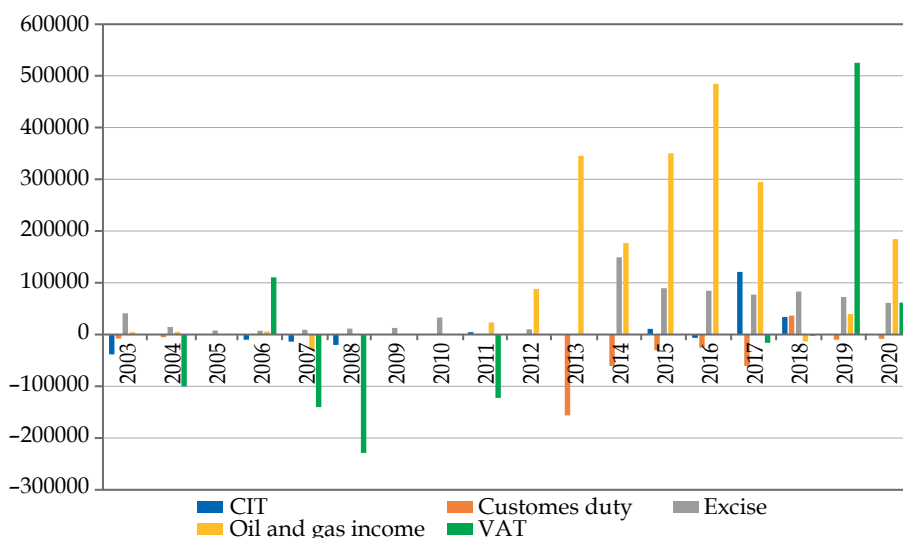


Figure 1. Forecasted change of tax receipts (mln rub.) due to exogenous tax policy incentives

The final base VAR model for the first approach uses data for two variables: seasonally adjusted log difference of real GDP (output growth) and forecasted change of tax receipts due to exogenous tax policy incentives as a percentage of nominal GDP. It is available on quarterly basis for the period 2003–2020.

To implement the second approach, we collected actual quarterly data on tax receipts from the Federal treasury¹ and Ministry of Finance². To minimize the effect of economic cycle, we calculated actual tax receipts as a percentage of nominal GDP. We define tax shocks as cyclical component of seasonally adjusted tax receipts as a percentage of nominal GDP. Together with seasonally adjusted log difference of real GDP it forms data for the base VAR model for the second approach. The cyclical component is calculated using HP filter with quarterly lambda of 1600.

4. Results

The lag order for VAR models was chosen to be 6 as a compromise between data availability and identification of longer-term effects. For robustness check we tested different lag orders (including those predicted by information criteria), but it has not significantly influenced the results.

¹ Federal treasury of Russian Federation. Available at: <https://roskazna.gov.ru/ispolnenie-byudzheta/konsolidirovannyj-byudzheta/> (accessed: 04.07.2023).

² Ministry of Finance of Russian Federation. Available at: <https://minfin.gov.ru/ru/opendata/> (accessed: 04.07.2023).

4.1. “Narrative approach”

The first approach base VAR model is stable. The orthogonal (variables order: tax changes > output growth) cumulative impulse response function (IRF) of output growth to the 1 s.d. shock of tax changes to GDP ratio is presented below (Figure 2).

According to the Figure 2, 95% of confidential interval covers zero for each period of calculation, so we have to conclude that there is no significant effect of tax changes on output growth. The reason for insignificant results could be high standard errors due to omitted important variables.

On the other hand, VAR framework does not allow us to use all possible factors, influencing output growth and legislative tax changes. The key factors identified in the literature are government spendings [31] and, what is of high relevance for Russian economy, oil prices [1].

That is why we estimated the second VAR model augmented with shocks of government spendings defined as cyclical component of seasonally adjusted aggregate government spendings (net of spendings on maintenance of government debt) as a percentage of nominal GDP and index of Urals oil prices (1q2016 = 1). The resulted VAR model is stable. The orthogonal cumulative IRF of output growth to the 1 s.d. shock of exogenous tax changes to GDP ratio is presented below. The process of orthogonalization is sensitive to variables ordering [36]. We supposed the following order: oil price index, exo-

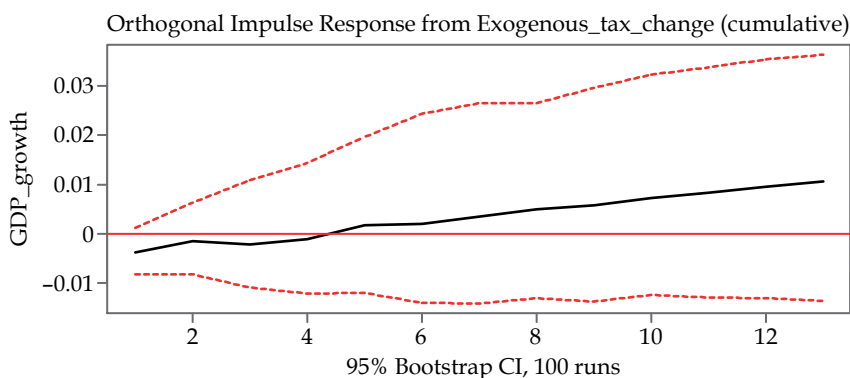


Figure 2. Orthogonal cumulative impulse response functions of output growth to the 1 s.d. shock of exogenous tax changes to GDP ratio

genous tax changes, government spending shocks, GDP growth (Figure 3).

According to Figure 3, additional factors have no significant influence on the result, so we have to conclude that “narrative approach” predicts no significant effect of tax changes on output growth.

4.2. “Classical approach”

The second approach base VAR model is stable too. The orthogonal cumulative IRF of output growth to the 1 s.d. shock of aggregate tax receipts to GDP ratio is presented below (Figure 4).

According to Figure 4, if more reliable data on actual tax receipts is used, there is a significant influence of tax receipts shocks on output growth. The cumulative influence becomes significant on the 4th quarter after shock, which means that tax shocks have a significant effect on output growth with a 1-year lag. Estimated standard deviation of shock of aggregate tax receipts to GDP ratio is 3.4 percent

age points, which means that cumulative effect on the 4th quarter after shock of 1 percentage point shock of aggregate tax receipts to GDP ratio on output growth is -0.5 percentage points.

As Figure 5 shows, the cumulative response converges and the overall long-run (after 120 periods, 30 years) effect of 1 percentage point shock of aggregate tax receipts to GDP lowers output growth by 0.7 percentage points. Results are statistically significant, which means, that tax policy is not neutral, and its effects should be taken into consideration when conducted economic policy.

Of course, there are numerous other factors, that influence GDP or tax receipts. As we stated previously, using output growth and shocks of aggregate tax receipts as a ratio to GDP should minimize the number of factors, relevant for both variables in the model simultaneously, and therefor minimize endogeneity problem.

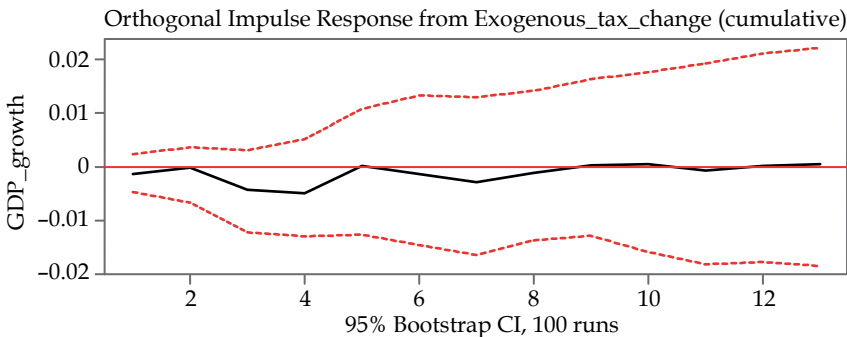


Figure 3. Orthogonal cumulative impulse response functions of output growth to the 1 s.d. shock of exogenous tax changes to GDP ratio (augmented VAR)

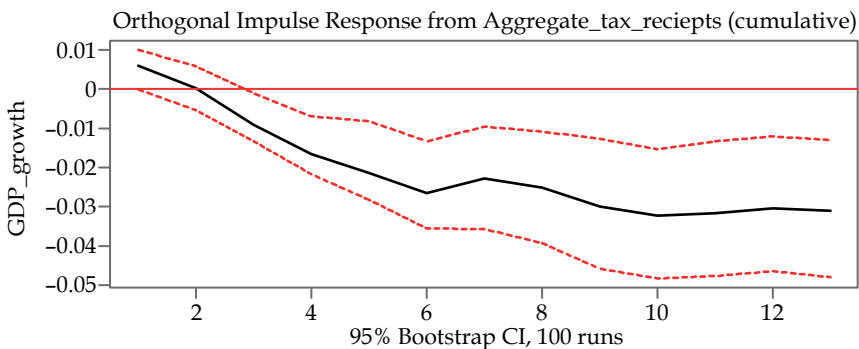


Figure 4. Orthogonal cumulative impulse response functions of output growth to the 1 s.d. shock of aggregate tax receipts to GDP ratio

However, to check the robustness of our result, we included additional key factors, identified earlier. Moreover, the inclusion of omitted significant variables could increase the accuracy of our results. We estimated augmented VAR model with oil price index and government spendings shocks.

The resulting VAR model is stable, long-run cumulative IRF of output growth to the 1 s.d. shock of aggregate tax receipts to GDP ratio is presented below (Figure 6).

As Figure 6 shows, our results are robust to including additional factors in the model, which may indicate, that the endogeneity problem is not significant in our model. The cumulative response converges again and the overall long-run effect of 1 percentage point shock of aggregate tax

receipts to GDP ratio lowers output growth by 0.88 percentage points, which is slightly higher than in case of base model.

5. Discussion

“Narrative approach” estimation results show no significant effect of exogenous tax shocks on output growth. As already been mentioned above, this method is very sensitive to data quality, vulnerable to the measurement error and problem of weak instruments. For example, the problem could be the accuracy of official forecasts. We collected data on the official tax receipts forecasts and compared it with the actual data.

According to Table 1, 1-year forecast always underestimates the actual tax receipts, which cast doubt on its accuracy.

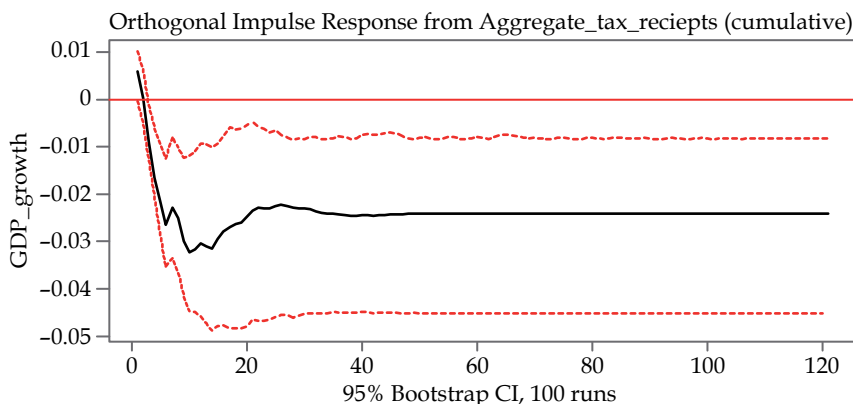


Figure 5. Orthogonal cumulative impulse response functions of output growth to the 1 s.d. shock of aggregate tax receipts to GDP ratio (120 periods ahead)

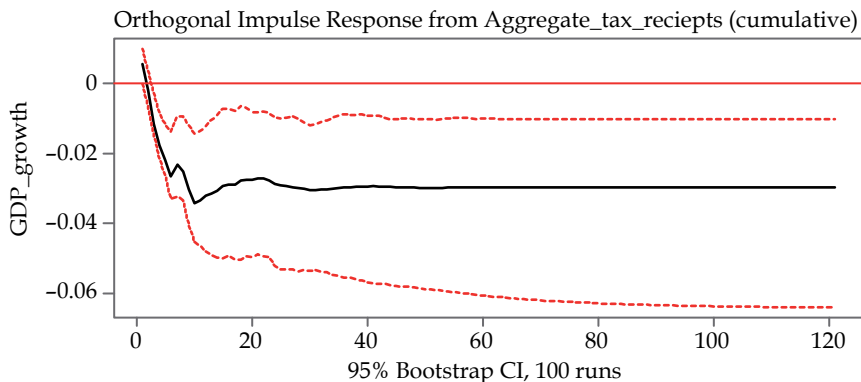


Figure 6. Orthogonal cumulative impulse response functions of output growth to the 1 s.d. shock of aggregate tax receipts to GDP ratio (augmented VAR, 120 periods ahead)

Table 1. The accuracy of official tax receipts 1-year forecast in Russia

2014	2015	2016	2017	2018	2019	2020	2021	2022	
The deviation of forecasts from actual data (%)									Mean deviation
0.3%	5.5%	10.7%	7.5%	6.3%	4.8%	4.3%	21.3%	3.4%	7.1%
The direction of deviation ("–" – underestimation, "+" – overestimation)									Mean square standard error (billions sq.)
–	–	–	–	–	–	–	–	–	1283.8 ²

Source: Authors calculations based on federal budget law of Russian Federation and its explanatory notes.

Sometimes the forecast differs systematically not only in size but also in its sign. For example, in 2010 the Ministry of Finance in Russia provided evaluation that the transition from permissive to declarative procedure of VAT refund would cost about 200 bln rub. (0,4% GDP). One year later the same tax change ex-post evaluation published by the Ministry of Finance demonstrated not fall but growth due to the transition from permissive to declarative procedure of VAT refund in Russia (not minus but plus 200 bln rub. in 2010).

"Classical" approach with more reliable data on actual tax receipts used predicts 0.7–0.88 percentage points decrease in output growth in response to 1 percentage point shock of aggregate tax receipts to GDP ratio. The results are consistent with the previous existing research. The most comparable to our results are research on the tax multipliers calculation. Foreign data findings mostly predict tax multipliers to be negative, with estimates ranging from –0.12 [37] to –0.78 and –1.33 [29].

Russian data research is scarce, for example, Zyablitskiy [1] estimated tax multiplier to be –0.38 and Vlasov & Derugina [38] found it to be –0.75. However, exact numbers are hard to compare, because there is no unified definition of VAR calculated multiplier.

Moreover, the definition of tax policy shocks used in our research differs from classical tax multiplier literature and is comparable to definition in Romer and Romer [31]. They found that a 1 percentage point shock of aggregate tax receipts to GDP ratio lowers output growth by 2.5 percentage points. This effect is con-

siderably higher than our result, which first of all is explained by the difference in country under research and the data period used.

Our estimation results support the main hypothesis in general – tax shocks prove to be quite significant for output growth in Russia. And, as well as tax changes could serve as an appropriate tool of countercyclical policy, increasing tax burden in times of downturn could slow down the recovery significantly.

These results should be interpreted taken into consideration the limitations of the methods used.

First, innovations in VAR model are not shocks in general, and results may differ due to identification strategy.

Second, VAR model is built on historical data and obtained results could be less applicable in case of substantial change in economic situation and structure. Moreover, the accuracy of VAR estimates is sensitive to the length of time series used, which limits the number of control variables.

However, our results show that the problem of omitted variables bias is not significant.

6. Conclusion

In this paper we estimated the effect of tax changes on output growth. The main theoretical significance of this study is the implementation of two alternative approaches – "narrative approach" and "classic" one – to the Russian data. The "narrative approach" did not provide any significant effect of exogenous tax shocks on output growth. The reason could be that this method is very sensitive to data

quality, vulnerable to the measurement error and problem of weak instruments. This is a novel approach for Russian data and deserves further research, first of all, testing the quality of official tax receipts changes forecasts.

The classic approach assumes that tax shocks are deviations from trend. This method provides a significant effect of tax receipts shocks, which means, that tax policy is not neutral, and its effects should be taken into consideration when conducted economic policy, which confirms the hypothesis of the research.

The results show that the cumulative effect of the shock of aggregate tax re-

ceipts to GDP ratio on output growth becomes significant on the 4th quarter after shock. In total, a 1 percentage point shock of aggregate tax receipts to GDP ratio lowers output growth by 0.7–0.88 percentage points. This result is robust to inclusion of additional factors in the model.

So, the main practical significance of the research is that tax policy could serve as an appropriate countercyclical tool in Russia. On the other hand, increasing tax burden in times of downturn could be highly harmful for recovery. These results should be interpreted taken into consideration the limitations of the VAR method used.

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Acknowledgements

The article has been funded through the state target of Russian Federation. The authors give thanks to Daria A. Golubeva for her assistance in collecting data.

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For citation

Belev S.G., Matveev E.O. The Consequences of Tax Changes: The Evidence on Tax Multiplier in Russia. *Journal of Tax Reform.* 2024;10(1):51–62. <https://doi.org/10.15826/jtr.2024.10.1.156>

Article info

Received July 27, 2023; Revised December 3, 2023; Accepted December 15, 2023

Благодарности

Статья подготовлена в рамках государственного задания Российской Федерации. Авторы благодарят Дарью Александровну Голубеву за помощь в сборе данных.

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Для цитирования

Belev S.G., Matveev E.O. The Consequences of Tax Changes: The Evidence on Tax Multiplier in Russia. *Journal of Tax Reform.* 2024;10(1):51–62. <https://doi.org/10.15826/jtr.2024.10.1.156>

Информация о статье

Дата поступления 27 июля 2023 г.; дата поступления после рецензирования 3 декабря 2023 г.; дата принятия к печати 15 декабря 2023 г.



Modern Tax Trends and Economic Growth in a Turbulent World: Insights from Developed and Developing Economies

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ABSTRACT

The article examines recent trends in tax level and structure changes within developed and developing economies in relation to economic growth. The study's significance stems from increasing geo-economic turbulence and emerging risks in the global economy, necessitating fiscal regulation. The analysis spans the period from 2009, post the Great Recession, to the present day.

We tested the hypothesis that discernible patterns could be identified through statistical analysis regarding the relationship between tax indicators (level and structure) and economic growth indicators. However, no such clear patterns were found. In essence, it cannot be definitively concluded that reduced tax levels and/or increased indirect tax shares do explicitly foster national economic growth. Tax impact on economic growth varies significantly across developed and developing economies, presenting a complex and nuanced picture. The nature and strength of this influence are largely shaped by the specific circumstances of each location and period. In order to identify their unique impact, counterfactual analysis is required.

In the course of further research, it is important to consider, firstly, the increased fiscal activism of the post-pandemic period: in this case, the research outcomes may be different from those obtained for the period already examined. Secondly, considering the ongoing processes of geo-economic fragmentation, it is recommended to re-examine the influence of taxes on economic processes. This investigation should adhere to the evolving framework of new macro-regions worldwide, rather than the conventional dichotomy of developed and developing economies. Participants within these macro-regions, interconnected through supply and value chains, will need to work together to align their tax rules and policies for mutual benefits.

KEYWORDS

taxation, tax policy, fiscal activism, economic growth, developed economies, developing economies

JEL E62, F43, H20, O47

УДК 336.22

Современные налоговые тренды и экономический рост в нестабильном мире: анализ в разрезе развитых и развивающихся экономик

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АННОТАЦИЯ

Статья посвящена анализу последних тенденций изменения уровня и структуры налогов в развитых и развивающихся экономиках в связи с проблемами экономического роста. Актуальность исследования объясняется активизацией процессов геоэкономических трансформаций, а также новыми рисками развития миро-

вой экономики, требующими фискального регулирования. Период анализа – с 2009 г., когда Великая Рецессия в основном закончилась, и по настоящее время. Мы проверяли рабочую гипотезу о том, что, опираясь на анализ статистических данных, можно обнаружить явно выраженные регулярности в соотношениях показателей налогов (их уровня и структуры) с показателями экономического роста, которые бы характеризовали вектор влияния налогов в относительно однородных группах стран (отдельно развитых, и отдельно развивающихся). При этом результаты анализа показали, что рабочая гипотеза не подтвердилась: такие явно выраженные регулярности обнаружены не были. То есть нельзя однозначно утверждать, что снижение уровня налогов и/или рост удельного веса косвенных налогов явно способствует национальному экономическому росту. Реальная картина в развитых и в развивающихся экономиках слишком пёстрая и не поддается однозначному трактованию. Из этого следует, что характер и сила влияния налогов на экономический рост во многом определяются обстоятельствами места и времени, и что выявление особенностей их влияния требует проведения специального контрафактического анализа. В ходе дальнейших исследований важно учитывать, во-первых, возросший фискальный активизм постпандемийного периода, так что анализ может показать иные результаты, чем в уже рассмотренном периоде. Во-вторых, что в связи с процессами геоэкономической фрагментации влияния налогов на экономические процессы целесообразно исследовать не в традиционном разрезе развитых и развивающихся экономик, а в составе новых макрорегионов, формирующихся сейчас в мире, участники которых, объединённые цепочками поставок и создания стоимости, должны координировать свои налоговые правила и политики с целью достижения кооперационного эффекта.

КЛЮЧЕВЫЕ СЛОВА

налогообложение, налоговая политика, фискальный активизм, экономический рост, развитые экономики, развивающиеся экономики

1. Introduction

In recent years, the significance of tax policy for the economy and economic growth has increased, as its impact became particularly pronounced during the COVID-19 pandemic. Many countries turned to fiscal instruments for crisis support, aiding the most affected population groups and economic sectors – a situation reflecting the natural correlation between tax policy and economic dynamics. Monetary policy demonstrates effectiveness in stabilizing economies when nations tackle their internal economic issues autonomously. Nevertheless, in instances where shocks and responses transcend national boundaries, fiscal policy takes precedence, provided that tax and budgetary measures are promptly implemented [1].

Moreover, it is important to note that unlike monetary policy, which focuses on regulating the overall money supply, fiscal policy – using various tax measures – is more easily tailored to the current objectives of the government.

In today's reality, characterized by frequent exogenous shocks and rising

risks¹, fiscal activism – used, among other things, to deal with the issues of economic growth – has become a dominant trend in many countries worldwide [2].

The relevance of this study is determined by the intensification of geo-economic transformation processes, as well as new risks in the development of the world economy, necessitating fiscal regulation.

This *article aims* to analyze recent trends in the changes of the level, composition, and structure of taxes in developed and developing economies in the context of post-crisis economic growth (following the Great Recession of 2007–2008).

The *hypothesis of the study* is that statistically, it is possible to identify clear patterns in the relationships between tax indicators (the level and structure of taxes) and economic growth indicators. To grasp the nature of tax impact in relatively homogeneous groups of countries, we need to understand the presence or absence of such regularities, while also giving due re-

¹ World Economic Forum. The Global Risks Report 2023. 18th ed. Insight Report. Geneva, 2023. 97 p.

gard to the distinction between developed and developing nations.

The *article structure* comprises an analysis of the tax trends and economic growth indicators in developed countries, followed by the discussion of developing (emerging) economies, with the final section summarizing the results and brief conclusions.

2. Literature review

Changes in fiscal policy and tax systems are often examined in relation to economic growth challenges, given their significant importance for many countries worldwide. However, research evidence of the precise and substantial impact of taxes on economic dynamics remains contradictory.

On the one hand, while logical and mathematical models simulating tax responses of economic agents often predict a significant impact, many empirical studies do not confirm this prediction.

Myles [3; 4] analyzed a series of theoretical and empirical studies of the impact of taxes on economic growth and found that taxes have an insignificant effect on economic growth.

Saez et al. [5] did not find a clear correlation between changes in tax rates and economic growth.

Burman & Randolph [6] also found no compelling evidence of the influence of changes in tax rates on capital accumulation or economic growth indicators, etc. (see Table 1).

On the other hand, there are studies confirming the influence of taxes on economic growth.

Canto et al. [7] provided analytical evidence confirming the negative impact

of the growing tax burden on production volumes and the intensity of the use of factors of production.

Independent researchers from various countries, analyzing fiscal policies over different time periods, have found consistent evidence that increasing tax rates leads to slower economic growth, while reducing tax rates, on the contrary, tends to boost growth (Engen & Skinner [8], Leibfritz et al. [9], Karras & Furceri [10], Romer & Romer [11], Woldy & Kano [12] (for more on this – see Table 1).

Alongside these studies, a number of economists have sought to determine which taxes are the most distorting and harmful to economic development. As a result, a consensus has been reached that taxes on consumption and property have less negative impact than taxes on personal and corporate incomes. Such conclusion was reached by Kneller et al. [13].

Lee & Gordon [14] argue that an increase in the corporate tax rates leads to a slowdown in the pace of growth, while a reduction in these tax rates by 10 percentage points results in an increase in annual growth rates by 1–2 percentage points.

In general, when it comes to the corporate income tax, it ranks first in the unofficial list of the most detrimental taxes for economic growth.

Johansson et al. [15] show that the corporate income tax has a distorting effect on the overall volume of investments, the type of investment projects, the choice of financing sources (borrowed funds, newly issued shares, or undistributed income), the location of the tax base, the choice of the legal form of business, and other factors.

Table 1. Summary of research findings: impact of tax increases and reductions on economic growth

No.	Author, year	Empirical foundation	Findings
1	Canto et al. [7]	Data on tax reforms in the USA, 1962 and 1964	An increase in tax rates has a negative impact on production volumes and the intensity of the use of production factors
2	Engen & Skinner [8]	Endogenous growth models, general equilibrium models, historical data on the economy, and tax reforms in the USA, spanning from 1959 to 1994	A decrease in marginal tax rates by 5% and average tax rates by 2.5% increases GDP growth rates on average by 0.2–0.3%

End of Table 1

No.	Author, year	Empirical foundation	Findings
3	Leibfritz et al. [9]	Simulation econometric models from the European Commission and the Ministry of Finance of Canada; research on the impact of taxation on economic indicators, labor markets, and capital in OECD countries, spanning from 1976 to 1993	A 10% increase in tax rates leads to a 0.5% decrease in growth rates, while a 10% decrease increases GDP growth by 0.5–1%
4	Myles [3]	Theoretical models of the impact of tax levels on economic growth, empirical assessments of taxation effects (USA, UK) in economic studies over the past 20 years	Tax structure has a greater impact on economic growth than the level of taxation
5	Karras & Furceri [10]	Panel methodology. Statistical data from 19 European countries, 1965–2003	Increasing the overall tax rate by 1% has a negative long-term impact on GDP per capita ranging from –0.5% to –1%
7	Gravelle [18]	Statistical data on small business income in the USA, spanning from 2006 to 2011.	Tax rate increases only affect 2% to 3% of small businesses
8	Romer & Romer [11]	Data on U.S. tax reforms in 1945–2007	An exogenous increase in taxes by 1% reduces real GDP by almost 2.5%
9	Woldy & Kano [12]	Statistical data for 40 sub-Saharan countries in 2000–2019	Budget consolidation reduces real GDP and private demand. Budget consolidation also depends on economic cycles, as production losses become smaller during economic booms
10	Saez et al. [5]	Data on income tax declarations, tax obligations, and tax rates in the USA, spanning from 1960 to 2006. Tax reform of 1993	Evidence of the real economic response to changes in tax rates is not found. The expansion of the tax base and the reduction in tax evasion may influence the type of behavioral response
11	Burman & Randolph [6]	Data on the maximum rates of the tax on capital gains and GDP growth rates in the USA, spanning from 1950 to 2011	No clear connection between the rates of the tax on capital gains and economic growth has been established
12	Srithongrung & Sánchez-Juárez [19]	Data on subnational state finances of 32 Mexican states, spanning from 1993 to 2011	Every 1% increase in taxes in Mexico leads to a 0.9% decrease in GDP in the short term perspective
15	Alinaghi & Reed [20]	Metadata of 49 studies on the impact of taxes on economic growth in OECD countries, spanning the period from 1993 to 2020	In OECD countries, a 10% increase in taxes is associated with a decrease in annual GDP growth of approximately 0.2%, or an increase in this parameter by 0.2%, depending on the specifics of the «taxes – government spending – budget deficit» relationships
16	Stoilova & Todorov [21]	Annual Eurostat data for 2007–2019 on ten new EU member states from Central and Eastern Europe – Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia	The growth rate of production is negatively affected by receipts from direct taxes, while receipts from indirect taxes do not have a significant impact on it

Moreover, Ljungqvist & Smolyan-sky [16], whose study focused on the experience of the USA, did not find any compelling evidence that a reduction in the corporate tax stimulates economic activity, except during a recession.

Hanappi et al. [17] showed that the sensitivity of enterprises to the corporate income tax, and the negative aspects of its application, significantly depend on the type of business, the assets used, national tax mechanisms, and other factors.

It is evident that much of the results obtained, and their differences, depend on the circumstances of place and time.

Gruen & Sayegh [1] argue that it is important to consider the consequences of the complex and contradictory processes observed in the global economy as a whole and in the economies of several countries around the world after the Great Recession of 2007–2008.

Aiyar et al. [22] show that this period in the global economy is characterized by a transition from globalization to fragmentation, including increased geopolitical risks.

In this context, it would be logical to adopt a conceptual approach and analyze recent trends in global tax levels and structures, with a specific focus on economic growth from 2009 to the present.

3. Methodology

The analysis was conducted separately for developed and developing economies, given their distinctly disparate fiscal capacities and different approaches in the tax sphere.

Out of the 40 developed countries included in the IMF classification², 17 were selected for analysis. The remaining countries were excluded for the following reasons:

- for 10 countries no statistical data were available (Andorra, Cyprus, Puerto Rico, San Marino, Hong Kong, Macao, Malta, Taiwan, the Republic of Korea, Singapore);

- 13 countries have lower GDP per capita at PPP than the selected ones (Greece, Israel, Spain, Italy, Latvia, Lithuania, Slovakia, Slovenia, the Czech Republic, Estonia, Japan, Portugal, New Zealand);

- Luxembourg was not included in our graphs because its indicators significantly differ from the average values of other developed countries.

Out of the developing and emerging economies, we selected 12 countries, including Eastern European (Bulgaria, Poland, Hungary), post-colonial South American and African (Argentina, Brazil, Colombia, Mexico, Chile, South Africa), Muslim (Indonesia, Turkey), and China. Other countries are not included in the analysis due to the lack of necessary statistical data.

As previously mentioned, the analysis covers the period from 2009 onwards, when the Great Recession largely ended or began to decline (in the second half of 2009, many countries around the world overcame the economic downturn and entered a trajectory of economic growth) until present, considering the available statistical data.

This is a relatively long period, which IMF experts [1] characterize as “slowbalization” (a word coined from the combination of “slow” and “globalization”). Slowbalization is characterized by a shift from offshore policies (transferring business operations from developed industrial countries to less developed/developing countries to reduce costs) to reverse processes (“onshoring”, “reshoring”, “nearshoring”, “friendshoring”). It is also characterized by the rapid advancement and integration of digital technologies and AI in tax administration, which is a critical aspect of fiscal policy.

Methodologically, this study relies on various methods of analysis such as comparison (horizontal, vertical, trend), grouping, and graphical analysis. We deliberately chose simple and visual methods as they were most suitable for testing our hypothesis about the existence of clear patterns in the relationships between tax indicators (level and structure) and

² IMF. World Economic and Financial Surveys. World Economic Outlook Database – WEO Groups and Aggregates Information. 2022. Available at: <https://www.imf.org/external/pubs/ft/weo/2022/01/weodata/groups.htm#ae> (accessed: 24.01.2024).

economic growth indicators. This exploration aims to characterize the vector of tax influence in relatively homogeneous groups of countries, with developed and developing nations considered separately.

The study also involves the search for hypothetical patterns based on common assumptions. Specifically, we examine the potential correlation between higher growth rates, lower taxes, and a reduced proportion of direct taxes compared to indirect taxes, assuming that other factors remain constant. The study aims to shed light on how these variables affect the incomes of economic entities and their capacity for savings and investment.

Before applying more advanced mathematical tools, such as Romer’s model of endogenous technological change [23], Vishnevsky & Polovyan’s mathematical model of coevolution [24], Gross & Klein’s simulation model [25], etc., it would make sense to first gain a comprehensive understanding of the global status of tax systems, including prevailing trends in tax levels, composition, and structure,

particularly in relation to concerns about economic growth.

It is clear that the mere existence of such regularities (if they indeed occur), or their absence, will not serve as proof of the positive or negative impact of taxes on economic growth, but may serve as a starting point for further, more advanced analysis.

4. Results

4.1. Developed economies

4.1.1. Tax level

As states become more prosperous, they can increase their spending on public goods, leading to a higher overall tax-to-GDP ratio. This trend aligns with Wagner’s law, where government expenditures grow faster than national income [26]. Remarkably, direct taxes usually play a more significant role in this process.

Figure 1 illustrates the correlation between the tax level and GDP for 17 developed countries over the past 14 years. The entire dataset is divided into deciles based on GDP per capita (in constant prices and

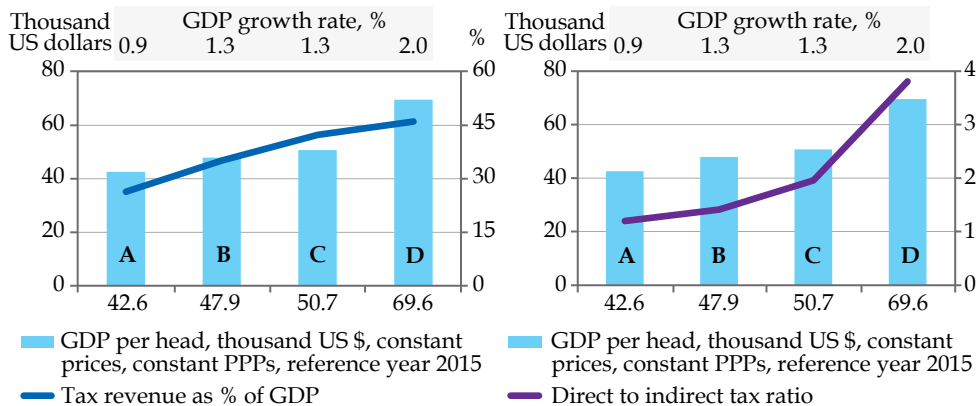


Figure 1. Relationship between tax levels and income across groups of developed countries, 2009–2022

Note: By income level (GDP per capita at PPP), in 2009–2022, developed countries were divided into four groups: Group A, comprising the UK, Canada, France, and Finland; Group B, comprising Australia, Belgium, Germany, and Sweden; Group C, comprising Austria, Denmark, Iceland, the Netherlands; and Group D, comprising Ireland, Norway, the United States, and Switzerland. The GDP growth rates are calculated by taking the average of the GDP growth rates per capita based on PPP for each group of countries.

Compiled by the authors by using the data from: OECD. Tax revenues as a percentage of GDP.

Global Revenue Statistics Data Set. 2024. Available at: <https://stats.oecd.org/viewhtml.aspx?datasetcode=REV&lang=en#>; OECD. Revenue Statistics – OECD countries: Comparative tables. Global Revenue Statistics Data Set. 2024. Available at: <https://stats.oecd.org/index.aspx?DataSetCode=REV#>; OECD. Regional GDP. Regional Economy – OECD. Stat. 2024. Available at: https://stats.oecd.org/Index.aspx?DataSetCode=REGION_ECONOM# (accessed: 24.01.2024).

PPP-adjusted) and the tax level for the corresponding period. Figure 1 shows the median GDP and tax levels for each decile.

Each group of countries exhibits a distinct correlation between tax levels and economic growth rates: for example, in Group D, characterized by the highest incomes and taxes, including direct taxes, the average GDP per capita growth rates at PPP were 2.0%, while in Group A, with lower incomes and taxes, it was 0.9%. Groups B and C occupy intermediate positions.

This picture clearly contradicts the common view that, all else being equal, small taxes are better for economic growth than large ones, and indirect taxes are preferable to direct ones (see, for example, [10; 12; 13]). While this notion may generally hold true over extended periods under normal development conditions, the unprecedented strain of the pandemic has introduced new circumstances. It has demonstrated that wealthier countries with a more developed public sector are better equipped to handle exogenous shocks.

The pandemic adversely affected economic growth worldwide, including many developed countries, which led to an unforeseen reduction in tax revenues due to decreased production volumes, especially

in service sectors, as well as a decline in the purchasing power of many households.

As a result, in 2019, there was a downward trend in the total amount of nominal (and even more so, real) tax revenues. In 2020, despite a noticeable decrease in nominal tax revenues, the decline in GDP was even more significant, showing negative dynamics. In 2021–2022, nominal and real GDP growth was restored, but during this time, the level of nominal tax revenues continued to decrease in several countries (see Figure 2).

This clearly was a result of fiscal stimulus measures implemented as part of government economic support programs such as the American Rescue Plan Act of 2021 [27] and EU post-Coronavirus recovery plan [28], which helped overcome the pandemic-induced slump. However, real growth rates in developed countries remain sluggish, with 1.6% in 2023 and an expected further decrease to 1.5% in 2024³.

³ IMF. World Economic Outlook Update, January 2024: Moderating Inflation and Steady Growth Open Path to Soft Landing, 2024. Available at: <https://www.imf.org/en/Publications/WEO/Issues/2024/01/30/world-economic-outlook-update-january-2024> (accessed: 24.01.2024).

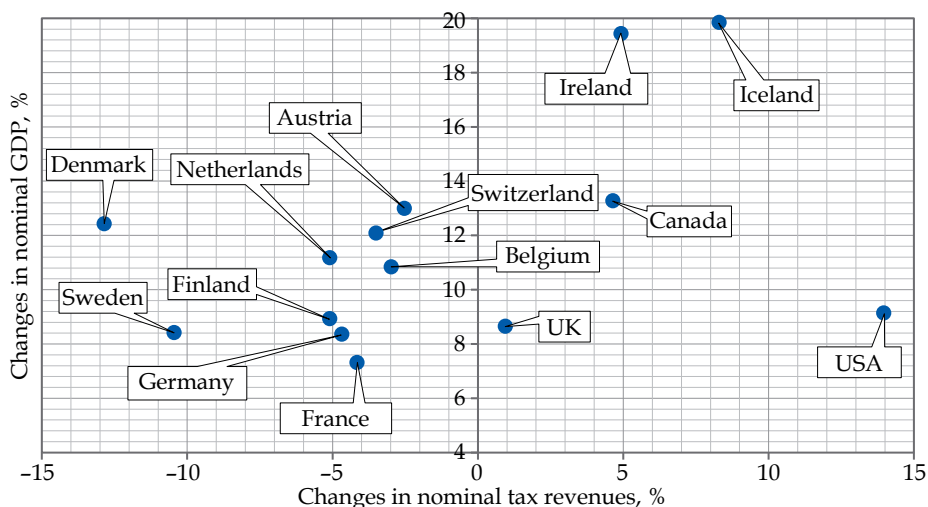


Figure 2. Changes in nominal tax revenues and nominal GDP in developed countries in 2022 compared to 2021

Compiled by the authors by using the data from: OECD. Revenue Statistics – OECD countries: Comparative tables Global Revenue Statistics Data Set, 2024. Available at: <https://stats.oecd.org/index.aspx?DataSetCode=REV#>; OECD. Regional GDP. Regional Economy – OECD. Stat, 2024. Available at: https://stats.oecd.org/Index.aspx?DataSetCode=REGION_ECONOM# (accessed: 24.01.2024).

Thus, according to statistical data, differences in historically established tax levels and the dynamics of the tax burden in developed countries have not demonstrated a clearly pronounced influence (or this influence has been insignificant) on the pace of economic growth. At first glance, this contradicts the results of theoretical research. However, it is important to take into account that the main instrument of macroeconomic regulation in the period under consideration (after the financial-economic crisis of 2007–2008) was monetary, not fiscal policy. The situation changed significantly only in recent years, as central banks such as the Federal Reserve and the European Central Bank, along with other regulators, were compelled to sharply raise key interest rates to combat inflation. In light of these circumstances, the results of the analysis can be deemed understandable and consistent.

4.1.2. Composition and structure of taxes

While tax systems in different countries may vary, all of these systems impose taxes on personal income, corporate income, sales, and property. The elements of taxes (tax base, rates, exemptions, etc.) are determined depending on the specifics of the current economic situation, as well as each country's historical, institutional, socio-cultural conditions, and traditions.

The analysis of the relationship between GDP and tax structures in developed countries showed that as GDP increases, the growth in revenues from corporate income taxes is not as significant as the growth in revenues from personal income taxes. However, the differences in the percentages of corporate income taxes and individual income taxes as a share of GDP vary depending on the income groups of the countries: for countries whose incomes (GDP) fall within the top three deciles, corporate income taxes and individual income taxes make up to 7.4% and 24.3% of GDP, respectively, while countries in the bottom three deciles collect 2–2.4% and 8.1–10.0%, respectively.

The high level of income tax revenues in the upper deciles can be partially attributed to countries like the USA, Germa-

ny, the UK, and France, which boast high GDP levels and host numerous multinational corporations, attracting substantial foreign direct investments and thus generating significant income.

The new OECD rules on taxing multinational corporations, coupled with corporate income taxation reforms in Europe (including the introduction of a tax on unforeseen income), may lead to some changes in this distribution. However, substantial alterations to income taxation are unlikely.

Until 2020, taxes on goods and services, including VAT, as well as property taxes, had been growing alongside economic prosperity. In the post-pandemic years of 2021–2022, the level of taxes on goods and services quite expectedly decreased while GDP was growing.

Developed countries with lower GDP levels have the highest rates of indirect taxes: in this study, these are Finland, Denmark, and Ireland with VAT rates of 24%, 25%, and 23%, respectively⁴.

As for countries with high GDP levels (such as the USA, Germany, the United Kingdom, France), they have achieved significant results in taxing digital goods and services, as well as in ensuring efficient tax administration and combating fraud. Recent reductions in indirect tax rates or exemptions of specific goods from VAT in European countries have been limited to a relatively short period and are intended to alleviate the consequences of a significant inflation spike [29].

Certain disparities between the tax structures of the developed countries typically result from historically established economic relationships, institutional and national factors, including differences in tax objects, tax rates, the breadth of the tax base, and so on.

For example, in 2022, the largest share of total tax revenues from income tax was found in Denmark, the United States, Iceland, Canada, Switzerland, and Ireland; taxes on goods and services predominated in Iceland, Finland, the United Kingdom,

⁴ OECD. Consumption Tax Trends 2022: VAT/GST and Excise, Core Design Features and Trends. OECD Publishing, Paris, 2022. <https://doi.org/10.1787/6525a942-en> (pp. 265–266).

and Denmark; social security contributions were highest in Germany, Austria, the Netherlands, France, and Belgium. Property taxes played a less significant role in all countries (Figure 3).

There is a widely held view that economic growth is better promoted by a revenue structure characterized by a smaller proportion of taxes on the income of persons and businesses [1; 31; 32]. However, the data in Figure 3 do not confirm this, as no clearly defined dependence of this kind is observed

here. This can be explained by the fact that consistently high levels of revenue from income taxes deter governments from making drastic changes to the tax structure, due to the lack of opportunities for quick compensation. Additionally, the inertia of tax relationships makes such patterns more visible over longer time intervals.

The dynamics of major tax revenues from 2009 to 2022 indicate that, overall, the corresponding tax bases and effective tax rates remained relatively stable (Figure 4).

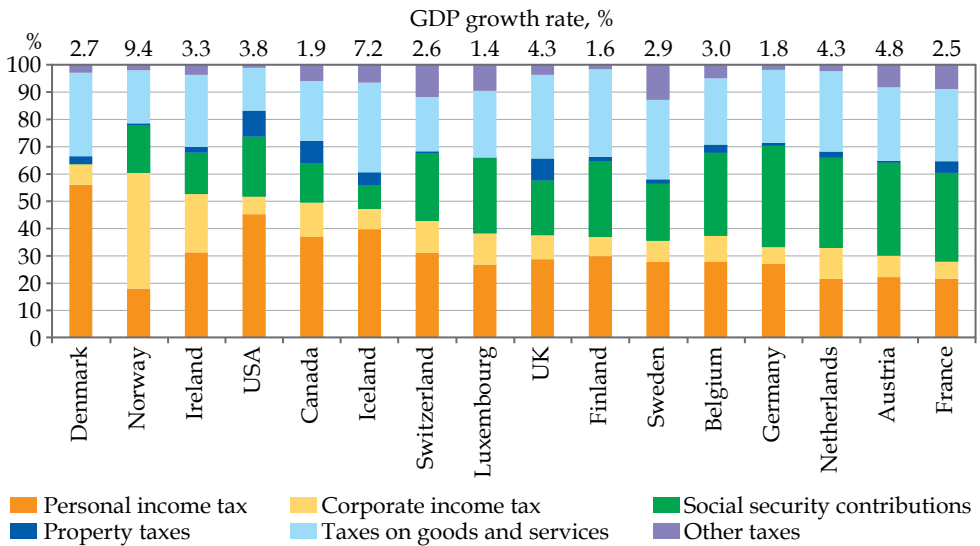


Figure 3. Tax structure of developed countries, 2022

Compiled by the authors by using the data from: OECD. Revenue Statistics – OECD countries: Comparative tables. Global Revenue Statistics Data Set. 2024.

Available at: <https://stats.oecd.org/index.aspx?DataSetCode=REV#> (accessed: 24.01.2024).

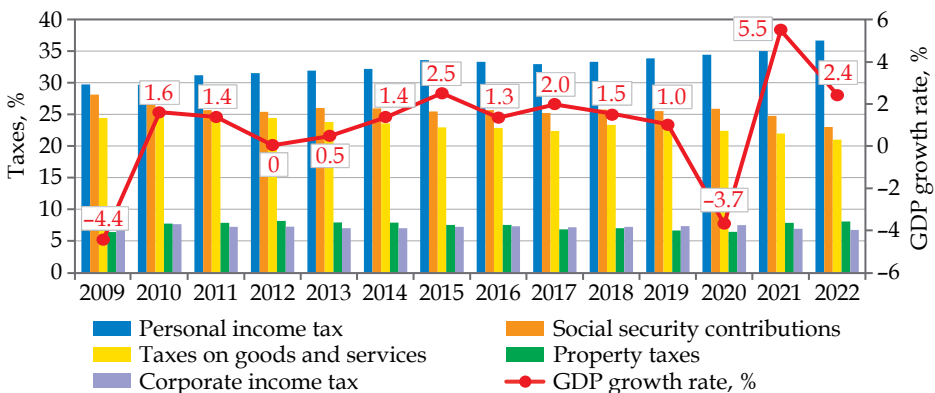


Figure 4. Revenues from major taxes in developed countries from 2009 to 2022

Compiled by the authors by using the data from: OECD. Revenue Statistics – OECD countries: Comparative tables. Global Revenue Statistics Data Set. 2024.

Available at: <https://stats.oecd.org/index.aspx?DataSetCode=REV#> (accessed: 24.01.2024).

The increase in revenues from income tax reflects the positive effects of income support policies. The decrease in corporate income tax revenues is attributed to lower economic activity and poor financial performance during the COVID-19 pandemic. Additionally, measures aimed at easing the tax burden, such as tax payment deferrals and reductions in tax advances, contributed to this decline.

No significant changes were observed in other types of taxes, while the proportion of taxes on goods and services continued to gradually decrease. Revenues from fuel excise taxes decreased due to mobility restrictions, and VAT rates were temporarily reduced during the COVID-19 pandemic.

The analysis of tax rates reveals a consistent trend in many developed countries toward decreasing the burden of direct taxation while enhancing its progressivity. Maximum income tax rates were raised in Austria, the UK, Denmark, Canada, Iceland, Luxembourg, Norway, Finland, France, and corporate income tax rates in Iceland and the Netherlands⁵.

⁵ OECD. Statutory corporate income tax rate. 2023. Available at: https://stats.oecd.org/index.aspx?DataSetCode=TABLE_III1#; OECD. Top statutory personal income tax rates. 2023. Available at: https://stats.oecd.org/index.aspx?DataSetCode=TAX_RATES_I7#; California Department of Tax and Fee Administration. History of Statewide Sales and Use Tax Rates. 2023. Available at: <https://www.cdtfa.ca.gov/taxes-and-fees/sales-use-tax-rates-history.htm>; OECD. Consumption Tax Trends 2022: VAT/GST and Excise, Core Design Features and Trends. OECD Publishing, Paris, 2022. <https://doi.org/10.1787/6525a942-en> (accessed: 24.01.2024).

Despite the changes described above, the overall tax structure evolves slowly. Direct taxation continues to outweigh indirect taxation in most of the countries examined. The statistics show no clear signs of any transformations in the tax structure (Table 2).

Recent tax reforms aim to preserve and mobilize tax revenues, while also protecting businesses and households from high inflation. This is achieved by reducing value-added tax and excise duties, indexing income tax to account for price increases, lowering tax rates for low-income families while simultaneously increasing property taxes for high-income individuals, and so forth.

However, such reforms are unlikely to significantly change the general situation. The introduction of broad tax incentives and preferences for innovation and investment, crucial for maintaining international competitiveness in the face of global fragmentation, may somewhat narrow the tax base. Nevertheless, the development of digital solutions for tax administration will help increase the revenues from indirect taxes, potentially shaping a new tax structure that better meets the need to stimulate economic growth.

4.2. Developing (emerging) economies

4.2.1. Tax level

Similar to developed countries, many emerging economies are implementing reforms that increase the overall tax burden as a percentage of GDP as their prosperity grows.

Table 2. Types of tax structure in developed countries

Type of tax structure	Countries
Prevalence of direct taxation over indirect taxation	Australia, Belgium, Canada, Denmark, Ireland, Luxembourg, Sweden, Switzerland, the United States, and Norway (in recent years, these countries have been transitioning to equal tax revenues)
Prevalence of indirect taxation over direct taxation	France, the Netherlands (in recent years, these countries have been transitioning to equal tax revenues)
Relatively equal revenues from direct and indirect taxes	Austria, Finland, Great Britain; Germany and Iceland (in recent years, direct taxation has been dominant over indirect taxation in these countries)

Note: Indirect taxes can be defined as taxes related to the production and import of goods and services. They include VAT, import duties, excise duties and other specific taxes on services as well as financial and capital transactions. Direct taxes are defined as current taxes on incomes and wealth, such as personal income tax, corporate income tax, as well as capital acquisitions tax (a tax on gifts and inheritances). See: European Commission. Data on Taxation Trends. Methodological and Explanatory Notes. 2023. (p. 6) Available at: <https://taxation-customs.ec.europa.eu/system/files/2023-06/Methodology2023.pdf> (accessed: 24.01.2024).

As our calculations show, the higher is the country's income, the more significant is the role of its direct taxes. The entire dataset is divided into deciles based on GDP per capita (in constant prices adjusted for PPP) relative to the level of taxes for the corresponding period. Figure 5 shows the medians GDP and tax levels for each decile.

As can be seen from Figure 5, there is no clearly pronounced correlation between the level of taxes and the rate of economic growth in this case. For example, the average GDP per capita growth rates at PPP in groups A and D (the poorest and the richest countries) in the given period were comparable, standing at 3.2% and 3.7%, respectively. These groups include large Asian countries with high population density such as China (147 people/sq. km) and Indonesia (141 people/sq. km), as well as "modest Europeans" – Poland, Hungary, and the distinctive case of Turkey. Meanwhile, in groups B and C, the average GDP per capita growth rates at PPP were significantly lower – 0.2% and 1.5%, respectively.

In China, which ranks among the top countries with the highest GDP in

the world at PPP, the tax level increased slightly, reaching 20.1% in 2021, which is close to the average value in the selected sample of developing countries (the lowest being in Indonesia at 10.0% and the highest in Hungary at 35.5%).

A tax burden level similar to that of China is observed, for example, in Colombia (19.2%). However, Colombia faces significantly higher unemployment and inflation rates compared to China, with Colombia's GDP per capita being only half of China's. Moreover, the proportion of the population living below the poverty line in Colombia is close to 50% (42.5% in 2020), whereas in China, it is 0%⁶.

Indonesia has the lowest level of taxes among developing countries. In 2020, its value was the lowest (10.1%) amid the general economic downturn (-2.1%), driven by the economic consequences of the COVID-19 pandemic. In 2021, the country managed to restore economic growth

⁶ The World Bank. Poverty headcount ratio at national poverty lines (% of population) - China | Data. 2023. Available at: <https://data.worldbank.org/indicator/SI.POV.NAHC?locations=CN> (accessed: 24.01.2024).

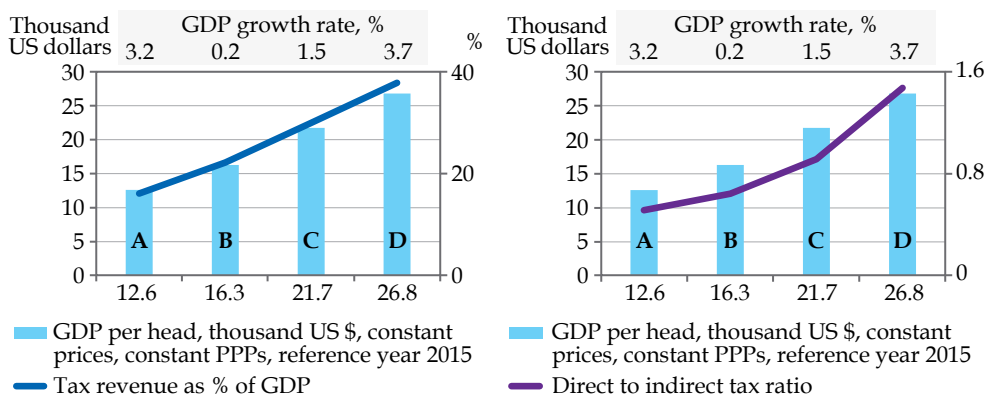


Figure 5. Relationship between the level of taxes and income in developing countries, 2009–2021

Note: By income level (GDP per capita at PPP), from 2009 to 2021, developing countries were divided into four groups: Group A, comprising Indonesia, China, Colombia, and South Africa; Group B, comprising Brazil; Group C, comprising Argentina, Bulgaria, Mexico, and Chile; and Group D, comprising Hungary, Poland, and Turkey. The GDP growth rates are calculated by taking the average of the GDP growth rates per capita based on PPP for each group of countries.

Compiled by the authors by using the data from: Tax revenues as a percentage of GDP. Global Revenue Statistics Data Set. 2024. Available at: <https://stats.oecd.org/viewhtml.aspx?datasetcode=REV&lang=en#>; Revenue Statistics. Global Revenue Statistics Data Set. 2024. Available at: <https://stats.oecd.org/index.aspx?lang=en>; Regional GDP. Regional Economy – OECD. Stat. 2024. Available at: https://stats.oecd.org/Index.aspx?DataSetCode=REGION_ECONOM# (accessed: 24.01.2024).

(+3.7%), thanks to the stimulus package aimed at supporting infrastructure development and consumption growth, as well as allocated social assistance⁷. This inevitably led to a slight increase in the overall tax level (10.9%), which partially resulted from the increase in the top income tax rate and excise taxes⁸.

The highest level of taxes among the developing countries in 2021 was recorded in Hungary (33.7%) and Poland (36.7%), which is hardly surprising since they are in the same socio-economic field as developed European economies, where such a level of taxes is the norm.

At the same time, Poland and Hungary have shown different trends in terms of the tax burden: in Poland, since 2010, there has been a gradual increase in the tax burden (from 31.3% to 36.7%), while in Hungary, the dynamics of changes from 2009 to 2016 were somewhat chaotic, however, since 2016, there has been a gradual decrease in the tax-to-GDP ratio (from 39% to 33.7%).

Brazil has a relatively high level of taxation (35.5%). In this country, about 45% of all tax revenues come from taxes on goods and services, which is why the rise in prices of fuel, minerals, and food products in 2021 became one of the key factors influencing the growth of tax revenues⁹.

In general, the level of taxes in developing countries varies significantly, ranging from 10.0% (Indonesia) to 36.7%

of GDP (Poland, a moderately developed European country) in 2021.

Measures to prevent mass layoffs and preserve jobs in sectors hit by the pandemic have allowed national governments to restore economic activity, resulting in GDP growth in all developing countries. However, unlike developed countries, in 2021, there was also an increase in nominal tax revenues (Figure 6), resulting from by less stringent restrictions on economic activity, as well as relatively strict fiscal or quasi-fiscal measures¹⁰.

Thus, judging by the macroeconomic data, developing countries are following their own, often distinct paths in developing fiscal systems and tax policies, where measures taken to regulate taxes have helped mitigate emerging issues but have not significantly impacted economic growth (at least in the medium term). Instead, governments tailored fiscal policies to follow changes in the economy.

4.2.2. Composition and structure of taxes

Similar to developed countries, in emerging economies, the main taxes include personal income tax, corporate income tax, sales taxes, and property taxes. However, unlike developed countries, the share of these taxes in GDP varies significantly. For example, in 2021, the share of personal income taxes in GDP ranged from 1–1.2% (Indonesia, China) to 8.7% (South Africa); consumption taxes ranged from 4.8% in Indonesia to 15.9% in Hungary; social insurance contributions ranged from 0.3% in South Africa to 13% in Poland. Corporate income tax shares in GDP were more similar, ranging from 1.4% in Hungary to 5.0% in South Africa, and property taxes ranged from 0.1% in Indonesia to 3.1% in Argentina.

The analysis of the relationship between GDP and tax structures in developing countries revealed a positive correlation between revenues from the personal income tax and GDP in most such countries (with the exception of Hungary, Brazil, and Turkey).

⁷ The World Bank. Economic Reforms and Investments in Health, Social Protection and Infrastructure Will Support Indonesia Sustainable Recovery. 2020. Available at: <https://www.worldbank.org/en/news/press-release/2020/07/16/economic-reforms-and-investments-in-health-social-protection-and-infrastructure-will-support-indonesia-sustainable-recovery> (accessed: 24.01.2024).

⁸ The World Bank. Indonesia: Support for Public Health and Affected Households and Firms Critical for a Secure and Fast Recovery. 2020. Available at: <https://www.worldbank.org/en/news/press-release/2020/12/17/indonesia-support-for-public-health-and-affected-households-and-firms-critical-for-a-secure-and-fast-recovery> (accessed: 24.01.2024).

⁹ Xinhuanet. Brazil sees record-high tax collection in 2022. 2023. Available at: <https://english.news.cn/20230125/036bb31a1fc945a6b8e91ad01c7aa61f/c.html#> (accessed: 24.01.2024).

¹⁰ OECD. Tax Policy Reforms 2021: Special Edition on Tax Policy during the COVID-19 Pandemic. OECD Publishing, Paris, 2021. <https://doi.org/10.1787/427d2616-en>

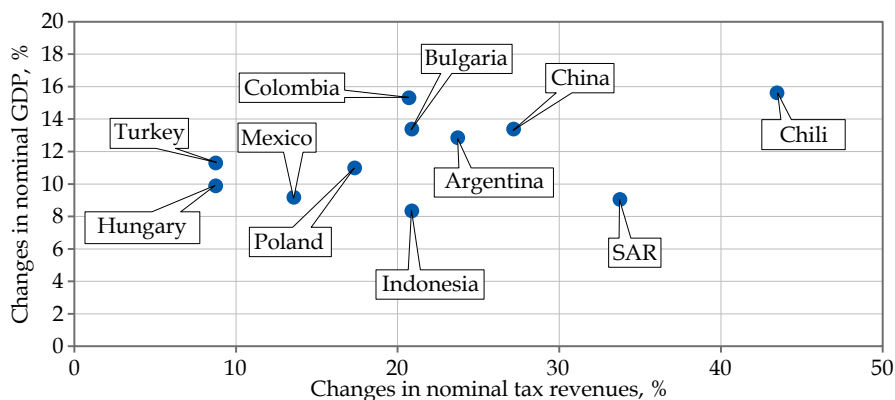


Figure 6. Changes in nominal tax revenues and nominal GDP in developing countries in 2022 compared to 2021

Compiled by the authors using the data from: Revenue Statistics. Global Revenue Statistics Data Set. 2023. Available at: <https://stats.oecd.org/index.aspx?lang=en>; Regional GDP. Regional Economy - OECD. Stat. 2023. Available at: https://stats.oecd.org/Index.aspx?DataSetCode=REGION_ECONOM# (accessed: 24.01.2024).

Across income groups, differences in income taxes are significant (similarly to developed economies): for countries that were in the top three deciles in the analyzed period, median values of corporate income taxes and personal income taxes amounted to around 4.9% and 8.5% of GDP, respectively (while countries in the bottom three deciles of GDP per capita collect an average of 1.8% and 1.2%, respectively).

Revenue from taxes on goods and services (including VAT) and property taxes increases alongside the prosperity of countries; however, this is not true for all income groups. For example, in 2021, their revenues increased in parallel with GDP growth from 16.3 to 25.2 thousand US dollars per capita (5th to 8th deciles).

In the given countries, tax structures vary considerably as a result of differences in historical development paths, financial constraints, and uneven income distribution. This partially explains why many of them do not fully use the potential of income and property taxation. For example, in 2021, the majority of revenues in many countries came from taxes on goods and services: Argentina (53.6%), Chile (53.1%), Bulgaria (48.6%), Hungary (45.9%), among others, while social insurance contributions comprised the largest share of total revenues in Poland (35.4%).

Property taxes played a less prominent role in the revenues of most developing countries (except for South Africa and Colombia) (Figure 7).

Taxes on income (personal income tax (PIT) and corporate income tax (CIT)) accounted for half of all tax revenues in South Africa and around 40% in Mexico and Indonesia. However, the trends in these countries are different, with South Africa and Indonesia experiencing a noticeable increase in the share of personal income tax and a decrease in the share of corporate income tax revenues until 2021, while Mexico saw a gradual increase in the proportion of these taxes.

In developed countries, there is no clear correlation between economic growth and tax structure.

The dynamics of revenues from major tax types from 2009 to 2021 (Figure 8) indicate that there were no significant changes in the development of tax systems in the pre-pandemic period. Meanwhile, personal income tax and corporate income tax showed a weak tendency towards gradual growth. However, the COVID-19 crisis negatively impacted economic and financial performance of businesses, leading to a reduction in the proportion of these taxes in recent years, alongside a simultaneous increase in the relative importance of social insurance contributions.

The average share of indirect taxes on goods and services remained consistently high in the given period, except for 2019 and 2020. Social contributions surged in the pandemic year of 2019. There were two main reasons behind this trend: firstly, this increase was caused by the redistribution of shares as other taxes decreased. Secondly, it resulted from national governments expanding the tax base and increasing contribution rates, aiming to ensure the stability of social insurance systems during the pandemic, disrupted by significant wage fluctuations throughout the economic cycle.

For instance, Mexico implemented a comprehensive pension reform, result-

ing in a significant increase in benefits and contributions tied to wages. Many countries have raised the retirement age, expanding the tax base for social contributions¹¹.

The analysis of changes in tax rates indicates that despite some common trends, there are noticeable differences among developing countries¹².

¹¹ OECD. Pensions at a Glance 2021: OECD and G20 Indicators. OECD Publishing, Paris, 2021. <https://doi.org/10.1787/ca401ebd-en>

¹² KPMG. KPMG’s Global Online Tax Rates Tool. 2023. Available at: <https://kpmg.com/sa/en/home/services/tax/tax-tools-and-resources/tax-rates-online.html> (accessed: 24.01.2024).

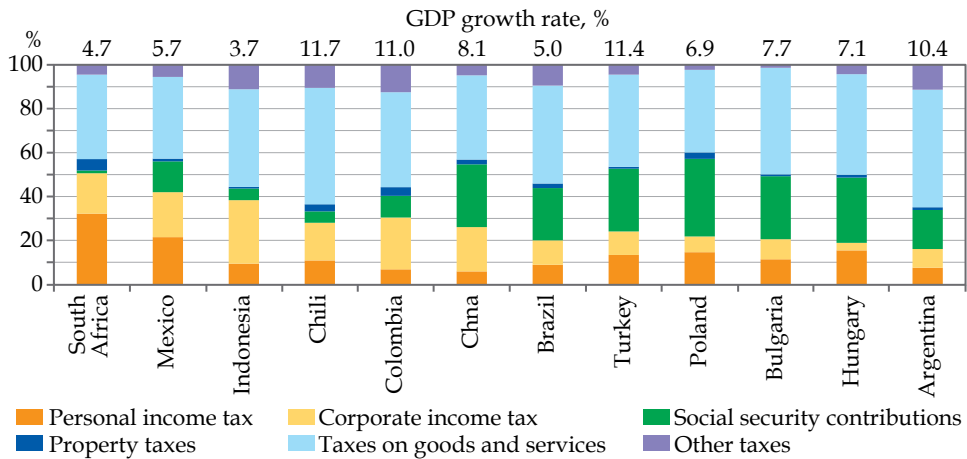


Figure 7. Tax structure of developing countries, 2021

Compiled by the authors using the data from: Revenue Statistics. Global Revenue Statistics Data Set. 2024. Available at: <https://stats.oecd.org/index.aspx?lang=en> (accessed: 24.01.2024).

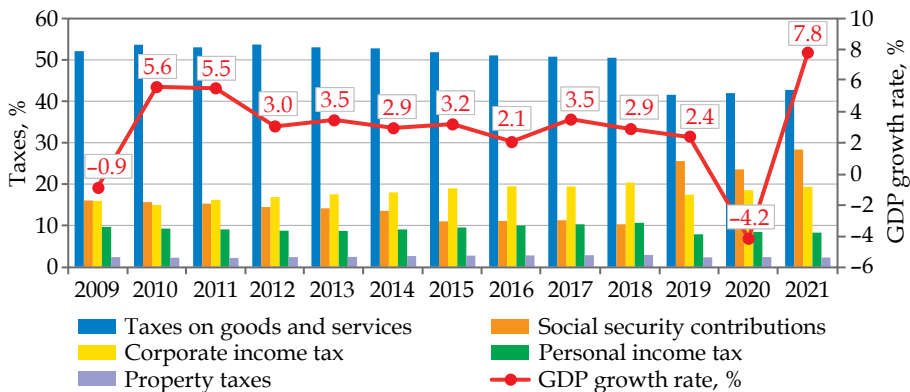


Figure 8. Structure of the major taxes in developing countries in 2009-2021

Compiled by the authors using the data from: Revenue Statistics. Global Revenue Statistics Data Set. 2024. Available at: <https://stats.oecd.org/index.aspx?lang=en> (accessed: 24.01.2024).

Hungary has gradually decreased the corporate income tax and personal income tax while keeping the VAT rate unchanged, continuing pre-crisis trends.

Several countries have reduced their corporate income tax rates in response to the pandemic (Colombia, Turkey, Chile, South Africa, Indonesia), which aligns with long-term global trends. In Argentina, the corporate income tax rate was reduced for enterprises engaged in knowledge-related economic activities (from 25% to 15%), while in Turkey, it was lowered for companies that first list at least 20% of their shares on the Istanbul Stock Exchange since January 2021 (from 22% to 20% for five years).

Meanwhile, several other developing countries, on the contrary, have decided to increase their direct tax rates: Colombia, Mexico, Turkey (income tax), and South Africa. In response to the falling tax revenues due to COVID-19, Chile reformed the personal income tax system by restoring the maximum PIT rate to 40% in 2020, which had been reduced from 35% in 2017. In the given period, the direct tax rates and VAT remained unchanged in Bulgaria, Brazil, China, and Poland.

The analysis has shown that it is quite difficult to identify common features and trends in the tax structures of developing countries; however, statistical data on major taxes clearly indicate the predominance of indirect taxation over direct taxation in most of them (Table 3).

Table 3. Types of tax structures in developing countries

Type of tax structure	Countries
Prevalence of direct taxation over indirect taxation	South Africa
Prevalence of indirect taxation over direct taxation	Argentina, Bulgaria, Brazil, Chile, China, Colombia, Hungary, Poland, Turkey
Roughly equal revenues from direct and indirect taxes	Indonesia, Mexico

The formation of a tax structure with the prevalence of indirect over direct taxation indicates certain issues in income taxation, partly linked to such well-known factors as fluctuating wages due to irregular pay and seasonal work, lobbying by wealthy taxpayers with economic and political sway, and sometimes ineffective tax administration. In many developing countries, the marginal income tax rate for individuals significantly exceeds the corporate income tax rate, incentivizing taxpayers to opt for collective or corporate forms of business. Another characteristic of developing countries is the absence of unified marginal tax rates for corporate income, which significantly distorts the processes of market resource allocation.

5. Discussion

5.1. Tax trends

The analysis of statistical indicators of tax levels, tax revenues, tax rates, and the level and dynamics of GDP in both developed and developing countries has shown that in the period after the global financial and economic crisis of 2007–2008 (the Great Recession), tax policies were relatively predictable and stable.

There's a famous saying: "an old tax is a good tax". Stable taxes, based on clear rules aimed at ensuring fiscal responsibility and manageable public debt [35], empower businesses to make decisions without being hindered by the state's tax policy, while also helping governments confidently plan tax revenues and expenditures.

Additionally, it should be noted that discretionary tax policy is less well-suited to promptly respond to emerging issues compared to monetary policy, as it is more susceptible to political influence and depends on lengthy and unpredictable democratic procedures.

In recent years, there has been a surge in global fiscal activism driven by several factors, including the depletion of monetary policy's regulatory potential in many countries and the growing importance of government support for R&D, propelled

by increased global technological competition and worsening environmental conditions, alongside the urgent need to mitigate the consequences of such unexpected events as COVID-19 and military conflicts. Specifically, in the given period, the COVID-19 pandemic emerged as a “black swan” event, compelling many countries to mobilize financial resources, often through tax and budgetary measures [36].

Fiscal decision-making affects the national tax level and economic growth rates. Statistical data, however, do not indicate any pronounced (or at least significant) impact that differences in tax levels and fluctuations in the tax burden may have on economic growth in developed countries. Over the long term, taxes have been increasing at roughly the same rates (in some countries, slightly higher) as GDP, as was shown for OECD states by OECD experts, while in the short term, their volatility mirrored fluctuations in the business cycle¹³.

This doesn't mean that taxes are not important; rather it suggests that their use was limited (except perhaps during the pandemic), and in developed countries, monetary policies, including quantitative easing, held more sway than fiscal measures during the period under review [37]. Additionally, the actual impact of taxes was overshadowed by other non-tax factors.

5.2. Developed economies

The tax structure in developed countries is dominated by taxes on personal income, as well as mandatory contributions to social funds. Taxes on goods and services account for a smaller share of the total tax revenues of OECD member countries.

The share of the largest tax on goods and services (VAT) is clearly smaller than that of the personal income tax and mandatory social contributions. Given that income taxes and social contributions rank highest in an informal ranking of taxes that are the most harmful to economic

growth [15], this situation could have a negative impact on the economic growth in developed countries.

The actual situation, however, is much more complex than that. For example, high and continuously rising social contributions, driven by the processes of demographic aging, on the one hand, reduce disposable incomes, consumption, and investments. On the other hand, they contribute to the struggle against poverty and social stability, which are also crucial for sustainable economic development, especially in periods of exogenous shocks.

The differences between the tax structures of many developed countries are typically not very significant (on a global scale), as are the differences in tax objects, tax rates, and the breadth of the tax base, which is explained by common patterns in economic and fiscal evolution, years of integration efforts, and processes of tax policy harmonization. The similar strategic directions of the tax systems' evolution are often determined by the historically high level of economic development and shared social institutions in the Western world.

However, recent trends towards escalating technological competition worldwide and geo-economic fragmentation may result in increased discrepancies and even contradictions in the fiscal policies of various groups of developed countries, particularly between the EU and the USA.

One of the recent examples is the US Inflation Reduction Act of 2022, which provides for tax subsidies for environmental initiatives and includes explicit “Buy American” requirements. In the EU, this law has raised concerns about possible hindrances to exports to the US and the possibility of European firms being forced to relocate. As a result, the EU has responded with changes to state aid rules under the Green Deal Industrial Plan [39] and special climate subsidies¹⁴.

¹³ OECD. Revenue Statistics 2023: Tax Revenue Buoyancy in OECD Countries. OECD Publishing, Paris, 2023. <https://doi.org/10.1787/9d0453d5-en>

¹⁴ European Parliament. Think Tank. EU's response to the US Inflation Reduction Act (IRA). 2023. Available at: [https://www.europarl.europa.eu/thinktank/en/document/IPOL_IDA\(2023\)740087](https://www.europarl.europa.eu/thinktank/en/document/IPOL_IDA(2023)740087) (ac-cessed: 24.01.2024).

5.3. Developing economies

Emerging economies differ from developed countries in their diverse fiscal systems, encompassing varying levels and structures of taxation. These differences arise from unique historical trajectories and national strategies aimed at addressing economic, social, environmental, and other pertinent challenges.

Unlike developed countries, many developing nations have a much lower overall tax level, with a larger proportion of taxes coming from goods and services rather than individuals' and businesses' incomes. However, this doesn't necessarily mean these countries have better fiscal conditions for boosting economic growth compared to developed ones. Instead, it points to challenges in improving citizens' well-being, organizing income taxation, and a tendency to rely on raw materials in developing their economies.

In many of these countries, taxes, much like in developed nations, generally did not have a significant impact on economic growth. Instead, they often served as tools to tackle economic issues and deal with external shocks.

This trend, observed in advanced emerging economies as well as many developed countries, involves the pursuit of an active fiscal policy aimed at enhancing scientific and technological progress and fostering economic growth, driven by escalating competition for cutting-edge technologies [38]. This primarily concerns the major economies that exert an increasing influence on global economic processes such as China, India, Brazil, Indonesia, Mexico, and Nigeria.

For example, according to Reuters, in 2022, China planned a package of financial stimuli in the form of subsidies and tax incentives to support its semiconductor industry, amounting to over 1 trillion yuan (143 billion dollars)¹⁵. In India in 2022, the government increased tax support for

¹⁵ Zhu J. Exclusive: China readying \$143 billion package for its chip firms in face of U.S. curbs. 2022. Available at: <https://www.reuters.com/technology/china-plans-over-143-bln-push-boost-domestic-chips-compete-with-us-sources-2022-12-13/> (accessed: 24.01.2024).

new semiconductor enterprises to 50% of project costs and announced plans to abolish the ceiling on maximum allowable investments to boost display production¹⁶. In 2019, Brazil provided tax deductions from various federal taxes for producers of goods used in the IT and communication sectors that invest in R&D and innovation¹⁷.

6. Conclusion

Our analysis of recent trends in tax level, composition, and structure does not corroborate the predictions of various theoretical models regarding the significant impact of tax factors on economic growth. In the aftermath of the global financial crisis (Great Recession) of 2007–2008, the tax policies of many countries, both developed and developing, didn't seem to have a pronounced systemic impact on economic growth according to statistical data. Instead, countries tended to exercise restraint in their fiscal responses to the crisis, rather than opt for a more proactive approach.

We found no confirmation for our hypothesis that there are clear patterns in the relationships between tax indicators and economic growth, which would characterize the direction of tax influence in relatively similar groups of countries. The actual picture is too varied and doesn't lend itself to a straightforward interpretation.

This conclusion, however, should be interpreted very cautiously. Taxes undoubtedly influence the well-being and behavior of economic entities. Thus, the following considerations should be kept in mind:

Firstly, the influence of taxes should be distinguished from the distorting influence of non-tax factors. This can be done, for example, through a specific

¹⁶ Vengattil M. India expects at least \$25 bln investment under semiconductor incentive scheme. 2022. Available at: <https://www.reuters.com/markets/asia/india-offer-more-fiscal-support-under-its-chip-production-incentive-scheme-2022-09-21/> (accessed: 24.01.2024).

¹⁷ Rivas de Simone D.C., Caumo R.H. Brazil to offer tax incentives for manufacturers of IT and communication products. 2020. Available at: <https://www.internationaltaxreview.com/article/2a6a4ynkdzu2frfpr629s/brazil-to-offer-tax-incentives-for-manufacturers-of-it-and-communication-products> (accessed: 24.01.2024).

counterfactual analysis, i.e., by comparing what actually happened with what could have happened in the absence of discretionary intervention.

Secondly, it is important to remember that cautious fiscal policy, which gives priority to monetary measures, is not an absolute imperative but rather a characteristic of a particular stage of economic development. The situation could change significantly due to new external shocks and other challenges, which requires active government intervention, for instance, a government may resort to such interventions to prevent increased economic inequality as a result of advancements in AI technologies.

Thirdly, rather than merely being economic agents, taxpayers are individuals endowed with free will, albeit constrained by institutional frameworks and over time, they can also change their behavior patterns, influenced by the new digital reality such as the rise of remote work, freelancing, tax nexus for businesses, and other factors.

Certainly, factors such as the digital and new industrial revolutions, geo-eco-

nomnic fragmentation, and global environmental challenges – especially since the onset of the pandemic – contribute to the recent rise in fiscal activism, primarily observed in influential developing (emerging) economies that are likely to shape new trends in the development of tax systems worldwide.

A promising avenue for further research would involve identifying and analyzing these factors not uniformly across all countries worldwide or within the traditional divide between developed and developing (emerging) economies, but within the framework of new macro-regions. These regions, where participants are interconnected through supply and value chains, will need to coordinate their tax policies to achieve maximum cooperative effect. It would also be advisable to pay particular attention to macro-regions that include rapidly progressing countries of the Global South, which have already concentrated a significant portion of global industry, including cyber-physical sectors – the main drivers of development for the entire global economy.

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Acknowledgements

The article is based on the results of research carried out at the expense of budgetary funds under the state assignment of the Financial University under the Government of the Russian Federation.

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For citation

Bogachov S.V., Vishnevsky V.P., Gurnak A.V., Nekliudova V.D. Modern Tax Trends and Economic Growth in a Turbulent World: Insights from Developed and Developing Economies. *Journal of Tax Reform*. 2024;10(1):63–83. <https://doi.org/10.15826/jtr.2024.10.1.157>

Article info

Received February 14, 2024; Revised March 5, 2024; Accepted March 26, 2024

Благодарности

Статья подготовлена по результатам исследований, выполненных за счёт бюджетных средств по государственному заданию Финансового университета при Правительстве Российской Федерации.

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Для цитирования






Bogachov S.V., Vishnevsky V.P., Gurnak A.V., Nekliudova V.D. Modern Tax Trends and Economic Growth in a Turbulent World: Insights from Developed and Developing Economies. *Journal of Tax Reform*. 2024;10(1):63–83. <https://doi.org/10.15826/jtr.2024.10.1.157>

Информация о статье


Дата поступления 14 февраля 2024 г.; дата поступления после рецензирования 5 марта 2024 г.; дата принятия к печати 26 марта 2024 г.



The Validity of Personal Income Tax Deductions: Analyzing Expenses for Children's Education in Private Schools in Moscow

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ABSTRACT

Tax incentives are commonly used to support various sectors and population, and this study delves into the realm of deductions for the personal income tax (known as *NDFL* in Russia). We explore differing perspectives on these deductions, considering them either as investments in human capital for future income growth or as a form of government-initiated financing for specific sectors. Focusing on deductions related to children's education expenses in private schools, the research evaluates the effectiveness of budgetary investments in this sector. Using DEA analysis, the study assesses private schools based on factors like teacher-student ratios, classroom space per student, and access to computers and educational literature. The learning outcomes were measured by the number of high performers in the Unified State Exam and the number of 9th-grade graduates with certificates of distinction. The evaluation of learning outcomes reveals that many private schools in Moscow prioritize comfort over educational standards and the majority of them perform below the average levels in terms of effectiveness. The findings prompt questions about the feasibility of including private school expenses in personal income tax deductions. The proposed approach recommends tying eligibility for these deductions to the effectiveness of private schools, ensuring a more targeted and impactful use of tax benefits.

KEYWORDS

personal income tax, tax deductions, private schools, data envelopment analysis, effectiveness of tax deductions


JEL I22, I26, H22, H31

УДК 336.228

Обоснованность вычетов по индивидуальному подходному налогу: пример анализа по расходам на образование детей в частных школах г. Москва

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АННОТАЦИЯ

Популярность налоговых льгот как инструмента поддержки населения и отдельных отраслей экономики достаточно высока как в России, так и в других странах. Однако такая популярность требует более выверенного подхода к предоставлению преференций. Нами были рассмотрены налоговые вычеты по индивидуальному подходному налогу (НДФЛ в России) как такой инструмент поддержки. Мнение исследователей на данный вопрос неоднородно, как

и теоретическое обоснование возможности применения тех или иных налоговых вычетов. Ряд исследователей признают налоговые вычеты только по расходам, которые явно связаны с увеличением дохода в будущем (своего рода инвестиции в свой человеческий капитал, которые в дальнейшем способствуют росту заработной платы, доходов). Другие группы исследователей допускают применение налоговых вычетов по подоходному налогу как инициативное финансирование государством определенных отраслей экономики. В статье нами рассматривались вычеты по НДФЛ расходов на обучение детей в частных школах, что подпадает под концепцию инициативного финансирования, а следовательно, требует оценки эффективности вложения бюджетных денег в данную сферу экономики. Для оценки эффективности частных школ нами был использован ДЕА анализ, где входными факторами были определены ресурсы, необходимые для обучения школьников (количество учителей на ученика, площадь учебных помещений на ученика, обеспеченность компьютерами и учебной литературой). Выходными результатами обучения рассматривались количество «высокобалльников» по единому государственному экзамену и количество выпускников 9 класса, имеющих аттестаты с отличием. Мы оценили эффективность большинства частных школ ниже среднего уровня, что свидетельствует о неэффективности используемых ресурсов. Многие частные школы предоставляют только повышенный уровень комфорта, а не высокие стандарты обучения. Данный аспект ставит под вопрос целесообразность включения расходов на частные школы в состав вычетов по НДФЛ. В статье сформулировано предложение увязать возможность применения вычетов по НДФЛ по расходам на частные школы с эффективностью таких школ.

КЛЮЧЕВЫЕ СЛОВА

налог на доходы физических лиц, налоговые вычеты, частные школы, анализ среды функционирования, эффективность налоговых вычетов

1. Introduction

In Russia, like in many other countries, tax legislation undergoes frequent and substantial changes [1]. The COVID-19 pandemic and economic challenges compelled national governments to extend financial aid to both the general population and diverse sectors of the economy. A prevalent component of this support takes the form of tax preferences. In 2023, Russia had 377 nationwide tax preferences – a notable increase from the figure of 269 recorded in 2019¹.

As the number of preferences is growing, it raises questions about their economic meaning and fairness, which creates the need for a more solid theoretical foundation and an analysis of how well they align with the current tax system concept.

One of the most debated issues is the application of tax deductions for individual income tax (personal income tax in

Russia known as *NDFL*). Many authors [2] raise concerns about the social justice implications of specific tax deductions tied to expenses, particularly those favored by individuals with high income levels (charitable contributions being one of their most prominent examples).

In Russia, the market for educational services is evolving rapidly, including the private school education sector. This situation is most clearly seen in Moscow, where the number of private general education schools is quite significant. It is worth noting that this refers only to schools that are licensed for educational activities and have the right to issue state-approved certificates. Payment for the services of such schools may qualify for a personal income tax deduction.

Research question: Is it justifiable to apply personal income tax deductions for expenses on children's education in private schools within the context of income taxation principles or frameworks?

Based on the case of Moscow, we will assess private school education in terms

¹ <https://minfin.gov.ru/ru/performance/budget/policy/raskhod/rf>

of its effectiveness compared to municipal and public schools, employing Data Envelopment Analysis (DEA). The data will help us decide if private school education is seen as improving education overall or merely providing a more comfortable (“privileged”) learning experience. Thus, we will be able to assess the feasibility of personal income tax deductions to users of such a service.

The *purpose of this research* is to evaluate the feasibility of applying personal income tax deductions for children’s education expenses in private schools in Moscow by examining the effectiveness of these schools.

Hypotheses:

H1: The outcomes of private education for children over 11 years of schooling and over 9 years of schooling should correlate with each other.

H2: For tax deductions on private school expenses to be aligned with the concept of government-initiated financing, private schools should be able to deliver high-quality education.

The *article structure* is as follows: the first part establishes the study’s relevance; the second part analyzes concepts related to the justification of tax deductions from the government’s perspective; the third part outlines the methodology for analyzing the effectiveness of private education; the fourth part scrutinizes the results of the effectiveness assessment; the fifth part discusses the findings and offers recommendations on aligning deductions with school performance indicators. The conclusion summarizes the key research findings.

2. Literature review

The personal income tax plays a significant role in shaping regional and local budgets. Tax deductions and tax credits are instrumental in calculating the final amount of tax obligations, thus impacting tax revenue to the budget.

Baake et al. [3] demonstrate that the fundamental difference between tax deductions and tax credits lies in the fact that a tax credit is fixed in amount, whereas a tax deduction can vary depending on

the rate at which income is taxed. In the situation of a flat tax rate, a tax deduction can be to a certain extent conceptualized as a fixed amount, but under a progressive tax rate, the monetary value of a tax deduction fluctuates.

2.1. Rationale for including individual expenses in the list of deductions

Even though there are various models of tax deductions and tax credits, only a limited number of approaches define the list of expenses that are subtracted from the taxable income base for income tax purposes.

According to Givati [4], in the early 1960s, the idea of tax deductions as a tool for co-financing certain individual expenses became increasingly popular. Within this concept, income taxation was divided into general tax conditions (the “ordinary income tax”), which include elements such as the tax rate, tax-exempt minimum, and tax payment deadlines, and the “personal preferences” allocated to each income taxpayer. The set of preferences includes two elements: expenses related to supporting a particular industry and “special” expenses associated with specific taxpayer expenditures (such as medical expenses, etc.).

Thuronyi [5] contends that this approach suggests viewing the income tax as the payment of the “ordinary income tax», with the subsequent provision of a government subsidy as compensation for specific individual expenses. In other words, according to this approach, personalized deductions should be regarded as direct subsidies for specific taxpayer expenses, limited by the size of their tax payments to the budget.

Surrey [6] pointed out a significant aspect of this approach by categorizing deductions into two types: voluntary subsidies that impact taxpayer behavior and change consumption patterns, and subsidies specifically intended to aid taxpayers facing difficult situations such as the deduction of medical expenses from the taxable base.

Andrews [7] argues that the concept of deductions as a tool for co-financing

individual expenses is not based on the notions of social justice and the correlation of taxation with an individual's level of prosperity. However, there are also approaches attempting to incorporate the dependency of tax obligations on the level of prosperity.

The starting point for the concept of the tax base as the sum of expenditures related or unrelated to income is the diversity of the taxpayer's spending. The concept strives for fair taxation of individuals; however, certain expenditures are not easily categorized as directly related or unrelated to income, which makes the whole task more challenging. This in particular concerns expenses related to medical services, which cannot be definitively categorized into a specific group. Nevertheless, medical expenses are considered eligible for tax deductions on the grounds that they level the possibilities between individuals who have incurred medical costs and those who have remained healthy throughout the entire tax period.

The eligibility of certain expenses for tax deductions, even when they are not directly linked to income, requires certain "imputed income" associated with these expenses. Imputed incomes are extremely difficult to express in monetary terms. In other words, they can be referred to as non-monetary incomes and include activities such as household work. It is this imputed income that provides the basis for incorporating numerous expense categories into tax deductions – a concept that we usually associate with deductions from the taxable base.

Implementing taxation on imputed incomes is a challenging task because it is difficult to evaluate their monetary value and exercise their tax administration.

In our view, this justification somewhat goes beyond the concept of tax fairness associated with the taxpayer's level of prosperity. However, it serves as an intermediate step for another concept described by Bittker [8], which does not recognize imputed income as part of the tax base and, consequently, does not accept

deductions that are not directly related to the receipt of taxable income.

Griffith [9] highlights that the primary rationale behind excluding imputed income is the intricacy involved in overseeing non-monetary forms of income and services, especially self-provided services. This contrast in approaches becomes particularly evident when examining a married couple's situation where one spouse is not employed and manages the household. The divergence in approaches results in a doubling of both personal tax deductions and tax brackets. Moreover, it raises questions about the eligibility of the non-working spouse for deductions.

In any of the concepts described above, deductions are an essential element of the structure of income taxation. It should also be noted that tax deductions significantly impact the budget, various sectors of the economy, and different aspects of life related to deductible expenses from the taxable base.

When considering specific types of deductible expenses, it is necessary to start with one of the largest types of expenses, namely, expenses related to acquisition of housing (mortgage interest).

According to Binner & Day [10], one of the most illustrative examples of the positive impact of such deductions is the increase in the homeownership rate in the United States by 23.1 percentage points over almost 90 years of applying these deductions, starting from 1913.

Melnikova & Tikhonova [11] demonstrated the positive impact of such deductions in Russia, pointing out their distinct social orientation.

Deductions related to expenses for medical treatment, or the acquisition of additional health insurance are also commonly applied. In this scenario, researchers differ in their approaches depending on how such a deduction is provided (whether it's the exclusion of employer-provided insurance from the taxable base or a deduction from the taxable base for expenses related to acquiring insurance or direct medical services) and the specific details of the medical insurance or service.

2.2. The negative impact of deductions on social justice

While the eligibility for deducting various expenses can be conceptualized differently, there is a consensus that the use of deductions can contribute to social injustice by favoring wealthier individuals and households.

The main point of contention in the discussion on the unfairness of tax deductions revolves around progressive income taxation, resulting in a higher marginal income tax rate for wealthier taxpayers. The reduction of the taxable base leads to a higher net deduction, expressed in monetary terms, for individuals with high income compared to less affluent individuals.

This discussion has engendered various perspectives on tax deductions. For instance, Saez [12], using the example of a deduction from the income tax for charitable contributions, argued that there is a need to apply deductions to a lesser extent than the taxed amount with the excluded tax base.

There are ongoing disputes regarding expenses that directly or indirectly increase the taxpayer's income. For instance, Baldry [13] highlights the inconsistency in the Australian income tax deduction system, where expenses for professional education within a profession are acknowledged as directly influencing the taxpayer's income. According to the deductibility concept, only expenses related to generating taxable income are considered eligible for deduction, whereas similar expenses for education outside the current profession are not recognized as deductible from the taxable base.

A more common example of different interpretations of expenditures in various countries is commuting expenses. Wrede [14] noted that such expenses are considered income-related and, accordingly, deductible from the tax base in Germany and Scandinavian countries while in the United States and the United Kingdom, these expenses do not reduce the income tax base.

Such a varied approach to the categorization of expenses into related or

unrelated to income growth perfectly illustrates, on the one hand, the complexity of establishing the correlation between income and incurred expenses, and on the other hand, the challenges in assessing the actual cost of such expenses and the portion eligible for deduction.

Criticism of tax deductions can be summarized as follows:

1. They contribute to social injustice, where more affluent individuals derive greater benefits from the application of tax deductions.

2. It is difficult to distinguish between types of expenses as eligible or ineligible for deduction.

3. It is also difficult to determine the fair portion of expenses that are allowed to be taken as a reduction in the income tax base.

Dreier [15] suggests addressing social injustice in tax deductions by replacing them with a tax credit – an alternative proposed by many researchers for a more direct and potentially fairer alleviation of financial burdens for individuals.

Green & Vandell [16] point out that in a progressive tax system, there are indeed two questions to consider: how to determine the credit amount and how to establish the base upon which the tax credit will be computed.

The effectiveness of the tax credit system has been discussed by various studies. Bierbrauer & Boyer [17] and Bastian [18] proposed addressing current deficiencies in the system by replacing deductions with tax credits for enhanced performance.

Among the above-mentioned issues, the most thoroughly explored is the challenge of classifying expenses as deductible. Stiglitz [19] and Christiansen [20] specifically point out that a key feature of deductible expenses is their ability to be quantified in monetary terms and their connection, even if indirect, to the income-generating process.

Within a broader approach, expenses may qualify for deductions if they help save time and thus create opportunities for additional income generation (Kleven [21]).

In academic literature, there is no agreement on how much of the deducted expenses can be used to lower the tax amount: for example, Doerrenberg et al. [22] argue that increased tax burden leads individuals to seek ways to minimize the amount of taxes they pay by reducing their work activity, using deductions, or resorting to illegal methods. In this case, tax deductions appear to be a healthier alternative in comparison with the other two options (reducing the amount of work and concealing tax bases) while restricting or standardizing the amounts of these deductions is impractical.

However, not all researchers support this conclusion. Saez [12] presents an alternative viewpoint, arguing that deductions for charitable contributions need not necessarily align with the full amount spent. Hence, to justify a partial deduction for charitable contributions, it is necessary to create methods for determining coefficients and evaluating effectiveness and social justice.

The application of tax deductions is an important element of personal income taxation, regardless of how the legitimacy of deductions is conceptualized. Impediments to a more effective application of tax deductions stem primarily from the heterogeneity of taxpayers, especially in terms of income levels, and the diverse ways individuals respond to similar expenses that reduce the taxable base for income tax.

While in some countries tax deductions are replaced with tax credits, we believe that the former hold greater potential, irrespective of the type of income tax system. In other words, tax deductions can be effective in both proportional and progressive systems.

2.3. Recognition of expenses for private school education as deductions

The inclusion of private school tuition expenses in income tax deductions raises many questions. While some countries, like the USA, offer tax credits for education expenses, some researchers argue that

these expenditures should be considered for deductions in the tax system.

Samwick [23] points out that self-payment for school education reduces the burden on public schools, which also decreases budgetary allocations for education. Therefore, such behavior is socially beneficial and may be rewarded with tax preferences.

Yet, not all researchers view tax preferences for private education expenses as a form of social support or socially significant behavior. For example, Smart [24] contends that tax compensation for the choices made by parents regarding a particular educational model is a debatable issue, especially concerning schools associated with religious communities.

Boyer [25] supports the idea of offering tax preferences for private education expenses on the grounds that it fosters competition between private and public schools, leading to improved educational service quality.

Tikhonova [26] proposes viewing private education expenses as an investment in human capital development. She highlights that the effectiveness of education is influenced by various factors, including age, occupation, financial status, and the type of educational services (school education, higher education, additional professional education).

The diversity of perspectives on the effectiveness of tax preferences for expenses on private school education is connected, in part, to differences in the reasons for choosing private schools.

On the one hand, parents opt for private schools seeking more comfortable and privileged learning conditions for their children. On the other hand, the choice in favor of a non-government school may be driven by objective circumstances, such as the need for more attention to children with special needs or the lack of available space (overcrowding) in nearby public schools.

A separate category is private education obtained in “religious” schools – in this case the choice is driven by parents’ desire to uphold specific religious rituals and traditions in their child’s education.

2.4. Private education expenses in the light of two tax deduction approaches

2.4.1. The concept of deductions for expenses directly tied to income

Let us investigate the expenses related to private school education. The analysis will be conducted by considering different concepts or perspectives on how these expenses can be accounted for as deductions from the taxable income base when calculating income tax.

Graetz et al. [27], Bradford [28], and Richter [29] argue that deductions should apply to expenses directly linked to income generation, viewing tax deductions as a means of determining the net income subject to taxation. However, in our perspective, this approach doesn't accommodate deductions related to private school education. This is because the user of such deductions is typically a parent who doesn't directly derive additional income from these specific expenses.

The above-described approach does not allow us to determine how effective deductions for private school education would be. According to Richter [30], to assess effectiveness, we need to assign a value to the expected increase in future income from these deductions. It makes more sense to speak of the potential rise in the household's income, not just the parents, because the child, who is expected to earn income later, is seen as a separate entity.

Bittker [31] notes that when it comes to households, it is more practical to operate with other instruments (tax allowances), for example, modify tax schedules or apply exemptions from taxable bases (untaxed minimum, etc.). Another debatable issue, according to the same author [32], is the question of classifying an adult working child as part of their parents' household.

Therefore, we are not going to apply the concept of deducting expenses directly related to income generation when considering deductions for private school education for children.

2.4.2. The concept of financing specific economic sectors through government-initiated expense deductions

Budgetary subsidization of expenses for private schools, to a certain extent, can be attributed to government-initiated financing, as the state's goal is to ensure the necessary level of school education accessibility. The social aspect of such subsidization can only be realized if there is a sufficient number of private schools offering conditions suitable for children with special needs.

Government-initiated (indirect) financing may be used to support private schools, thus benefiting society by improving knowledge. The impact of this measure can be gauged by analyzing graduation exam statistics.

An important thing to keep in mind is the fact that the Russian private schools are not equivalent to the private schools in the U.S. Instead, they correspond more closely to the so-called "charter schools", which are non-governmental institutions partially funded from the budget depending on the number of students. We believe that tax deductions for children's education in private schools can also be classified as indirect financing for Russian private schools.

In most studies, the effectiveness of private schools has been examined from the perspective of enhancing the level of education in a city or district. In their analysis of the academic achievements of students in private schools in Michigan, USA, Eberts & Hollenbeck [33] found higher scores on final exams for students in public schools.

Hollenbeck & Nelson [34] conducted a similar analysis of academic achievements among students in private schools in Arizona (USA) and obtained completely opposite results – higher scores for students in private schools.

Bettinger [35] investigated the improvement of the overall level of education in private schools through their competition with public schools.

Our results, however, do not confirm the improvement of the education level through competition; they only in-

dicating that private schools tend to establish themselves in areas where there is no competition from public schools.

Clark et al. [36] and Bifulco & Ladd [37] also did not find any statistically significant growth in the level of education associated with school competition. Moreover, they demonstrated that if the number of private schools is high, it may result in financial losses to the public education sector.

Ladd & Singleton [38] divided the funding for the education of one student into fixed and variable costs. They showed that an increase in the number of private schools raises the proportion of fixed costs (such as school buildings, etc.) and makes the education of one student in a public school more expensive, considering the need for co-financing education in private schools.

Looking at prior research, it is clear that there are mixed results when it comes to evaluating how well students perform in private schools. The majority of studies argue against any positive impact of educating children in private schools on the overall secondary education system.

Table 1 summarizes the research evidence mentioned in this article, including data sources and statistical methods used for data assessment.

Table 1 illustrates the modern approach to assessing the level of education

overall and with a breakdown into public and private schools. This approach focuses on how well the resources invested in education align with the learning outcomes, as indicated by students' grades.

Comparison of the level of education in private schools with public ones will help reveal the essence of fee-based school education: Does it merely serve as a "fee for comfort in education", or does it contribute to the improvement of the education level? By answering this question, we will be able to determine if these expenses qualify for tax deductions under the government-initiated financing concept.

3. Methodology

To assess the level of education in private schools in Moscow, we chose the Data Envelopment Analysis (DEA) method [39], which has been extensively tested before in evaluating the effectiveness of schools [40; 41] and universities [42].

This method assumes the efficiency of using "input" resources to generate "output" resources. The mathematical model of DEA analysis is represented by the following formulas:

$$\max_{v_i, u_i} \left(e_k = \frac{\sum_{i=1}^M u_i y_{ik}}{\sum_{j=1}^N v_j x_{jk}} \right); \quad (1)$$

Table 1. Summarized information on research of school education levels

Authors	Assessment of the quality of education	Methods
Eberts R.W., Hollenbeck K. [33]	MEAP test, categorizing students based on the quality of education	Statistical analysis of the MEAP test scores, indicators characterizing the school environment and the quality of teaching
Hollenbeck K., Nelson C. [34]	SAT test (test for admission to higher education institutions)	Linear regression of SAT test results on variables (several sets characterizing the school and student)
Bettinger E.P. [35]	Michigan's standardized testing program	Statistical analysis of test scores on variables (several sets characterizing the school and student)
Clark M.A. et al. [36]	Tests in mathematics and reading	Linear regression of test results against variables (multiple sets characterizing both the school and the student)
Robert Bifulco, Helen F. Ladd [37]	Tests in mathematics and reading	Linear regression of test results against variables (multiple sets characterizing both the school and the student)

$$\begin{cases} e_k \leq 1, k = 1, \dots, R \\ u_i > 0 \forall i \\ v_j > 0 \forall j \end{cases}, \quad (2)$$

where e_k is the effectiveness of the k -th object; v_j, u_i are weight coefficients indicating the contribution of each parameter; x_{jk} are input parameters; y_{ik} are output parameters; M is the number of input parameters; and N is the number of output parameters.

The “classical” model assumes constant returns to scale (CRS), which involves the hypothesis of a constant increase in the output measure when increasing input factors.

In our view, a more flexible model is the variable return to scale (VRS), which rejects the hypothesis of constant increase in the output measure when increasing input factors.

To build our model, we used the following “input” variables:

- student-teacher ratio;
- numbers of computers per student;
- classroom area per student;
- floor area of the school per student.

These variables were selected because it is necessary to consider the maximum number of material and labor resources allocated to education. To reduce the number of variables, we used indicators per student, thus excluding data on the school’s total enrollment, number of classes, etc. Certain constraints were imposed by limited information required for disclosure in self-assessment reports and the absence of even these data in reports from a significant number of schools.

For Model 1 we chose the indicator “number of students scoring above 220 points on the Unified State Exam in three subjects” as the output parameter, while for Model 2, it was the “number of certificates with honors upon completion of the 9th grade”.

Model 1 evaluates the performance of 11th-grade students who achieve high scores (above 220) in the Unified State Exam across three specific subjects chosen by the students. Model 1, primarily, describes the graduation of the most prepared students who have completed

their full secondary education and will subsequently have greater value for the economy. However, Model 1 overlooks a significant number of students who complete their education in schools after the 9th grade while it is precisely the 9-year school education that is truly mass-oriented and much more accurately reflects the potential of schools in educating children.

For a more comprehensive assessment, it was decided to use an indicator related to the number of high-performing 9th-grade graduates in Model 2. It should be noted that according to the hypothesis *H1*, the performance levels of schools based on 11 years of education and 9 years of education should correlate with each other.

The data were manually collected from self-assessment reports for 2022, published on the official websites of Moscow schools. It should be noted that despite the requirement to publish certain indicators, not all schools make this information publicly available in their self-assessment reports.

To measure the effectiveness of schools, we used specialized software RStudio, in conjunction with the Benchmarking library (R programming language). In total, we processed the data on 292 schools (43% of the total number of schools in Moscow), including 234 public schools and 58 private schools.

4. Results

As a result of modeling, the following results of school performance were obtained (Table 2 and 3).

The distribution of schools according to their performance is shown in Table 3.

As seen in Table 3, effectiveness indicators based on the CRS and VRS methods show significant deviations from each other. In our opinion, this illustrates the fact that a direct increase in input factors alone cannot ensure a qualitative growth in the output indicator. Therefore, for a more effective evaluation, we have chosen the VRS method.

According to the results of the DEA analysis using the VRS method, below-average effectiveness values are observed in

52.74% of schools (47% public schools and 72.41% private schools), while the segment of highest-performing schools comprises 11.99% of schools (11.11% public schools and 15.52% private schools). The distribution of schools based on their performance in Model 1 (11th grade) is shown in Figure 1.

As seen in Figure 1, the distribution of schools, including public schools, looks normal, while private schools show distinct segmentation in both low and high-effectiveness zones. In the average range of effectiveness, the number of private schools is very limited.

Table 2. Key modelling indicators

Indicators	Model 1 (11 th grade)		Model 2 (9 th grade)	
	CRS	VRS	CRS	VRS
1. Mean	0.21	0.598	0.259	0.585
2. Minimum	0.045	0.08	0.05	0.08
3. Median	0.138	0.588	0.183	0.563
4. Number of effective schools	12	25	14	27
Including				
private schools	5	8	5	9
municipal schools	7	17	9	18

Table 3. Values of effectiveness indicators for private and public schools in Model 1

Effectiveness	Model 1					
	All schools, %		Municipal schools, %		Private schools, %	
	CRS	VRS	CRS	VRS	CRS	VRS
0.1–0.2	61.64	3.42	55.13	1.28	87.93	12.07
0.2–0.3	17.12	7.88	20.51	2.99	3.45	27.59
0.3–0.4	6.51	8.56	8.12	5.98	0.00	18.97
0.4–0.5	6.16	12.33	7.69	14.10	0.00	5.17
0.5–0.6	1.71	20.55	2.14	23.50	0.00	8.62
0.6–0.7	1.37	17.47	1.71	21.37	0.00	1.72
0.7–0.8	0.68	9.59	0.85	10.68	0.00	5.17
0.8–0.9	0.34	8.22	0.43	8.97	0.00	5.17
0.9–1.0	4.45	11.99	3.42	11.11	8.62	15.52
Total	100	100	100	100	100	100

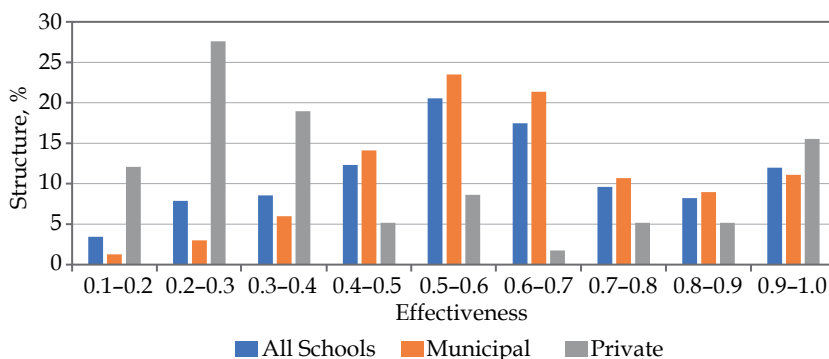


Figure 1. Effectiveness structure according to the VRS method in Model 1

It should be noted that 39.66% of private schools and only 4.27% of public schools fall within the range of extremely low effectiveness levels (from 0.1 to 0.3).

Let us now consider the distribution indicators for schools in Model 2.

As in Model 1, in Model 2, there is a significant deviation between the effectiveness indicators using CRS and VRS methodologies.

According to the results of the DEA analysis in Model 2 using the VRS methodology, 56.85% of schools have below-average effectiveness (53% of which are public schools and 72.41% are private schools), while 12.33% of schools fall into the highest effectiveness segment (11.11% of which are public schools and 17.24% are private schools).

It should be noted that there is a high level of comparability in the effectiveness assessment results of schools between

Model 1 and Model 2, which confirms the initial hypothesis of this study.

The distribution of schools according to their effectiveness in Model 2 (9th grade) is also presented in Figure 2.

The distribution of effectiveness in Model 2 has the same characteristics as in Model 1. It should be noted that 41.38% of private schools and only 4.27% of public schools can be considered low-performing (their results fall within the range from 0.1 to 0.3).

The final results from both models strongly correlate with each other. The majority of school ratings align in both Model 1 and Model 2, which, in our view, indicates the high reliability of results describing schools' potential to prepare top-tier students, both based on the results of basic education (9 years) and secondary education (11 years).

Table 4. Values of effectiveness indicators for private and public schools in Model 2

Effectiveness	Model 2					
	All schools, %		Municipal schools, %		Private schools, %	
	CRS	VRS	CRS	VRS	CRS	VRS
0.1-0.2	53.42	3.42	46.58	1.28	81.03	12.07
0.2-0.3	11.99	8.22	13.68	2.99	5.17	29.31
0.3-0.4	12.67	9.25	15.81	7.69	0.00	15.52
0.4-0.5	6.16	15.75	7.69	17.95	0.00	6.90
0.5-0.6	4.79	20.21	5.13	23.08	3.45	8.62
0.6-0.7	4.11	13.70	5.13	16.67	0.00	1.72
0.7-0.8	1.03	11.64	1.28	13.25	0.00	5.17
0.8-0.9	0.00	5.48	0.00	5.98	0.00	3.45
0.9-1.0	5.82	12.33	4.70	11.11	10.34	17.24
Total	100	100	100	100	100	100

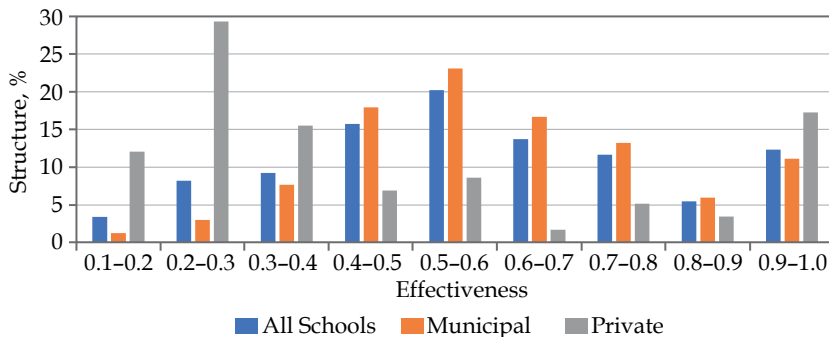


Figure 2. Effectiveness structure according to the VRS method in Model 2

As the results are comparable, we deem Model 2 as the foundation for assessing the quality of education for the majority of school graduates.

5. Discussion

Since Models 1 and 2 yield comparable results concerning school performance, we can consider the hypothesis *H1*, which posits a correlation between the effectiveness of children's education in private schools after 11 years of schooling and 9 years of schooling, as confirmed.

Earlier, we established that tax deductions as a form of budgetary support for private schools can be considered a type of government-initiated financing. In this case, tax deductions for education in private schools should be directly linked to the improvement of the average level of education in private schools. However, the research results do not support this as the majority of private schools (72.41%) perform below both the median and mean levels. It should be noted, however, that 17.24% of private schools are highly effective. Interestingly, there are virtually no private schools with average effectiveness levels.

Thus, the hypothesis *H2* about the need for highly effective private schools to consider parents' expenses justified has found only partial confirmation.

Based on these results, private schools can be roughly divided into those that mainly prioritize "creating comfort for students" (schools with low effectiveness) and those that are "focused on high academic achievements" (schools with high effectiveness).

The limited effectiveness of many private schools can be attributed to the fact that their resources are mainly directed towards creating a more comfortable atmosphere, while lacking specific academic performance indicators. The existence of highly effective private schools shows, however, that it is possible to achieve strong results with substantial resources, if there is a high standard of education.

The Russian tax deduction system currently does not provide a ranking mechanism for assessing private schools based on their academic success and learning comfort. In this scenario, it is clear that private schools emphasizing comfort, or the prestige of education do not align with the criteria of the government-initiated financing concept. Consequently, providing tax deductions for education in such schools is unjustified and, overall, is detrimental to education funding at the municipal level.

Potential budget losses can be easily calculated by using the number of students in private schools and the limit for tax deductions for education (110,000 rubles per child, Subparagraph 2, Paragraph 1, Article 219 of the Russian Tax Code). Taking into account the fact that there are 46,939 students attending private schools in Moscow, potential budget losses (inefficient spending) for the city of Moscow (as a subject of the Russian Federation) in 2023 ranged from 671.2 million rubles to 774.5 million rubles (calculated at rates of 13% and 15%, respectively).

We describe these amounts as losses because government-initiated funding is primarily directed towards underperforming schools, thereby reducing the overall budget volume that could potentially be allocated to public schools.

Considering the reviewed academic literature on income tax deductions and the analysis of DEA efficiency results for schools, we can conclude that offering tax deductions for expenses related to children's education in private schools contradicts the intended nature of these deductions. However, it is crucial not to discourage high-performing private schools.

We suggest tying the eligibility for deductions to the effectiveness levels of private schools. This way we can exclude private schools from budget co-funding if they provide "privileged" learning conditions without demonstrating a high level of training. To this end, the following mechanism can be proposed (Figure 3).

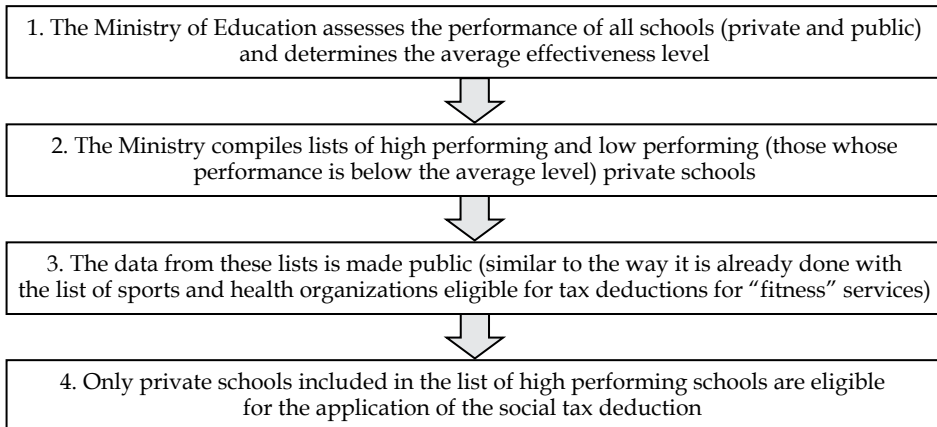


Figure 3. Scheme of income tax deductions based on private schools' performance

6. Conclusion

In this study, our main focus has been on exploring various approaches to determining tax deductions for individual income tax. Our literature review has shown that deductions for private school tuition align with the concept of government-initiated financing. However, it is important to note that this support should only happen if there is evidence of positive impacts or beneficial outcomes from such financial assistance.

The majority of private schools in Moscow (72.41%) perform below the median and mean levels of effectiveness, and only 17.24% of private schools perform above these levels.

Our results confirm the hypothesis that there is a correlation between the effectiveness ratings of children's education in private schools based on 11 and 9 years of schooling.

The study has partially confirmed the hypothesis that ensuring high effectiveness in private school education justifies parents' expenses on these schools.

The above-described situation raises concerns about the potential efficiency of providing income tax deductions of up to 774.5 million rubles from the Moscow budget. In addition, the majority of private schools significantly lag behind in effectiveness even compared to average public schools that have not demonstrated outstanding results.

Granting tax deductions for expenses on private education, without assessing the effectiveness of government-initiated financing, goes against the theoretical principles of income tax.

The proposed mechanism involves regular monitoring of private schools' performance and establishing a registry of effective private schools, thereby qualifying them for tax deductions on related expenses.

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For citation

Leontev E.V., Leontieva Yu.V., Shirshov S.A., Linnik E.Yu. The Validity of Personal Income Tax Deductions: Analyzing Expenses for Children's Education in Private Schools in Moscow. *Journal of Tax Reform*. 2024;10(1):84–99. <https://doi.org/10.15826/jtr.2024.10.1.158>

Article info

Received *February 6, 2024*; Revised *February 29, 2024*; Accepted *March 1, 2024*

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Для цитирования

Leontev E.V., Leontieva Yu.V., Shirshov S.A., Linnik E.Yu. The Validity of Personal Income Tax Deductions: Analyzing Expenses for Children's Education in Private Schools in Moscow. *Journal of Tax Reform*. 2024;10(1):84–99. <https://doi.org/10.15826/jtr.2024.10.1.158>

Информация о статье

Дата поступления *6 февраля 2024 г.*; дата поступления после рецензирования *29 февраля 2024 г.*; дата принятия к печати *1 марта 2024 г.*

Original Paper

<https://doi.org/10.15826/jtr.2024.10.1.159>



Property Tax in Indonesia: A Proposal for Increasing Land and Building Tax Revenue Using the System Dynamics Simulation Method

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ABSTRACT

The current hottest issue in Indonesia is the small amount of Land and Building Tax (LBT) revenue at the national and local levels. This research aims to find a valuable model for increasing LBT revenue for the government by formulating ideal clauses and determining what policies should be implemented. This research aims to reveal the practice of tax avoidance and evasion on LBT tax objects, which causes LBT income to stagnate yearly, and find a solution by mapping actual conditions and forecasting the next ten years using a system dynamics model. The research question is why LBT makes a small contribution to total state revenue, even though the object and what are the solutions to increase LBT income in the future. The research methodology uses quantitative methods supported by qualitative analysis using dynamical system modeling. This modeling makes it possible to predict increases in tax revenues by considering several variables that cause LBT revenues to stagnate. The findings of this study show that LBT revenues will proliferate compared to revenues in the initial year of the simulation if intervention is carried out by reducing tax avoidance and tax evasion, increasing tax compliance, and the value of the income growth ratio per tax object. This study found nine actors essential in increasing property taxes in Indonesia: civil officials, tax officials, tax authorities, notaries, large companies, state and regional-owned enterprises, sellers, and buyers of property. In conclusion, the government needs to improve the tax collection system and implement various strategies, including increasing the role of notaries to prevent tax evasion in housing.

KEYWORDS

tax governance, land and building tax, tax evasion, tax compliance, system dynamics model

JEL E62, E63, H21

УДК 336.22

Имущественное налогообложение в Индонезии: предложение по увеличению поступлений от налога на землю и строительство с использованием системно-динамического моделирования

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АННОТАЦИЯ

В настоящее время острой проблемой в Индонезии является небольшой объем поступлений от земельного и строительного налога (ЛБТ) на национальном и местном уровнях. Данное исследование направлено на поиск адекватной модели увеличения доходов правительства от ЛБТ путем формулирования идеаль-

ных положений и определения того, какая политика должна быть реализована. Целью данного исследования является выявление практики уклонения от уплаты налогов по объектам налогообложения LBT, приводящей к ежегодной стагнации доходов LBT, и поиск решения путем картирования фактических условий и прогнозирования ситуации на ближайшие 10 лет с использованием модели системной динамики. Исследовательский вопрос заключается в том, почему LBT формирует незначительный вклад в общий доход государства и какие существуют решения для увеличения доходов от LBT в будущем. Методологическую основу исследования составили количественные методы, подкрепленные качественным анализом с использованием системно-динамического моделирования. Это моделирование позволяет прогнозировать увеличение налоговых поступлений с учетом нескольких переменных, влияющих на величину доходов от LBT. Результаты исследования показывают, что доходы от LBT будут расти по сравнению с доходами в начальный год моделирования, если вмешательство будет осуществляться путем сокращения уклонения от уплаты налогов, улучшения налогового законодательства и роста налога на все объекты налогообложения. Исследование идентифицировало девять субъектов, играющих важную роль в повышении фискальной значимости имущественного налогообложения в Индонезии: государственные и налоговые чиновники, налоговые органы, нотариусы, крупные компании, государственные и региональные предприятия, продавцы и покупатели недвижимости. В статье обосновывается, что правительству необходимо совершенствовать систему сбора имущественных налогов и реализовывать различные стратегии, в том числе повышать роль нотариусов для предотвращения уклонения от уплаты налогов в жилищном строительстве.

КЛЮЧЕВЫЕ СЛОВА

налоговое управление, земельный и строительный налог, уклонение от уплаты налогов, налоговый комплаенс, модель системной динамики

1. Introduction

The current hottest issue in Indonesia is the small amount of Land and Building Tax (LBT) revenue at the national and local levels. In 2022, LBT tax revenue was less than 2% of total state revenue. Since its promulgation in 1985, an LBT has only contributed between 0.86–1.3%.

According to the Minister of Finance quoted by Cindy¹, LBT collected by the national Government in 2022 grew 59.5% (y-o-y) compared to the previous year. However, the 59.5% figure is actually only 1.23% of total state revenue.

The National Government collects the largest portion of tax objects, including plantation, forestry, mining, geothermal mining, mineral and coal mining, water and sea areas, toll roads, fisheries, aquaculture, pipeline networks, cable networks, storage, and processing facilities. This tax object is managed by large

national private companies, foreign companies, State-Owned Enterprises (SOE), and Regional-Owned Enterprises (ROE). Katadata.co.id² an online newspaper trusted by the government, said that all of this would have an impact on reducing the mining tax sector by around 43%.

The stagnation of LBT income – it is thought that the cause is tax practices that do not support conditions towards improvement. The large number of tax evasion cases in the real estate, housing, forestry, plantation, and mining sectors is a significant cause. MUC Consulting³ revealed that these issues are related to an ineffective tax collection administration system, resulting in a reduced level of tax compliance to 61–71%.

At the regional level, the stagnation of LBT income is caused by many things.

¹ <https://databoks.katadata.co.id/datapublish/2023/02/24/penerimaan-pajak-negara-tembus-rp162-t-pada-awal-2023-ini-sektor-penyumbang-terbesar>

² <https://databoks.katadata.co.id/datapublish/2021/03/03/pajak-dari-sektor-tambang-turun-43-pada-2020>

³ <https://mucglobal.com/id/news/3117/di-bawah-target-per-31-maret-2023-rasio-kepatuhan-formal-pajak-hanya-6180>

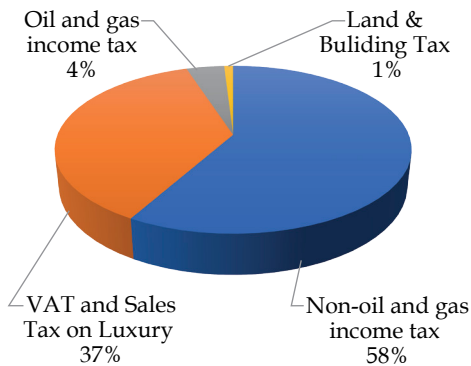


Figure 1. Percentage of LBT Revenue compared to other Central Taxes

For example, tax avoidance or evasion practices occur in the real estate, housing, forestry, plantation, and mining sectors. The low role of the tax authorities where the local government delegates authority to sub-districts to collect taxes using the target system⁴ reported that the stagnation also occurred because of local government policies to reduce taxes owed and not provide tax sanctions to taxpayers who evade taxes.

The low percentage of LBT revenues at the national level also occurs at the City and Regency levels. The average realization of LBT revenues is only 2.9% of total local tax revenue. Of the 416 Regencies and 98 Cities in Indonesia, only Jakarta Province reaches 29%. Figure 1 depicts the position of LBT which only contributes 1.23% to state revenue.

The research question: why does LBT make a small contribution to total state revenue, even though it has wider tax object more taxpayers? Are there ways and methods to increase LBT revenues in the future?

The hypothesis is:

H1: The lack of LBT income is caused by the low tax compliance of taxpayers.

H2: If the potential for tax losses is high (measured from tax avoidance and tax evasion), then LBT revenues will decrease significantly.

H3: If tax compliance increases and tax evasion decreases, then LBT revenues can be increased as expected.

This research aims to reveal the practice of tax avoidance and evasion on LBT tax objects, which causes LBT income to stagnate yearly, and find a solution by mapping actual conditions and forecasting the next ten years using a system dynamics model.

2. Literature Review

The Oslo Dialogue, a strategy launched in 2011, formulated an approach primarily to combat tax crimes, set standards, share best practices, and build capacity. The process is called the OECD⁵ Ten Global Principles, which relate to a number of practical tools, guidelines, training, and other capacity building supported by a legal framework related to financial transparency, strong institutions, and practical cooperation between tax administration and other law enforcement authorities. Tax theory calls this crime tax fraud, and tax fraud is related to tax corruption. According to Alm et al. [1], tax evasion is also considered a corrupt behavior.

Fiorino & Galli [2] stated that corruption is considered to create inefficiency and is proven to reduce investment and economic growth. Corruption tends to occur in countries with low economic growth.

Basem & Saeh [3] warn of the difficulty of limiting tax corruption that may be economically beneficial. According to him, tax fraud is an act of tax violation that is carried out intentionally with the intention of reducing the amount of tax that should be paid or deliberately providing incorrect information in the tax report to reduce the tax burden.

Tax evasion which leads to crime, and tax aggressiveness are included in the understanding of tax fraud. Tax evasion is a tax violation by carrying out a tax evasion scheme by reducing the amount of tax that must be paid or not paying tax. All this is done through illegal means. Tax evasion, tax avoidance, tax aggressiveness, and tax

⁴ <https://www.cnnindonesia.com/ekonomi/20230808073000-532-983215/pemprov-dki-beri-keringanan-bayar-pbb-sampai-akhir-tahun>

⁵ <https://legalinstruments.oecd.org/en/instruments/OECD-Legal-0469>

abuse cause quite large losses, which has an impact on the difficulty of calculating potential tax (loss tax potential). Loss tax potential occurs because an individual or company intentionally makes careless or deliberate inaccuracies by calculating any exaggeration that reduces the true impact of the tax payable.

Recently, scientific views highlighting the importance of carefully understanding the potential of taxes for the formation of budget revenues have grown rapidly.

Vasileva [4] explained that potential taxes depend more on the country's tax policy, applicable benefits, tax rates, tax base, and other indicators. Increasing central and regional economic strength through calculating tax potential can be determined by measuring the openness of access to taxable resources and further incentive and restrictive policies.

Mayburov & Kireenko [5] and Bikoula et al. [6] assert that a significant amount of tax potential is wasted when the government fails to control tax fraud.

Maksimchuk et al. [7] present the role of tax potential in stimulating innovation in the digital sector and review the advantages, disadvantages, and benefits of the existing taxation system in the Russian Federation. The conclusion is that more current benefits are needed to stimulate economic innovation without causing losses for the government due to tax avoidance aspects. They propose that tax benefits are a primary requirement for the growth of local tax potential in modern conditions and for stimulating innovation in the digital economy.

In the implementation of tax collection in regions in Indonesia, the minimal number of tax authorities results in less aggressive LBT tax collection. In contrast, regarding the property tax implementation in Singapore, the city government actively and aggressively employs it as an industrial policy and macroeconomic stabilization tool. There exists a close relationship between property taxes, public housing, and mandatory savings schemes. This scheme has replaced the mortgage financing market in Singapore. However, according to Asher & Nandy [8] what is

interesting is the gap between the property tax treatment of public housing, which is lightly taxed, and the treatment of non-residential property, which is relatively more heavily taxed.

Indonesia does not implement the concept of this mandatory savings scheme, and property tax is considered very affordable. Even in Jakarta, three years ago, properties worth less than US\$ 130,000 were exempted. A study by Gstach [9] analyzes a variant of the classic idea of property taxation based on the owner's self-assessment. To encourage market value reporting, tax authorities announced the random purchase of some properties at the declared value under certain conditions. Gstach discovered a tax game among these taxpayers where they all reported market values to tax authorities but did not purchase any property. In Indonesia, it is different; for a long time, the tax office has used newspapers and online sites where sellers offer property prices.

In a study by Pandya & Tippett [10] it is highlighted that in Australia, high house prices by global standards are prompting calls for the reform of the country's taxes. As per Freebairn [11], the call has raised concerns among policymakers that property tax reform might push home prices even higher. In Indonesia, since 1984, the government has yet to carry out tax reform. The government considers the condition of tax revenues to be stable by relying on Income Tax and VAT. Meanwhile, real estate and housing sales experienced a decline during and after COVID-19.

Concerning tax corruption, especially land and building tax, there are not many articles that reveal it. Perhaps the studies and perceptions found by researchers regarding tax evasion are considered dangerous and very vulnerable to political elites. However, we suspect this happens because it is difficult to obtain corruption data on LBT objects. The solution is to take and count case by case from reports in newspapers and the field, creating guidelines for exploring and finding relationships between corruption variables and then tracing them based on scientific analysis.

Quoted from a study conducted by Kurauone et al. [12] and Dowling [13], they revealed a relationship between decreasing tax revenues and corruption and tax evasion. Their study proposes controlling tax corruption by controlling taxpayers' tax avoidance efforts.

Pazhanisamy [14] conducted almost the same research. He offered the possibility of Ronald Coase's theory to control tax corruption and justified what interventions are needed to achieve the optimal amount of corruption. Their study concludes that to achieve optimal results (with the spread of corruption in society) all perpetrators of corruption must be internalized by introducing legal business and understanding tax compliance.

Based on this literature, tax corruption is a tax crime that can reduce investment and hinder innovative economic growth in the digital economy, potentially wasting tax potential if not significantly controlled by the government. The government can employ various methods to minimize tax evasion, tax avoidance, and tax aggressiveness on Land and Building Tax by understanding several important variables. One such variable involves reviewing the ten OECD Global Principles. Additionally, the government could consider a slight increase in tax deductions to encourage people to pay taxes, thereby reducing tax evasion.

3. Methodology

3.1. System Dynamics Simulation Model

This research method utilizes a quantitative approach supported by a dynamic system simulation model, referencing a mixed methods approach. Staadt [15] and Shin & Jeong [16] state that the application of a qualitative systems thinking approach (soft systems methodology) in operational processes is facilitated by using Power-sim constructor software as a cognitive mapping tool, aimed at formulating models with a quantitative systems thinking approach (system dynamics).

The primary objective of dynamic system analysis, according to Warren [17] and Senaras [18], is to address three key ques-

tions: (why) LBT income is decreasing, (where) or at what position action must be taken to increase LBT income, and (how) to effect this change. The last question is more concerned with the policy to be implemented. It can be said that a dynamic system is a method for describing how a system changes over time.

In each model, the feedback structure is expected to incorporate several loops to meet the requirements of a comprehensive model. Models that have been tested multiple times will endure under various conditions, even in extreme scenarios (robust).

Esteso et al. [19] add that the model should also have multiple points of contact with the real world; repeated comparisons with the real world will enhance the model's robustness. Referring to system dynamics, the tendency of LBT income to increase, decrease in certain periods, and then increase again, as depicted in Figure 1, carries a specific meaning referred to as behavior or dynamics. This behavior arises from various factors, and in system dynamics, the focus is on predicting the future value or quantity of the variable.

3.2 Stock and Flow Diagrams

Stock and Flow Diagram (SFD) is a development of the Causal Loop Diagram (CLD). Zheng et al. [20] and Araya et al. [21] described a CLD is illustrated in a diagram comprising two types of variables, including stock (level) and flow (rate), to produce dynamic system modeling. Stock (Level) and Flow (rate) are used to represent activity in a feedback loop and a more detailed explanation of the causal loop diagram. An SFD is very concerned about paying attention to the influence of time on the relationship between variables so each variable can show the accumulated results of the variable level and the variable, which is the rate of system activity for each period known as Rate.

The stock variable (level) states the condition of the system for each Stock, which is an accumulation in the system, and the system level, which is better known as the state variable system. The stock variable is a policy structure de-

scribing why and how a decision is made under the information available in the system. Meanwhile, a Rate is a variable in the model that may influence the level.

3.3. Initial values and parameters

System dynamics modeling analysis helps generate relationships between parameters and components of air pollution reduction models. These relationships can be estimated and made into a scenario if the data is available in numerical form. Secondary data sources generally acquire Initial values and parameters. If secondary data is unavailable, this value can be estimated by processing supporting or numerical data on primary and secondary data.

To establish the model of relationships between variables, initial values must be determined as constants, function tables,

and indicator levels. For instance, the LBT tax revenue index can be calculated from rates and constants, eliminating the need for complex initial value calculations. Therefore, as highlighted by Hekimoglu & Barlas [22], determining parameter values must take into account their effect on model sensitivity. In this case, changes in the structural model will appear more sensitive than the feedback model.

Therefore, estimates in this study are only made at the level of accuracy required in this study. For modeling purposes, this study will consider trends toward long-term changes, understanding the nature of system dynamics and alternative design policies. Therefore, behavioral and policy sensitivity will be prioritized. The initial values and parameters used in modeling are presented in the Table 1.

Table 1. Initial values and model parameters (2022)

No.	Indicators	Initial Value / Parameter (endogenous variable)	Unit	Source
A. General Information				
1.	Number of LBT taxpayers	69,573,930	Unit	S
2.	Amount of LBT revenue	730,898,262	US\$	S
3.	Taxable Tax Objects (Selling Value of Non-Taxable Tax Objects)	3,785	US\$	S
4.	Forestry and Plantation Tax Operational Costs	5.4	%	S
5.	Mining, Cable network, Pipe, Toll Road Tax Operational Costs	6.3	Percent	S
6.	River, Sea, Cultivation, Storage Tax Operational Costs	6.3	Percent	S
7.	Normal rates	0.5	Percent	S
8.	Maximum Tax Object Sales Value Rate	40-100	Percent	S
9.	Assessment Value	20-40	Percent	S
10.	Average Tax Object Sales Value of Land	75,000	US\$/meter	E
11.	Average Tax Object Sales Value of Buildings	100,000	US\$/meter	E
12.	Average of National LBT growth ratio	12	Percent	S
13.	Average of Tax Compliance	70.6	Percent	E
14.	Average of Tax loss potential (Tax avoidance, Tax evasion)	14	Percent	E
B. Plantation Land and Forestry				
15.	Area of Plantation and Forestry Objects	148,824,200	Hectare	S
16.	Amount of LBT revenue	122,606,044	US\$	S
17.	Ratio of Forestry and Plantation LBT Income Growth	0.23	Percent	E
18.	Ratio of Forestry and Plantation LBT Tax Compliance	0.34	Percent	E
19.	Ratio of Forestry and Plantation LBT Tax Avoidance	0.09	Percent	E

End of Table 1

No.	Indicators	Initial Value / Parameter (endogenous variable)	Unit	Source
C. Mining				
20.	Area of Mining Objects (Oil, Gas, Coal, Minerals)	6,423,898		
21.	Total revenue of LBT Mining	730,898,262	US\$	S
22.	Ratio of Mining LBT Income Growth	0.20	Percent	E
23.	Ratio of Mining LBT Tax Compliance	0.11	Percent	E
24.	Ratio of Mining LBT Tax Avoidance	0.07	Percent	E
D. River/aquatic, Marine/Sea, Cultivation, Storage				
25.	Area of Production Objects	191,112,434	Hectare	S
26.	Amount of LBT revenue	111,812,940	US\$	S
27.	Ratio of River, Sea, Cultivation, Storage LBT Income Growth	16	Percent	E
28.	Ratio of River, Sea, Cultivation, Storage LBT Tax Compliance	63	Percent	E
29.	Ratio of River, Sea, Cultivation, Storage LBT Tax Avoidance	6	Percent	E
E. Cable Network, Pipeline, Toll Road				
30.	Length of Network of Cables, pipes, Toll Roads	5,812,545	km	S
31.	Amount of LBT revenue	730,898,262	US\$	S
32.	Ratio of Cable Networks, Pipes, Toll Roads LBT Income Growth	17	Percent	E
33.	Ratio of Cable Networks, Pipes, Toll Roads LBT Tax Compliance	70	Percent	E
34.	Ratio of Cable Networks, Pipes, Toll Roads LBT Tax Avoidance	7	Percent	E
F. Rural				
35.	Rural Area	1,892,555.47	Km2	S
36.	Total LBT Revenue	3,593,890	US\$	C
37.	Ratio of Rural LBT Income Growth	15	Percent	E
38.	Ratio of Rural LBT Tax Compliance	68	Percent	E
39.	Ratio of Rural LBT Tax Avoidance	7	Percent	E
G. Urban				
40.	Area of Cities/Urban	24,775.26	Km2	S
41.	Total LBT Revenue	447,137,758	US\$	C
42.	Potential tax losses	29	Percent	E
43.	Ratio of Urban LBT Income Growth	14	Percent	E
44.	Ratio of Urban LBT Tax Compliance	67	Percent	E
45.	Ratio of Urban LBT Tax Avoidance	6	Percent	E
H. Scenario: Increase tax compliance and Decrease tax evasion				
46.	Scenario 1	0	Percent	Sc
47.	Scenario 2	50	Percent	Sc

Abbreviation: LBT = Land and Building Tax; S = Obtained from secondary data; E = Estimation based on qualitative information; C = Calculated in accounting; Sc= Scenario model

These values are mostly obtained from secondary data and should be sourced from reputable references. Some values may be estimated based on reliable qualitative information (Schoenenberger et al. [23]).

3.4. Definitions and Variables

3.4.1. Taxpayer, tax subject, and object

An LBT taxpayer is an individual or company who can serve as a taxpayer, tax withholding, and collector who has the rights and obligations to perform taxation.

A tax subject is an individual inheritance that has not been divided as a single unit, company, or permanent establishment that can reside or be located in Indonesia or outside Indonesia.

Meanwhile, the tax object is the source of taxable income. A tax rate is the basis for tax imposition determined on a tax object and becomes the taxpayer's responsibility.

In this discussion, tax relief is not used as a variable because it is regulated by law. For example, state land that is excluded from LBT imposition. This variable is called exogenous and is not the subject of this research, but it can be intervened in other research models.

3.4.2. Rates, procedures, and assessment systems

The LBT rate is a percentage determined by the Government. The LBT tax rate is determined at 0.5% of the taxable sales value.

The basis for calculating Taxable Sales Value is defined at a minimum of 20% and a maximum of 100% of the Tax Object Sales Value. The Minister of Finance determines the selling value of tax objects every three years except for certain regions, which are determined yearly following local developments, such as Jakarta Province.

LBT may choose an implementable collection system, for example, a self-assessment system, an official assessment system, and a withholding tax system. However, LBT in Indonesia adheres to the official assessment system. The Official Assessment System is calculated and determined by the Directorate General of Tax.

Meanwhile, the Local Revenue Agency determines it at the city and regency government levels. Determining the amount of tax depends on the location and object, the owner or cultivator of the land based on land certificate data.

The procedure for collecting this is that taxpayers must fill out the Object Notification Letter form. The tax authorities issue a Tax Assessment Letter that includes the land area, building area, and assessment value. The assessment value is set at 20% for subjects who own land valued below US\$ 63,000 and 40% for land valued above US\$ 63,000.

3.4.3. Potential tax and tax losses

Tax potentials are the amount of tax that the Government can collect from the community plus those that cannot be collected for several reasons.

Potential tax losses are the amount of tax lost due to tax reductions and exemptions based on regulations, which are determined at 2.5% (tax relief). Potential tax losses are also caused by tax avoidance and tax evasion, with the average per tax object by 14%.

3.4.4. Forestry sector

The maximum limit for Taxable Tax Objects (Selling Value of Non-Taxable Tax Objects) at the City and Regency level is US\$ 4,000. Tax Object Sales Value means the average price obtained from buying and selling transactions occurring naturally, and if there is no sale and purchase transaction determined by comparing prices with similar objects or new acquisition value or replacement Tax Object Sales Value. In its calculations, this LBT in the Forestry sector is divided into two types, namely natural forests and plantation forests.

3.4.5. Mineral and coal mining sector

The amount of payable LBT by the mineral and coal mining sector is calculated by multiplying the LBT rate with the Taxable Sales Value (TSV).

The LBT rate is 0.5%.

TSV is defined as 40% of the Tax Object Sales Value, which encompasses both land and buildings. The Tax Object

Sales Value for the land comprises the land’s surface, and the Tax Object Sales Value for the explored land body is determined based on production operations.

The amount of Tax Object Sales Value for the land surface is calculated from the multiplication result between the area of the land surface and the Tax Object Sales Value per M^2 .

The amount of Tax Object Sales Value for the explored land body is calculated from the size of the Mining Permit area multiplied by the Tax Object Sales Value per M^2 .

The Tax Object Sales Value for the land body of production is calculated from the size of the Mining Permit Area multiplied by the Tax Object Sales Value per M^2 .

The Tax Object Sales Value per M^2 is the conversion result of the land value per M^2 into the classification of Tax Object Sales Value for land. According to Duke & Gao [24] the value of the land is obtained based on the assessment results conducted individually and in bulk.

4. Research Results

4.1. Initial model flowchart

In the analysis of system dynamics, the construction of a flowchart necessitates the identification of variables and indicators. Figure 2 serves as the initial step to depict

the actual state of land and building tax revenue, influenced by tax compliance and the growth ratio of LBT revenue.

The LBT tax revenue is denoted as Stock, while the LBT revenue growth ratio is represented as a loop (+), and tax compliance is designated as loop (-) or the Balancing loop. Given the current low tax compliance, it is classified as a loop (-), acknowledging the difficulty in achieving a compliance digit of 1.0.

The loop (+) representing the LBT revenue growth ratio is influenced by the assessment value, the LBT revenue growth ratio per tax object, the standard rate, and the TOSV rate. On the other hand, tax compliance is affected by the ratio of tax compliance, taxable tax objects, and potential tax losses. Notably, potential tax losses are observed to be influenced by tax avoidance, tax evasion, and tax relief.

4.2. Flowchart of the developed model

Figure 3 represents the development of a flowchart, which consists of eight segments designed to yield comprehensive and maximum calculation results. The first segment, referred to as flowchart 1, outlines the development of total LBT Income. It encompasses factors such as the number of taxpayers, tax object area, and rates. Stock-1 represents LBT Income,

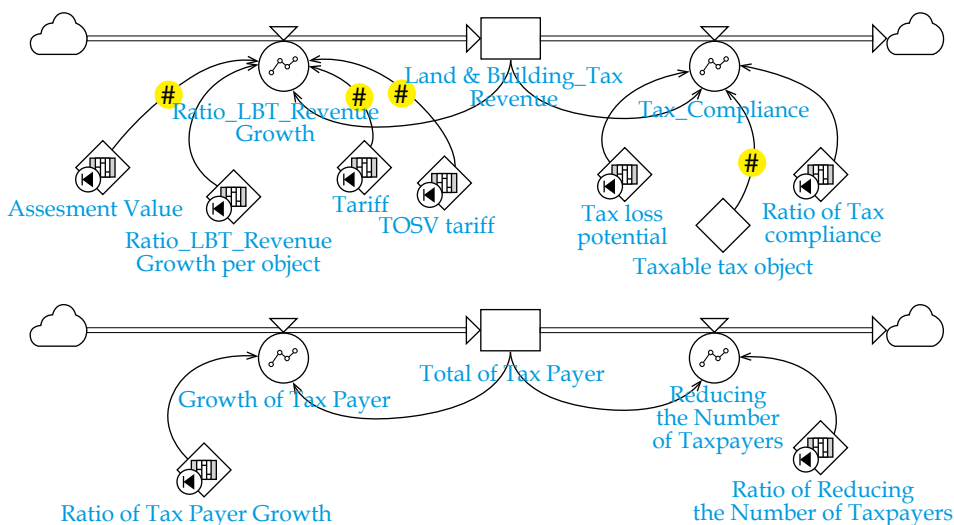


Figure 2. LBT and taxpayer variable flowchart

generating two loops: Loop 1 for LBT Revenue Growth and Loop 2 influenced by tax relief, tax avoidance, and tax evasion, which collectively contribute to tax loss potential.

In the flowchart (+), LBT's revenue growth is depicted to increase at an average rate of 30.12% per year based on a five-year average revenue. This assumption remains below national media reports, citing a growth rate of 59.5% in 2022. On the other hand, the flowchart (-) elucidates a balance indicated by potential tax losses attributed to tax relief, tax avoidance, and tax evasion, assumed to be 20% of LBT income.

The 20% figure is derived from calculations using the taxpayer compliance level formula, incorporating tax relief, tax avoidance level, and tax evasion. For a more detailed prediction of LBT income over the next 5-10 years, additional flowcharts for Tax Objects are essential. Multiple flowcharts for Tax Objects are detailed in Figure 3.

In flowchart 2, the Plantation and Forestry Tax Object is stated as Stock. Plantation Tax Objects comprise Cocoa, Tea, Sugarcane, Tobacco, Coffee, Rubber, and Coconut Land, which need to be calculated to increase an LBT income. The flowchart generates two loops. Loop 1 is an LBT Income growth in the Plantation sector, calculated based on tax operational costs (TOC). Loop 2 is represented by Tax loss potential influenced by tax relief, tax avoidance, and tax evasion. The Forestry Tax flowchart comprises productive and non-productive forest land. The flowchart generates two loops. Loop 1 is an LBT Revenue growth in the Forestry sector, calculated based on TOC. Loop 2 is represented by tax loss potential influenced by tax relief, tax avoidance, and tax evasion.

The 3rd flowchart is called Mining LBT Stock. The analysis discussed Oil and Natural Gas, Geothermal Mining, Minerals and Natural Gas, Mining, and Coal. The flowchart generates two loops. Loop 1 is

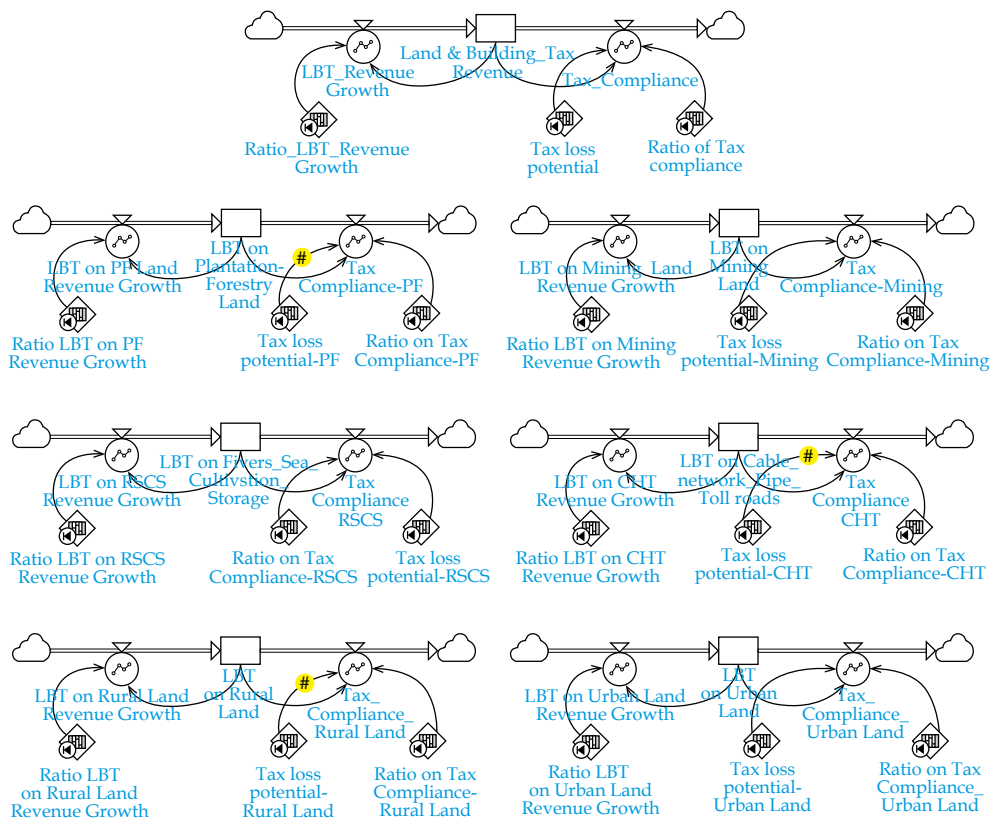


Figure 3. LBT variable flowchart

an LBT Revenue growth in the Oil and Gas Mining, Geothermal Mining, Mineral, and Natural Gas sectors, calculated based on TOC. Loop 2 is represented by tax loss potential influenced by tax relief, tax avoidance, and tax evasion.

The 4th flowchart is called an LBT Stock of Aquatic, Marine, Cultivation, and Storage. The flowchart generates two loops. Loop 1 is an LBT Revenue growth from the Aquatic, Marine, Cultivation, and Storage sectors, calculated based on TOC. Loop 2 is represented by Tax loss potential influenced by tax relief, tax avoidance, and tax evasion.

The 5th flowchart is an LBT Stock of Toll Roads, Cable Networks, and Pipes. The flowchart generates two loops. Loop 1 is an LBT Revenue growth from the Toll Roads, Cable Network, and Pipe sectors, calculated based on TOC. Loop 2 is represented by Tax loss potential influenced by tax relief, tax avoidance, and tax evasion.

The 6th flowchart is Rural LBT Stock. The flowchart generates two loops. Loop 1 is the growth of Rural LBT Income calculated based on TOC, and Loop 2 is represented by Tax loss potential, which is influenced by tax relief, tax avoidance, and tax evasion.

The 7th flowchart is an Urban LBT Stock. The flowchart generates two loops. Loop 1 is an Urban LBT Income growth calculated based on TOC, and Loop 2 is represented by Tax loss potential, which is influenced by tax relief, tax avoidance, and tax evasion.

4.3. Behavior modeling and test models

The Historical Behavior Test Model aims to determine whether the model corresponds to the actual system's historical behavior by comparing computer simulation results with on-site empirical data.

The validity criterion states that the developed model is deemed valid if the computer simulation results closely match and resemble empirical data. The implication is that a valid model serves as an effective experimental tool for analyzing government policies, particularly in predicting and analyzing income at the national, city, and regency levels.

The conclusive result of the conformity test indicates that the model's behavior aligns well with historical behavior, making it suitable for use as a foundation for long-term policy simulations.

Collectively, these tests provide a robust assessment of the model's reliability and its capability to simulate real-world scenarios, facilitating informed policy analysis and decision-making (Paine [25]).

4.4. Conformity statistical test model

The root mean-square percent error (RMSPE) and Theil inequality statistics were employed to assess the confidence level of the model in accurately representing actual behavior. Since system dynamics modeling does not directly utilize historical data for model construction, adjustments were made to the model size to align with real conditions (goodness-of-fit). Traditional significance tests used in econometric modeling were not deemed suitable for implementation in this context (Tezel et al. [26]).

RMSPE calculates the root-mean-square of the proportion of differences between simulated values and actual values (Narwane et al. [27]). On the other hand, Theil's inequality statistics break down the mean-square error (MSE) into components that measure the error parts caused by biased inequality proportion, variance proportion from inequality, and covariance proportion from inequality. The application of Theil statistics in model testing considered various factors. In order to apply Theil statistics in model testing, the following items were considered:

The statistical tests involved analyzing various errors and their characteristics to evaluate the model's confidence in replicating actual behavior. Here are the key points:

1. Big U^m ; U^S , Small U^C . Indication: This points to an error attributed to bias, representing a systematic discrepancy between the model and reality or an error in determining parameter specifications.

2. Errors Caused by Inequality of Variance.

- a) big U^S and Small U^m , correlated with U^C : Implies that while the mean is

the same, the mean variance differs. This suggests that simulated and actual values exhibit different trends;

b) big U^S , $U^m = 0$, and Small U^C : Suggests the presence of non-existent cycles in the simulated value.

3. Big U^C , U^m , Small U^S . Indication: Points to errors due to covariance inequality. This occurs when the simulated and actual average values are the same but differ in phases, requiring error correction.

In order to enhance the model's confidence in reproducing system behavior resembling real situations, it is crucial to minimize errors and discrepancies in U^C and U^S . Models with significant errors are considered unacceptable for producing reliable results (Naumov & Oliva [28]; Schoenenberger & Tanase [29]).

Acceptable error variables in this model are summarized in Table 2.

Table 2 presents the root-mean-square error (RMSPE) of the tested indicators, indicating systematic errors in comparing the model with reality. The significant U^S (U^m and U^C) values suggest the presence of cycles that may not be captured in the simulated data, highlighting the influence of various factors on each variable. Some undisclosed data, such as unreported LBT income, contribute to these discrepancies.

The research findings reveal a decrease in LBT income by 0.0026 U^C , Plantation-Forestry Land by 0.0025, and Rural sector LBT by 0.0020 U^C . These values exhibit a tendency for imperfect variance (U^S) and high correlation but differ in mean-variance. Consequently, simulated and actual values will consistently differ,

influenced by factors like changes in the number of taxpayers, occurrences of tax avoidance and evasion, increased tax relief, and potential tax havens based on future laws.

Despite errors, the statistical test results' conformity value is considered good, staying within tolerance limits for analysis (not exceeding a value of 1.0). Given the values remain below the tolerance limit, the analysis can proceed. The system dynamics performs two scenarios to assess the impact of low tax compliance and high potential tax loss.

The observed differences between simulated and actual values can be attributed to various factors, such as a decline in the number of taxpayers, instances of tax evasion and avoidance, increased tax breaks, or the emergence of tax havens influenced by future legislation. Similar research by Lin & Hsieh [30] in Ethiopia found that farmers' tax compliance was relatively low due to unfair treatment and a non-transparent administrative system. In conclusion, the goodness of fit of the statistical test results is deemed satisfactory for determining the validity of the model in replicating historical behavior (Quadrat-Ullah & Seong [31]).

4.5. Pessimistic Scenario

This scenario simulates the conditions of LBT income from 2022–2032 without any intervention (0%).

Over the last five years, the average LBT income was US\$ 730,898,262, with a total of 69,573,930 taxpayers. The national tax compliance ratio averaged 70.60%,

Table 2. Statistical test results of model conformity

No.	Variables	RMSPE	Theil Inequality Statistics		
			U^m	U^S	U^C
1.	Amount of LBT revenue	0.0228	0.0001	0.0032	0.0026
2.	Plantation-Forestry Land	0.0220	0.0012	0.0031	0.0025
3.	Mining Land	0.0119	0.0003	0.0009	0.0005
4.	Water, Sea, Aquaculture, Storage	0.0148	0.0005	0.0014	0.0009
5.	Cable Network, Pipeline, Toll Road	0.0081	0.0001	0.0004	0.0001
6.	Rural Land	0.0021	0.0001	0.0025	0.0020
7.	Urban Land	0.0127	0.0004	0.0001	0.0006

while the city and district-level tax compliance ratio averaged 45.20%. The average annual growth ratio for LBT stood at 12%, accompanied by an average annual tax loss potential of 15% and an average annual tax compliance ratio of 71%. This simulation assumes a constant number of taxpayers and the area of taxable land, with no changes in government policy.

The results indicate that if the average tax compliance ratio remains at 71%, along with constant growth in the number of taxpayers, the projected increase in LBT income in the 10th year will only be 1.23%. This highlights that the contribution of LBT revenue remains relatively low compared to the average annual state revenue (Figure 4).

This scenario underscores the significant impact of tax compliance levels on LBT income. If compliance is low, it will lead to a reduction in LBT revenue. Therefore, the first hypothesis is validated by this simulation.

4.6. Optimistic Scenario

The optimistic scenario aims to create an information-based problem-solving model, as illustrated in Table 1, where all indicators contribute to the model. The goal is to develop a model that comprehensively describes predictions and anticipates potential outcomes.

In this research, the endogenous variable is expected to intervene in the model by reducing potential tax losses. The

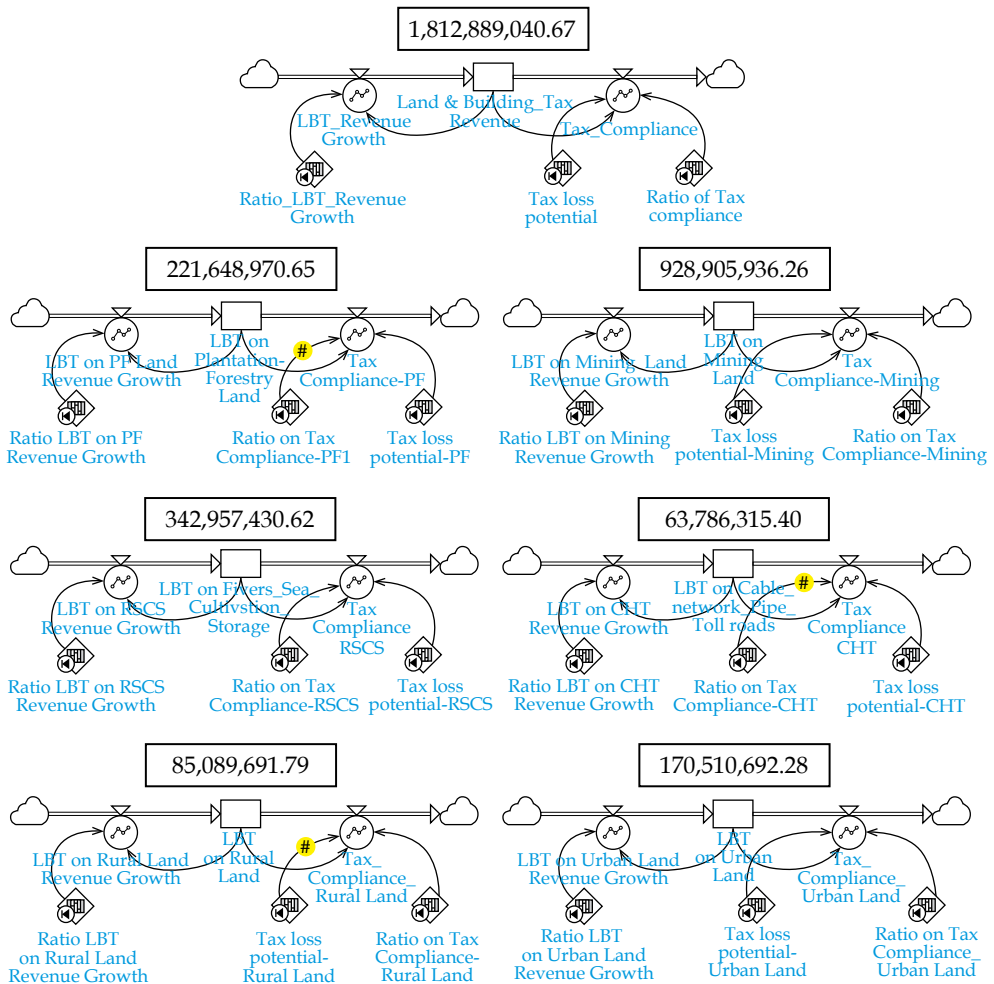


Figure 4. Pessimistic Scenario without Intervention

indicators utilized include the level of tax avoidance and tax evasion. The calculation of potential tax losses involves these two indicators, with the tax loss potential variable representing them in the simulation. It's worth noting that obtaining and disclosing data on tax avoidance and tax evasion can be challenging. Furthermore, it is suggested that imposing tax penalties on tax evasion can contribute to increasing an LBT's income (Zhang et al. [32]).

Figure 5 outlines the optimistic scenario model, capturing the dynamics of the various indicators and their interactions in the simulation.

The optimistic scenario model consists of two loops. LBT revenue serves as the Stock, loop 1 represents LBT revenue

growth, and loop 2 is Tax Compliance, which includes Potential Tax Losses and Tax Compliance Ratio. The tax compliance ratio is currently set at 0.12 as the growth value, and loop 2 is considered the balancing or negative (-) loop. In this loop, the potential tax loss value is reduced by 0.50, and the tax compliance ratio is increased by 0.90. These values represent the average for Potential Tax Losses and the tax compliance ratio for various sectors, including Plantation and Forestry, Mining, River-Sea-Oil Processing, Cable-Pipe-Toll Networks, and Rural and Urban Land.

This scenario aims to validate hypothesis 2, asserting that a decrease in tax avoidance and tax evasion (represented by the potential tax loss variable) will result

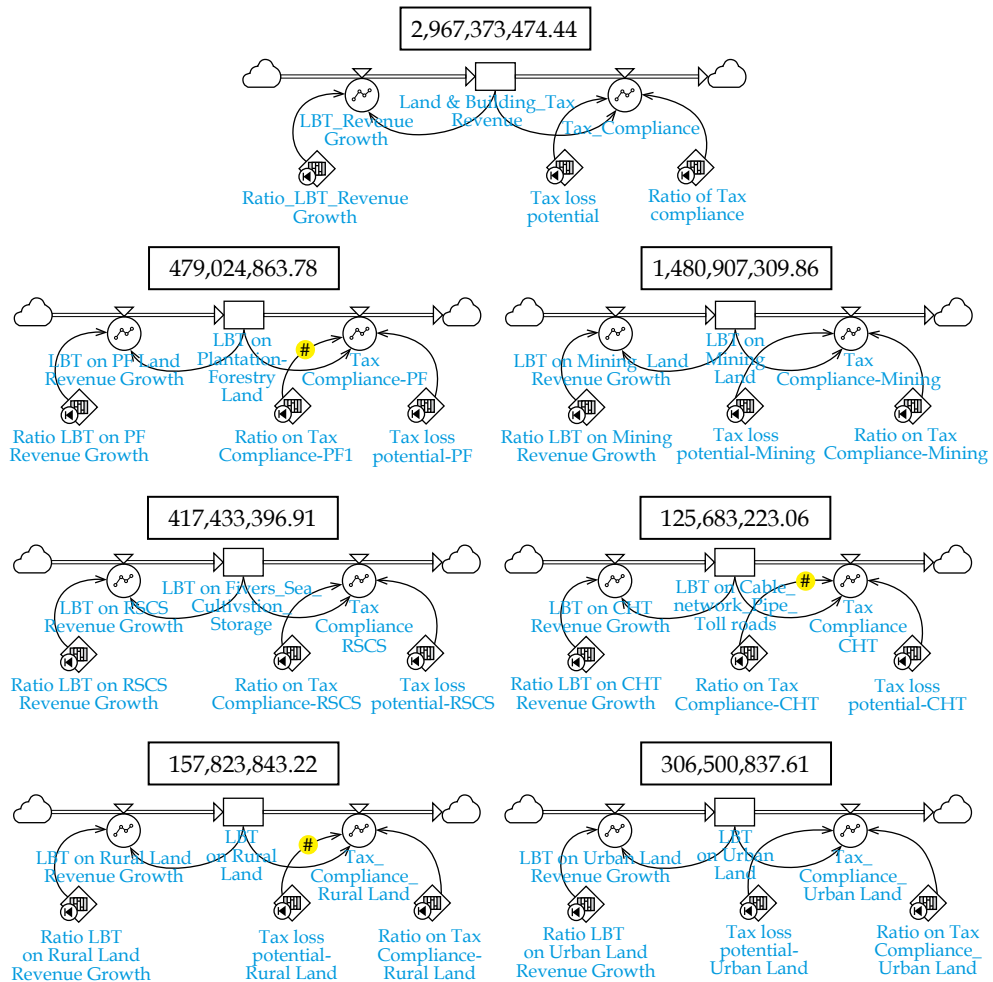


Figure 5. Optimistic Scenario with Intervention

in a significant increase in LBT income. Additionally, hypothesis 3, suggesting that an increase in tax compliance leads to a reduction in tax avoidance and tax evasion, thereby increasing LBT income as anticipated, will also be examined.

The optimistic scenario, as depicted in Figure 5, represents the condition of LBT Revenue from 2022 to 2032. The simulation was conducted with no intervention (0%).

1. Current data (2022): The average income of an LBT in the last five years is US\$ 730,898,262, the number of taxpayers is 69,573,930, the average tax compliance ratio at the national level is 70.60%, and at the Cities and Regencies amounted to 45.20%.

2. The government issued policies to increase tax compliance and reduce potential tax losses by reducing tax avoidance and tax evasion by 50% from current data.

3. This scenario records LBT Income conditions in 2022–2032. The simulation was carried out with intervention to increase and reduce tax compliance with potential tax losses by 50%.

4. The average LBT growth ratio per year is 22%, the average potential tax loss is 15% per year, and the average tax compliance ratio is 90% per year (simulated increase).

The simulation results for the next ten years indicate a noteworthy increase in LBT income. When comparing the pessimistic scenario to the optimistic scenario, a substantial difference in income emerges, showing an increase of 163.68% in 2032 (Table 3).

The conclusion drawn from the optimistic scenario suggests that a reduction in tax avoidance and tax evasion (represented by the potential tax loss variable) leads to a significant increase in LBT income. Additionally, an increase in tax compliance has a substantial effect on LBT income. If the level of compliance rises, it will contribute to an increase in LBT income.

This simulation supports the validity of Hypothesis 2, which posits that reducing tax avoidance and tax evasion will lead to increased LBT income. Furthermore, Hypothesis 3 is also confirmed through this simulation, emphasizing the substantial impact of increasing tax compliance on LBT income. The optimistic scenario validates the accuracy of Hypotheses 2 and 3.

5. Discussion

5.1. Current conditions and scenario determination

At the city and regency levels, cases of low tax compliance have been evident, particularly among plantation business actors who evade tax payments. For example, in Rokan Hulu Regency, Riau Province, the level of tax compliance was low at 48.14% due to plantation and forestry management companies neglecting LBT payments. Despite their awareness of Law Number 6 of 2014 concerning Villages and Corporate Social Responsibility Law Number 40 of 2007, the local government had issued verbal notices and posted leaflets in crowded places to call on taxpayers. However, plantation employers consistently overlooked LBT payments.

Table 3. Results of LBT Calculation Simulation Using Pessimistic and Optimistic Scenarios

No.	Tax Objects	Pessimistic Scenario	Optimistic Scenario	Increase (%)
1	Plantation and Forestry Land	221,648,970.65	479,024,863.78	0.46
2	Mining Land	928,905,936.26	1,480,907,309.86	0.63
3	Rivers Sea Cultivation Storage	342,957,430.62	417,433,396.91	0.82
4	Cable network Pipe Toll roads	63,786,315.40	125,683,223.06	0.51
5	Rural land	85,089,691.79	157,823,843.22	0.54
6	Urban land	170,510,692.28	306,500,837.61	0.56
	Total LBT Revenue	1,812,899,037.00	2,967,373,474.44	163.68
	Forecast Index Values			0.61

A similar case occurred in Brebes City, Central Java Province, where only a few employers were willing to pay LBT despite severe warnings. Verbal and written warnings were issued, and banners were displayed reading: This taxpayer has not paid the LBT. The Head of the Local Revenue Service explained that the warning to display banners indicating non-payment of taxes is an effort to control tax non-compliance.

Tax theory explains that cases of low tax compliance signify the taxpayer's inclination toward tax avoidance or evasion. The solution, as suggested by O'Hare et al. [33] involves imposing strict sanctions or even closing the non-compliant company.

A study by Carrillo et al. [34] has revealed an important yet poorly understood form of tax evasion arising from "ghost companies" – fake entities that issue fraudulent receipts, enabling their clients to claim fictitious tax deductions. This study provides a unique insight into this global phenomenon, utilizing transaction-level tax data from Ecuador. Ghost transactions are prevalent among large companies and those with high-income owners, exhibiting suspicious patterns. Other instances of tax fraud include claiming false tax deductions, classifying personal expenses as business expenses, employing fake Social Security numbers, and underreporting income. Lembut & Oktariani [35] and Kollruss [36] believe that tax abuse encompasses two concepts, including tax avoidance and tax evasion.

In the analysis of the pessimistic scenario, a non-intervention policy is implemented to assess potential tax losses and increase the tax compliance ratio. The model demonstrates an increase with a sloping average annual growth. This observation indicates that the contribution of LBT income remains unchanged, and state income is projected to reach only 1.23% by 2032. However, if intervention is implemented following an optimistic scenario, LBT income is expected to grow by 61% at the end of the simulation in 2032.

Furthermore, by developing the LBT tax system, conventional practices will begin to be abandoned. The conventional

method, which only uses variables of land area, land ownership, and the number of taxpayers, still guided by the system adopted during the colonial period, must now pay attention to the variables of economic conditions, city development, and developments in land prices. These variables are always increasing and are determining factors for the future. For example, land acquisition for the construction of toll roads, dams, railway lines, new cities, and the expansion of districts and provinces has increased land prices around development areas (Vitriana [37]).

Therefore, a more effective, efficient, and fair assessment system is needed. The issue arises because the increase in land prices differs from people's ability to pay taxes in urban and rural areas, leading to an increase in taxpayers' tendency to engage in tax evasion (Gumus & Yalama [38]).

According to Hussain et al. [39] studies on drastic changes in land and taxation systems worldwide that are not commensurate with people's ability to pay taxes will result in a decrease in LBT income every year. On the other hand, geothermal, coal, oil, gas, palm oil, and other companies are suspected of committing tax evasion.

The optimistic scenario serves as the reference for this study to calculate predictions of LBT acceptance in the future. Therefore, to determine the average national LBT growth ratio variable, factors such as GDP per capita indicators, the number of taxpayers, inflation rate, land area, building area, and population are considered. This composition will yield a value for the LBT income growth ratio per tax sector (Average National and Regional LBT Growth Ratio). According to Awasthi et al. [40], caution is necessary because property tax reform has proven to be more challenging than other taxes and takes time.

In the optimistic scenario, interventions were implemented to mitigate potential tax losses and raise the tax compliance ratio to 50%. By the end of the simulation in 2032, LBT income increased by 61% compared to the scenario where no government policies were implemented. Table 3 below illustrates the comparison.

This paper discussion emphasizes that there will be strong government efforts to increase tax revenues by increasing tax compliance (Postali [41]). Tax effort is calculated by comparing LGR with GRDP (Stoilova [42]). GRDP at current prices is used to determine the capacity of economic resources, shifts, and economic structure of a region, as well as the added value of goods and services, which is calculated using applicable prices in the current period. Taxation efforts can be calculated by finding the elasticity coefficient of LGR to GRDP by calculating the average growth during the 2018–2022 national budget.

These calculations show that the LBT tax ratio at the local level is still at 1.2% and 1.8% at the national level. In order to increase the amount of LBT income, many factors must be undertaken. For example, the convenience of the administration system by embracing government banks to provide good tax payment services to villages and improve tax services at the head office.

In the context of tax economics, Peacock & Wiseman [43] conducted a survey of literature on government spending growth, offering suggestions for possible future developments. They argue that the growth of public spending must be explained by utility-maximizing behavior influenced by political and economic factors. Some governments relying on tax growth to cover spending face significant risks.

Gounder et al. [44] supports the Fijian government's position that heavy spending on taxes may negatively impact investment levels and skilled human resources, potentially leading to future tax increases.

However, it is essential to remain vigilant as, in the case of Indonesia, at least four issues must be addressed to increase LBT income, each with its own correlation.

1. Increase the role of Notaries Public in preventing tax evasion. Gaps in tax losses may occur in land sale and purchase transactions when taxpayers process legal certificates with a notary public. Typically, taxpayers engage in transactions through land brokers or privately, obtaining a blank purchase receipt as proof.

The land seller provides a receipt without specifying the price or land area, only a signature and duty stamp. When buyers submit legal certificates to a notary public, they tend to lower the selling price of land and buildings. Reducing the selling value decreases the amount of tax payable. These cases occur at both national and local levels, where determining the market price is challenging, making it difficult to establish the selling value of the tax object. These cases involve hidden transactions, happening frequently and proving challenging to disclose. The role of a notary public is crucial in understanding the concept of land comparison, where the value of the land is compared with the equivalent value of land in other areas based on land classification.

2. Tax avoidance in residential clusters. Cases of LBT tax arrears frequently occur in housing clusters, and this issue has been prevalent over the last five years. In luxury housing in Bekasi city alone, 13,996 taxpayers have been in arrears in LBT payments since 2018. This example is illustrative of many other housing estates in every city and regency that continue to evade tax payments. Similar cases are found in research conducted by Bimonte & Stabile [45], which also explores the negative impact of property taxes on housing supply and demand.

3. Tax evasion and avoidance by Companies. Several cases indicate that corporations attempt to evade taxes and only settle them after undergoing a tax audit or receiving a Letter of Tax Underpayment Assessment. They often wait and lobby tax officers to obtain tax relief. Instances include coal companies in Kalimantan embezzling LBT, and approximately 65% of oil palm plantations operating illegally without usufructuary rights in Sumatra. In such cases, state losses amount to US\$ 313.42 billion annually (Choiruzzad et al. [46]). Corporate taxpayers' unethical behavior falls under the category of tax evasion (Lin et al. [47]). For instance, a large company in Tangerang Regency fell behind in tax payments, prompting the Corruption Eradication Commission to intervene to compel them to fulfill their

tax obligations. In Semarang, Central Java Province, the government issued a tax warning letter to a company, which went ignored. Eventually, in collaboration with the Prosecutor's Office, the local government compelled the company to settle LBT arrears totaling US\$ 35 billion.

4. *Tax Corruption*. In a study conducted in Zimbabwe, Kurauone et al. [12] attempted to distinguish tax avoidance from tax corruption. Tax corruption is linked to politics, while tax avoidance pertains to corruption originating from taxpayers or large companies. However, this concept requires clarification as there are numerous instances where tax evasion occurs due to collusion between officials, companies, and political parties. Bani-Mustafa et al. [48], used institutional theory to investigate the impact of government efficiency on tax avoidance, considering the mediating role of ethics and the control of corruption through digitalization. (Yamen et al. [49]) revealed that most banks currently only comply with the formal aspects of financial inclusion regulations and turn a blind eye to corrupt investment money. This seems to be of little practical use in developing countries due to the influential role of capitalists in shaping state policy and corrupting certain aspects of that policy to generate profits two to three times more than the State Revenue and Expenditure Budget. This phenomenon, once observed in the United States, is now increasing in developing countries (Tarzi [50]).

However, in cases in Indonesia, aside from tax corruption by companies, it is also carried out by officials on a small scale. There are numerous cases, and what happens seems to point to weaknesses in the administrative system that need clarification.

Therefore, the government needs to enforce the law and is demanded to be more active in tax collection innovation. According to Lewis [51], this tax collection innovation must reduce the level of corruption and clientelism. Moreover, criticism is warranted as, so far, the tax authorities have not been proactive in increasing LBT income. This can be observed from the suboptimal number of audits

conducted by the Directorate General of Tax Data on licensing for palm oil plantations, forestry, mining, company business development reports, and land maps, which still require improvement (Faxon et al. [52]).

Additionally, the complexity of the LBT administration system for plantations, forestry, and mining, along with weak information systems, contributes to decreased taxpayer compliance. The Directorate General of Tax and Local Revenue Agencies must be more active in sending Tax Object Notification Letters at the beginning of the calendar year to plantation license holders who are registered and unregistered as taxpayers. Furthermore, optimizing LBT income should be encouraged to be included in local planning agendas and targets to increase original local income.

6. Conclusion

The final results of the dynamic system simulation, predicting LBT income until 2032 (10 years), assume an average growth rate of 12% per annum and simulate without policy intervention to increase tax compliance and reduce potential tax losses (tax evasion and tax avoidance). The pessimistic scenario shows a minimum income tendency for state income.

This simulation supports the first hypothesis, indicating high tax evasion per tax object, averaging 14%, particularly at Plantation and Forestry objects. Meanwhile, Rivers, Sea, Cultivation, Storage, and Mining Land demonstrate that the second hypothesis has been proven.

In an optimistic scenario, if the Government intervenes with policies by increasing tax compliance and reducing potential tax loss by 50%, the contribution of each object changes, leading to an ideal, high-, and varied-income trend. The results show the maximum income change occurring in LBT with the objects of Rivers, Sea, Cultivation, Storage (0.82), Mining Land (0.63), Urban land (0.56), and Plantation and Forestry (0.46). Thus, the third hypothesis is proven: increasing tax compliance and reducing tax evasion significantly influences increasing LBT revenues.

Various problems need clarification by the central and regional governments to increase LBT income. This involves re-mapping, controlling, and calculating the amount of tax paid by taxpayers. Minimizing control over illegal palm oil, mining, and forestry companies, which have the potential to cause tax losses, is crucial. Therefore, the government needs to reform land maps by including legal clauses that determine complete cadastral boundaries. Imposing heavy sanctions on corrupt tax officials is necessary. Regional governments should carry out cross-sectoral coordination to control taxpayers committing

tax evasion, reduce tax corruption, increase taxpayer compliance, intensify tax socialization, and establish a tax police.

Contributions to tax theory and its implications in Indonesia, which still uses conventional variables (tax bargaining) in handling tax avoidance and tax evasion, are kept to a minimum. In addition to minimizing tax avoidance and tax evasion, this research recommends using the national LBT growth ratio variable, measured by indicators such as GDP per capita, number of taxpayers, inflation rate, land area, building area, and population, to increase LBT income.

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For citation

Samudra A.A. Property Tax in Indonesia: A Proposal for Increasing Land and Building Tax Revenue Using the System Dynamics Simulation Method. *Journal of Tax Reform*. 2024;10(1):100–121. <https://doi.org/10.15826/jtr.2024.10.1.159>

Article info

Received *December 1, 2023*; Revised *December 28, 2023*; Accepted *January 19, 2024*

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Для цитирования

Samudra A.A. Property Tax in Indonesia: A Proposal for Increasing Land and Building Tax Revenue Using the System Dynamics Simulation Method. *Journal of Tax Reform. 2024;10(1):100–121*. <https://doi.org/10.15826/jtr.2024.10.1.159>

Информация о статье


Дата поступления 1 декабря 2023 г.; дата поступления после рецензирования 28 декабря 2023 г.; дата принятия к печати 19 января 2024 г.



Do Capital Adequacy Ratios of the Banking System Affect the Taxation Performance: Novel Evidence from BRICS Nations

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ABSTRACT

The empirical studies on the potential interconnection between tax and financial growth have gathered a great deal of attention from scholars and policymakers. However, the impact of regulatory capital on taxation performance has been ignored. In this context, the study aims to provide new discussion by assessing the linkage between capital adequacy and taxation revenues in the case of Brazil, Russia, India, China, and South Africa (BRICS) economies. We aim to find out the impact of capital adequacy ratios on the taxation performance of BRICS countries. We hypothesize that a stronger banking system is positively associated with higher taxation performance. A sound banking and financial system promotes economic development and growth, also resulting in the firms' profitability and ultimately increasing the government's tax revenues. Using the advanced quantile panel technique of the Methods of Moments Quantile Method (MM-QR), the study showed that capital adequacy positively influences taxation sustainability in the BRICS economies. Besides, the findings illustrated that economic growth positively increases taxation revenues in the BRICS economies. The study suggests that regulatory capital policies can positively influence financial stability by mitigating bank risk-taking incentives and offering a buffer against losses. Hence, an increase in capital adequacy will promote financial stability, which in turn leads to increased taxation revenues. However, higher capital adequacy may increase the franchise value of core banks' activities, which in turn allows banks to attract new investments and funds that can be used for investment in risky market-based activities. Based on the empirical analysis, the study concludes that policymakers should focus more on capital regulation and sustainable taxation revenues.

KEYWORDS

capital adequacy ratio, stronger banking system, taxation, economic development, BRICS


JEL G28, H21

УДК 336.02

Влияют ли нормативы достаточности капитала банковской системы на эффективность налогообложения: новые данные стран БРИКС

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АННОТАЦИЯ

Эмпирические исследования потенциальной взаимосвязи между налогами и финансовым ростом привлекли большое внимание ученых и политиков. Тем не менее, влияние регулятивного капитала на эффективность налогообложения было проигнорировано. В этом контексте наше исследование призвано обеспечить новую дискуссию путем оценки связи между достаточностью капитала банковской системы и налоговыми доходами в случае экономик Бразилии, России,

Индии, Китая и Южной Африки (БРИКС). Мы стремимся выяснить влияние нормативов достаточности капитала на налоговые показатели стран БРИКС. Мы предполагаем, что более сильная банковская система положительно связана с более высокими показателями налогообложения. Здоровая банковская и финансовая система способствует экономическому развитию и росту, что также приводит к прибыльности фирм и, в конечном счете, к увеличению налоговых поступлений в бюджет. Исследование с помощью передовой квантильной панельной методики *Methods of Moments Quantile Method (MM-QR)* показало, что достаточность капитала положительно влияет на устойчивость налогообложения в экономиках стран БРИКС. Кроме того, полученные результаты показали, что экономический рост положительно влияет на налоговые поступления в экономиках стран БРИКС. Исследование показывает, что регулятивная политика в отношении капитала может положительно влиять на финансовую стабильность, смягчая стимулы для принятия банками рисков и предлагая буфер на случай убытков. Следовательно, повышение достаточности капитала будет способствовать финансовой стабильности, что, в свою очередь, приведет к увеличению налоговых поступлений. Однако более высокая достаточность капитала может увеличить стоимость франшизы деятельности профильных банков, что, в свою очередь, позволяет банкам привлекать новые инвестиции и средства, которые могут быть использованы для инвестирования в рискованную рыночную деятельность. На основе эмпирического анализа в исследовании делается вывод о том, что директивным органам следует уделять больше внимания регулированию капитала для обеспечения устойчивых налоговых поступлений.

КЛЮЧЕВЫЕ СЛОВА

норматив достаточности капитала, сильная банковская система, налогообложение, экономическое развитие, БРИКС

1. Introduction

Tax is the most important source of income for many countries, and it is an important public finance policy tool for governments [1]. Tax is collected from individuals and corporations as a responsibility, and it is used for the benefit of the whole society [2]. However, there has been a discrepancy between the increasing demand for governmental expenditures and the level of tax income collected, especially for developing countries [3] and it has been a challenge as well as a primary policy to increase tax to gross domestic product (GDP) ratio [4].

There have been significant differences in tax income across the countries. The determinants of the taxation performance of governments are varied and can be categorized in several ways, such as economic and financial, social, and institutional. Economic and financial factors might include public finance policies [5], GDP per capita [6], the level of export/import transactions and foreign direct investment (FDI) [7], the changes in macroeconomic conditions [8], the volatility of exchange

rates [9], and the strength of financial sector [10]. Social and institutional factors are education level [11], the growth rate of the country's population [12], political stability, freedom, and civil rights, and the efficiency of governmental mechanisms [7].

Among the financial factors, the strength of the financial sector, especially banks, play an important role in taxation performance. The financial sector performs as the intermediary between the parties in need of funds and the parties with a surplus of funds and contributes to economic growth [13] by providing funds to real sector companies. Banks also have roles in facilitating tax collections and providing information about the transactions subject to taxation.

Therefore, the banks' strength and healthiness can have a pivotal role in tax performance. Capital adequacy ratios are among the most essential tools to measure the strength of banks. In this context, this concept is defined as a bank risk exposure indicator. Banks' risks are re-categorized as different risks, including (market risk, credit risk, interest and exchange rates risk).

The policy makers in the banking sectors used the capital adequacy ratio as an effective adequate and security" measure for banks and libraries since they regard capital as a guardian or cushion to take away losses [14]. The prime purpose of these ratios is to reinforce the financial stability of the banking sector [15] and therefore, the position of an individual entity in and around the world is financial stability since the system improves the amount of risk involved in bank operations.

One of the most critical discussions currently ongoing in financial sectors is the highly growing relationship between banking sector stability and the country financial development.

We aim to find out the impact of capital adequacy ratios on the taxation performance of BRICS countries.

We hypothesize that a stronger banking system is positively associated with higher taxation performance. A sound banking and financial system promotes economic development and growth, also resulting in the firms' profitability and ultimately increasing the government's tax revenues.

This is the first empirical study searching for the impact of capital adequacy on the countries' taxation performance, and it has important contributions. The study uses BRICS countries as the sample. BRICS stands for the five emerging countries, Brazil, Russia, India, China, and South Africa. It is an informal group of countries with a total population of 3.2 billion as of 2021, 41% of the world population. All countries are also a member of G20, and their total GDP is approximately 33% of the global GDP. The main comparative advantage of BRICS countries is lower labor costs, demographics with a young population, and ample natural resources. They have been becoming a source of growth for trade, investments, and the international economy. They aim to work collectively on economic, social, and political issues.

Besides, BRICS are the leading economies that highly implement Basel capital requirements. According to Basel III, higher capital adequacy rates reinforce financial stability by mitigating the probability

of banks' financial distress and reducing banks' losses given default.

The article contributes to literature in several aspects.

Firstly, it aims to assess the impact of economic growth, and financial soundness on taxation performance. Unlike the previous studies, the article investigates the role of capital adequacy ratios in the linkage between economic, financial development and taxation performance. To the best of our knowledge, this is the first study that examines the impact of capital adequacy at the country level on the taxation performance of the countries.

Secondly, the article uses data from BRICS countries, the five leading emerging economies. The context of emerging economies is significantly different than that of developing countries in terms of economic and financial development, legal system, investor protection, taxation system, etc.

Thirdly, the article presents novel findings using the advanced technique of MMQR model. This approach captures the linkage among the selected variables through moment conditions. Therefore, the distributional and as well as heterogeneous impacts are confirmed across quantiles. Besides, this technique reflects factual observations about the connection amid the focused variables that takes into account the fixed influences of distribution heterogeneity.

The remainder of the article is organized as follows: the next section provides a brief review of the related literature. Section 3 presents the details of the data and methodology. Section 4 and reports the results and discussion and the last section concludes.

2. Literature Review

Tax is a mandatory, non-repayable remittance the firms and people make to the local government for services intermittently [16]. There are several factors affecting the countries' tax revenue and the prior literature provided empirical evidence in different contexts. Gross domestic product (GDP) growth is one of the most important determinants because

a higher GDP growth implies more capacity for the governments to collect tax [17] and a broader tax base or taxable income at both individual and firm levels [4].

Empirical studies have presented the evidence about the effect of GDP growth on tax capacity in different contexts such as in OECD countries [18], in Middle East countries [19], and in Nigeria [20].

For instance, Adefolake & Omode-ro [20] use the Vector Error Correction Model and evaluated the connection among tax revenue and economic growth in case of Nigeria. The author found a positive significant linkage between tax revenue and economic growth.

In addition to GDP, other macroeconomic indicators and conditions affect tax revenues, including the unemployment rate [21], foreign direct investment [22], the reforms promulgated to ease international trade [23], a foreseeable macroeconomic environment [24], exchange rates [25], foreign trade and trade openness of the country [26].

Extant literature documented the relationship between financial sector development and economic growth in different contexts and presented empirical evidence at global level [27], in meta-analysis of several studies [28], or country level such as in European countries [29], and in Pakistan [30], for instance. The studies used several measures of financial development in different contexts, in single-country cases or multi-country cases, and different periods, by considering the effects of some events such as global crises.

However, there are some common indicators used in most of the studies such as the ratio of liquid liabilities to gross domestic product (GDP), which shows the size of financial institutions relative to the country's economy; the ratio of commercial banks' assets to GDP; the ratio of the market capitalization of listed companies to GDP, among others [31].

The size, development, and stability of the banking sector have a crucial role in the overall financial development of a country due to the capital mobilization function performed by the banking sector. Higher levels of capital improve the

stability and soundness of the banking sector because capital plays a buffer role against financial crises and financial distress and reduces the potential bankruptcy costs [32], and leads to reductions in volatility [33], and systematic risk [34].

Therefore, it can be inferred that the capital levels of banks and the regulations of capital requirements are supposed to have a significant impact on economic growth via direct and indirect effects. In this context, the regulatory capital requirements have important implications, by protecting and improving the banking sector stability and by forcing the banks to implement a more effective screening in their lending decisions. Capital adequacy ratio (CAR) is one of the most important regulations for banks and has been adopted in more than 100 countries aimed to ensure and maintain stability in the banking sector. CAR which has been proposed by the Bank for International Settlements (BIS) has developed over time in response to financial crises, however, there exists a trade-off in setting the ratios.

Stricter ratios might improve the capability of banks in their operations, but on the other hand, might hinder the ability to have the maximum benefit from the potential loans, as a result, harming the performance. However, there is a consensus that capital requirements have a significant and value-adding impact on the banking sectors and overall macroeconomic stability.

An important concept in the context of financial sector development and economic growth is financial inclusion which can be defined as the availability and equality of opportunities to access financial services [35]. The regulatory authorities in a country have important responsibilities to promote the financial inclusion of individuals and businesses because the regulations like capital adequacy ratios affect all parties directly or indirectly.

Anarfo et al. [36] conducted a study to examine the effect of financial regulation on financial inclusion by using financial stability as the moderating variable for the sample of Sub-Saharan African countries. Their results showed that tightening the

regulations and increasing capital adequacy requirements affects financial inclusion negatively because of the reduction in banks' capacity in extending financial resources to the parties in need. They also concluded that the interaction between financial regulations and financial stability has a positive impact on financial inclusion.

Credit facilities and extension mechanisms are crucial for economic growth and development. Individuals and businesses should be able to access sources of finance, however, mismanagement of credit mechanisms may cause problems, resulting in the failure of businesses and threatening the stability of the financial system. The regulations and the regulatory capital of banks can play an important role.

Stewart et al. [37] investigated the impact of regulatory capital on economic growth by considering the role of credit extension by using a large sample of 124 countries for a long period from 1998 to 2015, they analyzed the interdependencies among regulatory capital, credit extension, and economic (GDP) growth. They found that regulatory capital prevents unstable credit extension, which in turn affects GDP growth positively. They concluded that regulatory capital promotes funding stability and contributes to the sustainability of economic growth.

In this study, we hypothesize that there is a significant relationship between economic growth and the taxation performance of a country, and economic growth is driven by financial sector development, among other factors. We also hypothesize that capital adequacy ratios play a crucial role in the soundness and stability of banks. Along with the other players in the financial sector, banks assume a leading role in meeting the financing needs of non-financial sector companies. There-

fore, the study aims to determine whether capital adequacy ratios significantly impact taxation performance via the hypothesized channel.

3. Methodology

The study aims to assess the impact of capital adequacy ratios, and economic growth on the taxation revenues in the case of BRICS states. The tested model of the current paper is structured as follows:

$$TR_{it} = f(CA_{it}, GDP_{it}), \quad (1)$$

where TR_{it} stands the taxation revenues of the BRICS nations over the focused period, CA_{it} stands the capital adequacy ratios, GDP_{it} stands for economic growth.

The data covers the period from 2002 to 2019. The description and data sources are presented in Table 1.

It is crucial to affirm that employed data and models are stationary and free of cross-sectional dependence to reinforce that the findings of the tested model are correct. Therefore, before conducting the link amid CA , GDP , and TR , the study performed a cross-sectional dependence (CD) statistical assessment.

Besides, the study performed an augmented cross-sectional IPS (CIPS) statistical test suggested by Pesaran [39] to assess cross-sectional dependence in the examined model and to get reliable findings.

In the next step, the work performed Pedroni co-integration technique to assess the long-run counteraction amid the selected variables. This technique relies on error-correction and considers cross-sectional dependence with robust critical assessment values by bootstrapping co-integration.

Besides, this technique is suitable when for small datasets and produces more reliable outcomes compared with classical co-integration assessments. This

Table 1 Description and sources of data

Variables	Description	Source
TR_{it}	Annual taxation as a share of GDP	(OECD)
CA_{it}	Bank Regulatory Capital to Risk-Weighted Assets	Federal Reserve Economic Data
GDP_{it}	GDP (constant 2015 US\$)	

assessment is based on four different test statistics. With this technique, H_0 stands the absence of co-integration level amid the selected variables, while H_1 proves the existence of co-integration.

After assessing the cross-sectional dependency, and integration issues, the study employed a novel technique, namely the Method of Moment Quantile-Regression (MM-QR) as introduced by Machado & Silva [38]. Unlike classical techniques, this approach captures the linkage among the selected variables through moment conditions.

Therefore, the distributional and as well as heterogeneous impacts are confirmed across quantiles. Besides, this technique reflects factual observations about the connection amid the focused variables that takes into account the fixed influences of distribution heterogeneity. This assessment is important to capture the effects of the independent selected X variable on the Y dependent selected variables in different quantile domains.

The MM-QR technique is a suitable statistical approach to assess the impacts of heterogeneity at different quantiles. The conditional quantile model in terms of modified location and scale parameter estimations is structured as follows:

$$Y_{it} = \alpha_{it} + X'_{it}\beta + (\varphi_i + \partial_{it}\gamma)\mu_{it}, \quad (2)$$

where $P\{\delta_i + \partial_{it}\gamma > 0\} = 1$. The “ I ” is reflected by (α_i, δ'_i) , $i = 1 \dots n$, and ∂ represents “K-vector” employed components of X'_i

that could be observed in various formats with specified I structures as follows:

$$\partial_I = \partial_I(X'_{it}), \quad I = 1, \dots, k, \quad (3)$$

X'_{it} means independently disposed of for any stabilized “ I ” and independent via time (t). μ_{it} means disposed of through time (t) and are orthogonal to “ X'_{it} ”. Therefore, equation number (2) is formulated by the equation stated below:

$$Q_y(\tau | X_{it}) = (\alpha_{it} + \varphi_{iq}(\tau)) + X'_{it}\beta + \partial_{it}\gamma'q(\tau). \quad (4)$$

The independent estimated variables are implied by , which estimated in log of CA_{it}, GDP_{it} .

X_{it} means the quantile distribution of Y_{it} (the natural log of TR_{it}), “ $X'_{it}\alpha_{it}(\tau) = \alpha_{it} + \varphi_i q(\tau)$ ” stands the scalar estimated coefficient. The “ τ ” is implied through $q(\tau)$, which is structured by considering the optimization issue.

$$- \min_q \sum_i \sum_t \rho_\tau(R_{it} - (\varphi_i + \partial_{it}\gamma)q), \quad (5)$$

where $\rho_\tau(A) = (\tau - 1)AI\{A \leq 0\} + \tau AI\{A > 0\}$ stands the check estimated function.

To acquire robustness of the captured parameters, the current study initially utilized three techniques related to long-run interconnection analysis, namely, Fixed-Effect OLS (FE-OLS), Dynamic OLS (D-OLS) as developed by Pedroni [40], Fully Modified OLS (FM-OLS) techniques developed by Pedroni [40] (Figure 1).

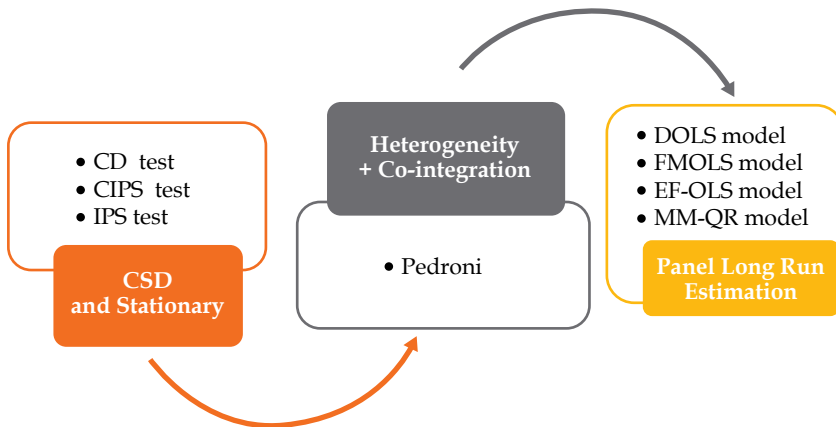


Figure 1. Methodology structure of the current study

4. Empirical Results

The present section presents the empirical outcomes under cross-sectional dependence (CD) and unit root, co-integration, and estimating assessments. The outcomes of (CD) assessment displayed in Table 2 illustrate that the H_0 of cross-sectional independence for each variable valid. This indicates that the BRICS economies are associated through various channels such as the similarity of economies policies across.

Besides, the outcomes of CIPS and IPS assessments displayed in Tables 3 and 4

which illustrated that (GDP_{it} , CA_{it} , TR_{it}) are statically integrated at I(1) level. Pedroni [40] assessment results are presented in Table 3, illustrating that employed panel data is statistically cointegrated.

We employed the MM-QR assessments after affirming that the focused panel variables are cointegrated. Besides the study employed FMOLS, FE-OLS, and DOLS, approaches to affirm the findings of MM-QR. The findings of the used model are presented in Tables 4 and 5.

Table2. Results of the CD and CIPS unit root tests

Variables	CD test	p-value	CIPS test		IPS	
			I(0)	I(1)	I(0)	I(1)
TR_{it}	18.44 ^a	0.00	-2.01	-5.440 ^a	-0.43	-5.55 ^a
GDP_{it}	12.83 ^a	0.00	-1.46	-6.340 ^a	-2.18	-6.60 ^a
CA_{it}	14.25 ^a	0.00	-1.76	-5.435 ^a	-1.77	-5.66 ^a

Note: a stands 1% level of significance.

Table 3. Results of Pedroni assessment

Test	Statistic	Prob
Panel v	1.505005	0.4032
Panel rho	-4.953261 ^a	0.0000
Panel PP	-5.504870 ^a	0.0000
Panel ADF	-1.008256	0.2043
Panel ADF	-3.339718 ^b	0.0004
Group PP	-6.905059 ^a	0.0000
Group ADF	-1.541226	0.0616

Note: a, b, c means significance level at 1%, 5%, and 10 % levels, respectively.

Table 4. Panel quantile estimations (MMQR) results

Variables	Quantiles								
	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90
GDP_{it}	0.016 ^a	0.046 ^a	0.061 ^a	0.084 ^a	0.100 ^a	0.115 ^a	0.142 ^a	0.260 ^a	0.306
CA_{it}	0.359 ^a	0.323 ^a	0.304 ^a	0.2767 ^a	0.256 ^b	0.238 ^c	0.205 ^c	0.0611	0.004

Note: a, b, c means significance level at 1%, 5%, and 10 % levels, respectively.

Table 5. Results of panel estimation for BRICS nations

Variables	FM-OLS		D-OLS		FE-OLS	
	Coef	t-stats	Coef	t-stats	Coef	t-stats
CA_{it}	0.268 ^a	4.036	0.184 ^c	1.729	0.105 ^a	3.691
GDP_{it}	0.058 ^a	3.363	0.046 ^b	2.107	0.077 ^a	4.451

Note: a, b, c means significance level at 1%, 5%, and 10 % levels, respectively.

Table 6. The results of Granger heterogeneous

Null hypotheses	Z-bar	P-Value
GDP_{it} does not homogenously cause TR_{it}	1.977 ^c	0.048
GDP_{it} does not homogenously cause GDP_{it}	0.621	0.530
CL_{it} does not homogenously cause TR_{it}	0.041	0.960
GDP_{it} does not homogenously cause CL_{it}	1.170 ^c	0.293

Note: c stands the significance level at 1%.

The MM-QR outcomes showed that economic growth positively promotes taxation revenues in BRICS countries. For all captured quantiles, the outcomes show an upsurge effect of economic growth on taxation from 0.135 in quantile 10th to 0.306 in 90th quantile. The findings from FMOLS, DOLS, and EF-OLFS as presented in Table 4, displayed that economic growth significantly affects taxation revenues. The outcomes from FMOLS, DOLS, and EF-OLFS show that a 1% increase in capital adequacy in the tested economies led to increase the tax revenues by 0.268%, 0.184%, and 0.105% from FMOLS, DOLS, and EF-OLFS tests, respectively.

In addition, the findings from MM-QR showed that capital adequacy positively affects taxation revenues in BRICS countries. For all captured quantiles, the outcomes show capital adequacy has positive and significant impact on taxation. These findings affirmed the findings of MM-QR, which implied that economic growth significantly affects taxation revenues. Besides, the conclusions of the mentioned test showed that a one percent increase in capital adequacy ratios led to a rise in taxation revenues by 0.058%, 0.046%, and 0.077% from FMOLS, DOLS, and EF-OLFS tests, respectively. These findings affirmed the findings of MM-QR.

Finally, the heterogeneous causality assessment approach, as advanced by Dumitrescu & Hurlin [41] is applied to explain the causality association among capital adequacy, economic growth, and tax revenues. The findings of this assessment, as displayed in Table 6, showed a unidirectional causal association between GDP and taxation revenues. These findings affirmed that economic growth has a powerful influence on taxation performance.

5. Discussion

Most empirical studies focused on capital regulation's direct and indirect effects on the financial performance and financial market. However, the impact of capital regulations on taxation has been ignored. The present study aims to present a novel discussion on the link between capital adequacy and economic growth and taxation revenues in the case of BRICS economies.

The study uses a novel technique, namely the Method of Moment Quantile-Regression (MM-QR) as introduced by Machado & Silva [38]. In addition, the study uses, Fixed-Effect OLS (FE-OLS), Dynamic OLS (D-OLS) by Pedroni [40], Fully Modified OLS (FM-OLS) techniques to affirm the findings of MM-QR approach.

The outcomes of MM-QR approach show that economic growth positively promotes taxation revenues in BRICS countries for all captured quantiles. The outcomes from FMOLS, DOLS, and EF-OLFS approve these findings, and affirm that economic growth positively promotes taxation revenues in the tested countries.

The heterogeneous causality assessment findings show that there is a causal link among economic growth, and tax revenues. These findings approve that economic growth has a powerful influence on taxation performance. These findings are in line with Adefolake & Omodero [20], who found a positive significant linkage between tax revenue and economic growth.

On other hand, MM-QR, FMOLS, DOLS, and EF-OLFS approach showed that capital adequacy positively affects taxation revenues in BRICS countries. These findings are in line with Stewart et al. [37] investigated the impact of regulatory capital on economic growth by considering the role of credit extension.

However, the banking sectors in BRICS nations play an essential role in sustainable development. In this context, the primary concern of regulatory authorities is to promote the Banks' depositors' safety by using minimum capital adequacy to encourage the banking sector's efficiency.

One of the notable achievements of regulatory authorities was the capital adequacy standards that the Basel Committee had proposed. However, the primary purpose of capital Adequacy is to create a secured business environment to promote the quality of banking supervision that contributes to improving the banking sector's performance.

BRICS are the leading economies that highly implement Basel capital requirements. According to Basel III, higher capital adequacy rates reinforce financial stability by mitigating the probability of banks' financial distress and reducing banks' losses given default. Hence, an increase in capital adequacy will promote financial stability, which in turn leads to increased taxation revenues.

In this context, the study suggests that BRICS policymakers must design a regulatory framework to encourage investment, economic growth, and taxation. The main limitations of this work that we have focused on the BRICS nations. Therefore, future studies can focus on other regions.

6. Conclusion

Under Basel III the banking sectors face stricter capital requirements meaning that the ratio of equity to risk-weighted assets must rise to 8–12%. Some emerging economies such as BRICS nations, impose even stricter capital regulations to boost banks' resilience to future financial and economic downturns.

Currently, there is a debate about whether such an increase in capital requirements benefits the economy. The present study is the first that assessed the impact of capital adequacy and economic growth on taxation revenues. In this context, the study aims to determine the impact of capital adequacy, and economic growth on taxation revenues in the case of BRICS countries.

In addition, the study uses an advanced quantile panel technique, namely the Methods of Moments Quantile Method (MM-QR), to assess the link among the selected variables. Unlike classical techniques, this approach captures the linkage among the selected variables through moment conditions. Using the advanced quantile panel technique, the empirical findings showed that a 1% increase in economic growth promotes the taxation revenues across all captured quantiles (1st to 9th).

Similarly, the outcomes from MM-QR showed that an once percent increase in capital adequacy positively impacted one taxation revenues across all captured quantiles (1st to 9th). The work affirms the findings by checking the robustness through the FMOLS, DOLS, and EF-OLS. The findings of these tests confirmed the results of the MM-QR technique. However, the conclusions affirmed that capital adequacy and economic growth promote taxation sustainability in the BRICS economies.

The study suggests that capital regulation may affect taxation revenues through the financial stability channel by mitigating the probability of banks' financial distress and reducing banks' losses given default. Hence, an increase in capital adequacy will promote financial stability, which in turn leads to increased taxation revenues. However, higher capital adequacy may increase the franchise value of core banks' activities, which in turn allows banks to attract new investments and funds that can be used for investment in risky market-based activities. Based on the empirical analysis, the study concludes that policymakers should focus more on capital regulation and sustainable taxation revenues.

The present work aims to determine the impact of capital adequacy, and economic growth on taxation revenues in the case of BRICS countries. However, the current paper has some limitations such as the study only focused on BRICS nations. Therefore, future studies can focus on other regions. The finding of this study may be debatable on various grounds as the selected variables do consider other va-

riables such as interest rate, financial development, and foreign direct investment. Future empirical research can be done to incorporate the mentioned issues. In addition, the present work used MMQR testing models to capture the linkage among

the studied variables. Hence, the future studies can employ other advanced approaches (linear and nonlinear) models. Future empirical research may improve the models by including new variables for corporate governance.

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For citation

Samour A., Yilmaz I. Do Capital Adequacy Ratios of the Banking System Affect the Taxation Performance: Novel Evidence from BRICS Nations. *Journal of Tax Reform*. 2024;10(1):122–133. <https://doi.org/10.15826/jtr.2024.10.1.160>

Article info

Received *September 21, 2023*; Revised *November 29, 2023*; Accepted *December 8, 2023*

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Для цитирования

Samour A., Yilmaz I. Do Capital Adequacy Ratios of the Banking System Affect the Taxation Performance: Novel Evidence from BRICS Nations. *Journal of Tax Reform*. 2024;10(1):122–133. <https://doi.org/10.15826/jtr.2024.10.1.160>

Информация о статье

Дата поступления 21 сентября 2023 г.; дата поступления после рецензирования 29 ноября 2023 г.; дата принятия к печати 8 декабря 2023 г.

Original Paper

<https://doi.org/10.15826/jtr.2024.10.1.161>



Application of Theory of Planned Behavior on Determinants of GST Compliance Behavior of GST Taxpayers: An Empirical Study from India

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ABSTRACT

The Indian government has recently transformed its indirect taxation system with the adoption of Goods and Service Tax (GST) in India. However, this taxation reform has a direct impact on the compliance behavior of the taxpayer as explicated by low GST revenue of the country. Since GST is a new taxation law in India, it become pertinent to explore the compliance behavior of GST taxpayers to proffer valuable suggestions and feedback to the concerned authorities for devising appropriate policies and strategies to comprehend and control the non-compliance behavior of the GST taxpayers. Therefore, the present study analyzed the compliance behavior of GST taxpayers by synthesizing the theory of planned behavior by collecting the data from 503 GST taxpayers using snowball random sampling with the application of exploratory and confirmatory factor analysis. The collected data was analyzed using exploratory and confirmatory factor analysis to confirm the theory of planned behavior to comprehend the compliance behavior of the GST taxpayers. The findings of the study assert that the theory of planned behavior explain the 60.1% variance of the total compliance behavior of the GST taxpayers. Moreover, the findings posit that the attitude, subjective norms and perceived behavioral control have a positive impact on the compliance behavior of the GST taxpayers. The proposed instrumental scale may be applied in future research studies to comprehend the compliance behavior of GST taxpayers at national and international level and therefore, this study may have major implications for the government, academicians and policy makers for improving the compliance behavior of the GST taxpayers.

KEYWORDS

confirmatory factor analysis, exploratory factor analysis, GST taxpayers, India, theory of planned behavior

JEL H20; H25; C38; C83; G38

УДК 336.62

Применение теории запланированного поведения к детерминантам поведения плательщиков налога на товары и услуги: эмпирическое исследование из Индии

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АННОТАЦИЯ

Индийское правительство трансформировало свою систему косвенного налогообложения, приняв налог на товары и услуги (GST). Эта налоговая реформа оказывает непосредственное влияние на поведение налогоплательщика, что объясняется низкими доходами от налога на товары и услуги в стране. Поскольку налог на товары и услуги является новым законом о налогообложении в Индии,

стало актуальным изучить поведение плательщиков налога на товары и услуги, чтобы предложить обоснованные рекомендации органам власти для разработки соответствующих политик и стратегий улучшения контроля за несоблюдением требований плательщиками налога на товары и услуги. В данном исследовании было проанализировано комплаенс-поведение налогоплательщиков GST путем синтеза теории запланированного поведения. Был осуществлен сбор данных от 503 налогоплательщиков GST с использованием «снежного кома» случайной выборки с применением факторного анализа. Собранные данные были проанализированы посредством исследовательского и подтвержденного факторного анализа для понимания комплаенс-поведения налогоплательщиков GST. Результаты исследования подтверждают, что теория запланированного поведения объясняет дисперсию в 60,1% общего поведения налогоплательщиков GST. Полученные результаты свидетельствуют, что отношение, субъективные нормы и воспринимаемый поведенческий контроль оказывают положительное влияние на поведение плательщиков налога на товары и услуги. Предлагаемая инструментальная шкала может быть применена в будущих исследованиях для понимания поведения налогоплательщиков по соблюдению требований налога на товары и услуги на национальном и международном уровнях. Данное исследование может иметь серьезные последствия для правительства, ученых и политиков в плане улучшения понимания поведения плательщиков налога на товары и услуги.

КЛЮЧЕВЫЕ СЛОВА

подтверждающий факторный анализ, исследовательский факторный анализ, плательщики налога на товары и услуги, Индия, теория запланированного поведения

1. Introduction

The taxation system of a country is an integral part of overall economic development of a country and is responsible to make significant contribution in the achievement of desired social and economic goals. The taxation policy of a country is design not only to achieve fiscal objectives but also to attain socio-economic objectives. This system is use by the governments around the world to spur their economic activities; encourage investment in sustainable projects; regulate the consumers spending on goods and services and to control the horizontal and vertical equity in their economies (Malkawi & Haloush [1]).

Indubitably, the revenue from taxation enables the government to offer public goods and services that uphold and sustain the economic system (Yew et al. [2]). It helps the government in attaining the sustainable revenue growth for their economies by parking adequate funding resources for social programs and infrastructure investment (Ibrahim et al. [3]).

However, the capability of the government to generate revenue is confined by numerous factors. The non-compliance behavior of the taxpayers is one of the major

factors attributed to this phenomenon universally (Thaha et al. [4]). However, there is not any universally accepted definition of tax non-compliance but usually it is defined as the failure of taxpayer in fulfilling their taxation liabilities timely and accurately voluntarily or involuntarily (Hayat et al. [5]; Kirchler [6]).

It is a universal issue that raise a concern for both developed and developing economies as the higher the rate of non-compliance in a country, the higher the burden will be on compliant taxpayers to finance the government expenditures or necessitates shrinking vital expenditures on development programs (Thaha et al. [4]). Therefore, the governments are enforcing taxation reforms in their taxation system to make their taxation system more efficient, transparent, and robust to tackle this universal issue (Yadav & Sankar [7]).

In this direction, the government of India has also introduced the Goods and Service Tax (GST) in Indian economy from July, 2017. However, this taxation reform has a direct impact on the compliance behavior of the GST taxpayers as they are required to update their accounting systems and business processes, as well as be prepared to set up the correct accounting

and record-keeping systems, train their employees and have the appropriate software to facilitate successful documentation and recording keeping for GST compliance (Chen & Taib [8] and Ramli et al. [9]).

Garg et al. [10] propound that GST taxation system inherited a complex and convoluted supply chain system for levying and collection of taxes from the taxpayers which increase the probability of tax evasion and tax avoidance by the GST taxpayers. Tax evasion and tax avoidance are the key leading factors contributing to non-compliance behavior of GST taxpayers. Tax evasion is defined as reducing tax liability of oneself by under-reporting their income deliberately. Conversely, tax avoidance involves reducing the tax obligations legally by taking the undue advantage of existing loopholes in a taxation system.

The indirect taxes constitute nearly 13% of the GDP of the country in India, which illustrates a prominent role of indirect taxation system in the Indian economy (Singhal et al. [11]). Thus, the GST taxation system occupy a prominent role in the own tax revenue of the Indian states and central government which make it essential to examine the determinants of compliance behavior of GST taxpayers in India (Garg et al. [12]).

Garg et al. [13] have also posited that the GST implementation has adversely affected the revenue efficiency of the Indian states. Similarly, Mukherjee [14] has also instituted that the GST adoption has condense the taxation capacity of the Indian states.

Dey [15] have also explored that the Indian states may suffer serious consequences in the near future with the abolishment of GST compensation to the Indian states.

Garg et al. [16] have propounded that GST implementation has a negative impact on the Indian economy. Similarly, Basavanagouda & Panduranga [17] have also contended that the technical and complex GST system in India make it difficult for the GST taxpayers to comprehend and comply with the provisions of the GST law in India.

Thus, the non-compliance behavior of GST taxpayers occupies a prominent role

in the central problems of Indian economy especially where need for revenue increases, but the tax base show declining trends.

The Theory of Planned Behavior (TPB) is one of the prominent theories in varieties of disciplines to comprehend and anticipate the human behavior (Ajzen & Driver [18]). However, there is hardly any study which has applied this theory to understand the complex phenomenon of non-compliance behavior of GST taxpayers in India. Therefore, the present study endeavors to examine the determinants of GST evasion and fraud behavior of GST taxpayers in India with the application of TPB theory.

The purpose of the article is to study the determinants of compliance behavior of GST taxpayers in India with the application of theory of planned behavior.

The study has formulated the following conceptual *hypothesis of the study*:

H1: The attitude behavior of the GST taxpayers has a positive impact on the compliance behavior of the GST taxpayers.

H2: The peer group or subjective norms have a positive impact on the compliance behavior of the GST taxpayers.

H3: The perceive behavior control have a positive impact on the GST taxpayer's compliance behavior.

The rest of the study proceeds as follow: section 2 describes the past literature with the development of conceptual model for the current study. Section 3 describes the research methodology adopted for the current study. Section 4 elaborates the results of the study by comparing it with past literature. Section 5 provides avenues for future research in this domain by putting a light on conclusive section of the study.

2. Literature Review

The non-compliance behavior of taxpayers is a dynamic and multifaceted phenomenon that is affected by numerous factors. This has gained the prime attention of the researchers during the 1970s with the introduction of economic deterrence theory by Allingham & Sandmo [19]. This theory propound that the compliance decision of a taxpayer is purely based on economic factors i.e. analysis of cost-benefit ratio by the respective taxpayer. The proba-

bility of being caught and penalized is assumed as their expected cost and the taxes hoarded by the taxpayers by evasion of taxes are viewed as their respective income.

However, this theory restricted its periphery only to economic factors and tries to examine this complex phenomenon by depending only on economic factors. Therefore, with time a number of academicians take a controversial posture and criticize this economic model for ignoring numerous aspects and factors i.e. behavioral, social and cultural aspect (Alm et al. [20]). The critics emphasize that this model oversimplifies the decision-making process of taxpayers and does not adequately account for various psychological, social, and institutional factors that influence tax compliance behavior of the taxpayers.

Moving on in this direction ahead, several theories were evolved by numerous academicians to comprehend this ambiguous and complex phenomenon with more clarity and precisely.

Fishbein & Ajzen [21] propounded the Theory of Reasoned Action (TRA) which claims that the intention of an individual is a function of their attitude towards their behavior and subjective norms.

Ajzen [22] propounded the Theory of Planned Behavior (TPB) theory as an extension of the TRA theory, which contends that subjective norms, attitude behavior, and perceived behavioral control are the primary factors influencing the intentions of the people to involve in a particular behavior, which ultimately has an impact on behavioral performance. With time, the TPB theory has emerge as one of the most widely used socio-psychological theory in a variety of disciplines i.e. IT, psychology, leisure, and even health to understand and predict human behavior. However, it is quite surprising fact that there is hardly any study in GST domain which have applied TPB theory for understanding the complex phenomenon of compliance behavior of taxpayer.

2.1. Theory of Planned Behavior

TPB theory is an extension of TRA theory which is applied a variety of domains to predict the intention of an individual of indulging himself/herself in

a particular action. This theory contends that subjective norms, attitude behavior, and perceived behavioral control are the primary factors influencing the intentions of the people to involve in a particular behavior, which ultimately has an impact on behavioral performance.

2.1.1. GST Taxpayer's Attitude and Their Compliance Behavior

Attitude is usually described as a viewpoint or perception of an individual towards a particular or specific behavior in progress. The attitude of taxpayers has a positive impact on their compliance decision. The individuals who have positive attitude towards taxation system will have a belief that tax payment will have numerous benefits not only confined to him/her but also for the society as a whole. They will have a perception that the taxes paid by them will be properly managed by their respective governments and will be reverted to them in the form of infrastructure, education, health care and other public services that are usually organized by the governments to benefit all the people in a particular community (Putra & Osman [23]).

Conversely, an individual with negative attitude will hypothesize that tax payment will have negligible benefits and will try to evade taxes by tax avoidance and tax frauds. A number of research have propounded a positive impact of attitude on their compliance behavior.

Witte & Woodbury [24] also observed a positive impact of attitude of taxpayer on their compliance behavior. Similarly, Kirchler et al. [25] also propounded a favorable impact of taxpayers on their compliance behavior. A similar finding was also instituted by Alleyne & Harris [26] and Owusu et al. [27]).

2.1.2. Subjective Norms and Compliance Behavior of GST Taxpayers

Subjective norms are usually described as the perspective of individuals near to the taxpayers which may affect their compliance decision. It usually includes the peer groups i.e. relatives, friends, colleagues, role models and employees etc. which have a direct or indirect impact on

the compliance behavior of an individual’s compliance decision. It is convincing by the available literature that the tax morale of a human being depends on the compliance behavior of others in the society.

Kirchler et al. [25] also instituted that the taxpayers are found to be more inclined to engage in non-compliance practices if they perceive non-compliance practices as universal in their referent group.

Palil [28] also affirm the notion that the compliance behavior of a taxpayer has a direct impact from the behavior and attitude of other persons in their social group.

Lefebvre et al. [29] contends that when the taxpayers perceive high level of compliance behavior in their referent group, it does guarantee an improved version of compliance behavior explicating that it is not necessitate that a good illustration of compliance should always have any disciplinary effect on their compliance behavior. On the contrary, if the taxpayers perceive the existence of high non-compliance practices in their peer group, it will surely decrease their compliance behavior (Figure 1).

Nurwanah et al. [30] found a favorable impact of subjective norms on the compliance behavior of the taxpayers. Bobek et al. [31] also affirm the notion and posit that subjective norms have a favorable impact on the taxpayer’s compliance behavior. Saad [32] also contended a positive and significant impact of subjective norms on the compliance behavior of taxpayers.

Maulana & Andrianingsih [33] have also explored a favorable impact of subjective norms on the compliance behavior of the taxpayers.

Wallschutzky [34] also posit that the probability of non-compliance behavior of taxpayers goes on increasing with the number of non-compliant peer group members; they have in their particular referent group.

2.1.3. Perceive Behavioral Control

Perceived Behavioral Control (PBC) is a crucial concept in the Theory of Planned Behavior (TPB), proposed by Ajzen [22]. It refers to an individual’s perception of the ease or difficulty in executing a particular behavior. PBC encompasses internal and external factors influencing one’s ability to accomplish an action.

Ajzen [22] suggests that individuals assess their control beliefs by considering factors such as resources, skills, and obstacles related to the behavior. High perceived control increases the likelihood of intention formation and action implementation. For instance, someone perceiving ease in accessing healthy food options is more likely to adopt a healthy eating behavior. PBC interacts with attitudes and subjective norms within TPB, influencing behavioral intentions. However, it acknowledges that perceived control might not always guarantee behavior due to external constraints or unforeseen circumstances.

Smart [35] and Alleyne & Harris [26] reported a positive impact of PBC on taxpayer’s compliance intention. However, Dey [36] instituted an indirect impact of PBC on the taxpayer’s compliance behavior with the interaction of subjective norms.

Maulana & Andrianingsih [33] propounded a positive but insignificant impact of PBC on the compliance behavior of the taxpayers. However, it is worth mentioning here that there are very limited number of studies that have explored

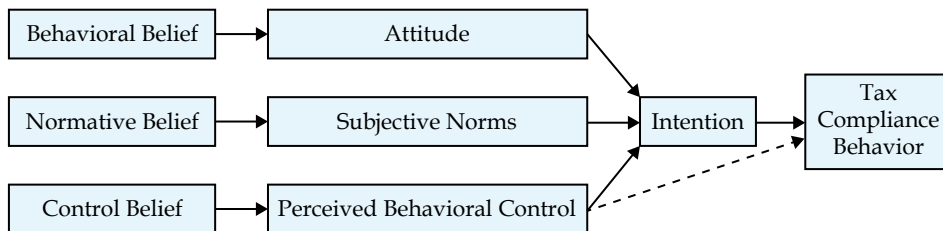


Figure 1. Theory of Planned Behavior

the compliance behavior of taxpayers with the application of TPB theory, therefore, the impact of PBC on the taxpayer's compliance behavior is still ambiguous and unclear.

Thus, the above literature review has well documented that the compliance behavior of GST taxpayer is a worrying phenomenon for the Indian economy. However, there is hardly any study which has focused on understanding this complex phenomenon with the application of TPB theory. The government loses nearly 5 trillion rupees in revenue from indirect taxes each year due to GST non-compliance among GST taxpayers.

Moreover, the available literature has versed well with a number of studies conducted on compliance behavior of taxpayers for corporate and income taxpayer leaving the GST compliance behavior of GST taxpayers virtually unexplored. Therefore, this study tries to explore the determinants of compliance behavior of GST taxpayers with the application of theory of planned behavior in India.

3. Research Objective and Methodology

The main objective of the study is to explore the determinants of compliance behavior of GST taxpayers with the application of TPB theory in India. For this purpose, the study has developed the instrumental scale by critically analyzing the extensive literature in this context. As

majority of the study in this domain has confined its periphery to income tax and corporate taxpayers, therefore, it become necessitate to validate the developed instrumental scale with the help of experts working in this particular domain.

Therefore, the proposed instrumental scale is validated with the help of 77 GST experts and academicians regularly working in this phenomenon by conducting a semi structured interview. The majority of the GST experts agree on the proposed instrumental scale with the deletion of one research item.

Thereafter the finalization of the instrumental scale by the GST experts, the study has collected the data from 152 GST taxpayers for the pilot survey and final refinement of the developed instrumental scale. The final proposed instrumental scale (after affirms the validity and reliability) is used to collect the data from the GST taxpayers.

The final data was collected from 577 GST taxpayers using snowball random sampling with the help of the GST experts. However, the final analysis integrated only 503 questionnaires as 74 questionnaires have to be excluded due to illegible, duplicate and incomplete responses from the respondents.

Figure 2 explicate the research methodology adopted for the development of the instrumental scale for the current study.

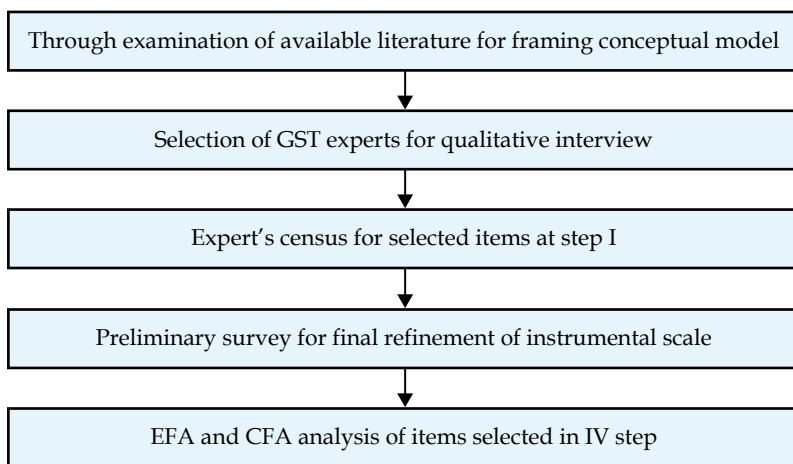


Figure 2. Development of Instrumental Scale

The final collected data was analyzed using Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) to validate the theory of planned behavior for understanding the complex phenomenon of compliance behavior of GST taxpayers. These are the most advance statistical tool to develop and validate the instrumental scale in social science with the application of any theory.

4. Results

The compliance behavior of GST taxpayers is a multifaceted phenomenon which is affected by numerous factors. However, there is hardly any study which has applied the Theory of Planned Behavior (TPB) to comprehend the compliance behavior of GST taxpayers around the globe. Therefore, it becomes imperative to develop a comprehensive instrumentals scale by applying TPB theory for comprehending the complex and multifaceted phenomenon of compliance behavior of GST taxpayers.

The initial step for the development of comprehensive instrumental scale is to classify the information from multiple variables into fewer components using EFA analysis. Typically, EFA is the preliminary step in the development of comprehensive scale to facilitate the es-

tablishment of a theoretical construct’s dimensions. For the application of EFA, the study should have a sample of minimum five responses against each research item of the instrumental scale.

Field [37] and Hair et al. [38] propounded a sample in the ratio of 1:10 for each research item of the instrumental scale for ensuring the applicability of the factor analysis on the research items, whereas Comrey & Lee [39] instituted a minimum sample of 300 respondents for the same.

The sample size for the current study is 577 for 15 research items (in the ratio of 38:1) for measuring three constructs namely attitude behavior, subjective norms and perceived behavioral control. Similarly, to ensure the sampling adequacy, the study has applied the KMO and Bartlett’s test of sphericity as illustrated in Table 1 with the following alternate hypothesis *H1*: Correlation matrix is significant.

Table 1. Measurement of Sampling Adequacy

KMO Measure	0.843
Bartlett’s Test of sphericity (Approx. Chi Square)	2631.918
DF	105
P-Value	0.000*

Notes: *sig. at 1%

Table 2. Result of Exploratory Factor Analysis

Latent Construct	Item Code	Standardized Factor Loading	Eigen-value	% Variance	% Cumulative	Cronbach Alpha
Subjective Norms	SN08	0.804	3.010	20.063	20.063	0.833
	SN09	0.784				
	SN06	0.778				
	SN07	0.765				
	SN10	0.729				
Attitude Behavior	AB01	0.816	3.008	20.055	40.118	0.833
	AB02	0.787				
	AB04	0.777				
	AB03	0.764				
	AB05	0.722				
Perceived Behavioral Control	PBC14	0.829	3.003	20.019	60.137	0.830
	PBC12	0.778				
	PBC13	0.773				
	PBC15	0.745				
	PBC11	0.732				

Notes: The factor was extracted using principal components analysis with varimax Kaiser normalization rotation. ^a Rotation converged in six iterations.

The computed value of KMO measure ($\chi^2 = 0.843$ with p-value 0.00) explicates that the sample size of the current study is highly suitable for the application of factor analysis technique. Moreover, the statistical value for Bartlett’s test of sphericity ($\chi^2 = 0.843$, DF 105, with p-value 0.00) illustrates that the correlation matrix is highly significant as indicated by significant p-value.

After affirming the suitability of the research data for factor analysis technique, the study has applied the EFA and CFA statistical tool as presented in Table 2 and Figure 3 respectively.

The result of the factor analysis affirms three factors explaining 60.137% of total research variable variance. The first factor was labeled subjective norms with eigenvalue of 3.010 explaining 20.063% of the research variable variance. Subjective norms refer to the perceived social expect-

tations or pressures that an individual taxpayer perceives from their surrounding environment regarding certain behaviors or actions. These norms are based on an individual’s beliefs about what other people in their referent group think that they should or should not do in a particular situation. They encompass the influence of social factors i.e. family, friends, culture, and society, on an individual’s attitudes and behaviors.

Subjective norms play a significant role in shaping an individual’s decisions and actions, as people often consider the opinions and expectations of others when making choices. In the past, a number of studies affirm the notion that the compliance behavior of taxpayers has a direct impact from what other people (i.e. relative, friends, colleagues, employees) perceive about the non-compliance behavior of the taxpayer and whether they approve

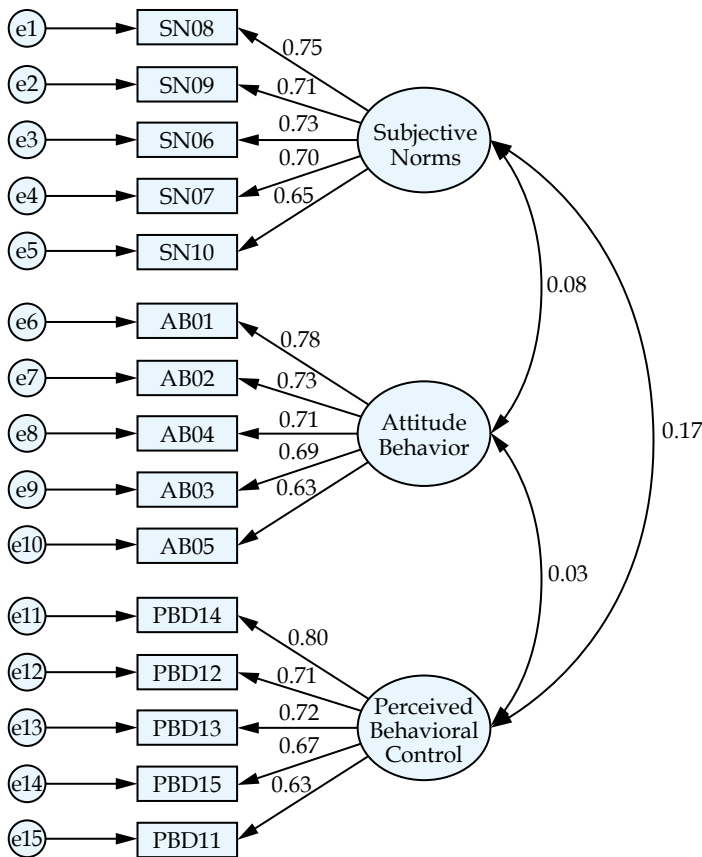


Figure 3. Measurement Model

or disapprove this type of behavior of the taxpayers.

Wallschutzky [34] have instituted that subjective norms have a direct impact on the compliance behavior of the taxpayers. Kirchler et al. [25] and Palil [28] also explored that the subjective norms have a favorable impact on the compliance behavior of the taxpayers.

Bobek et al. [31] and Lefebvre et al. [29] also affirm this notion and conclude that compliance behavior of the taxpayers is affected by the referent groups to which the taxpayers belong.

Saad [32] explicate that the peer group of the taxpayers have a direct impact on their decision of whether to comply or not with the tax norms of the country. Owusu et al. [27] have also instituted that the compliance decision of the taxpayers has a direct impact from the subjective norms of the referent group of the taxpayers.

Similarly, the findings of the factor analysis explicates that the subjective norms of the referent group are a major predictor of the compliance behavior of GST taxpayers. In the TPB framework, the attitude component refers to an individual's evaluation or perception of a particular behavior. It involves one's overall assessment of whether the behavior is favorable or unfavorable, positive, or negative.

This component reflects the personal belief about the potential outcomes or consequences of engaging in that particular behavior. Attitude in this theory encompasses an individual's feelings, emotions, and thoughts toward the behavior, influencing their willingness or motivation to perform or avoid the behavior based on these assessments (Figure 3).

The results of the factor analysis affirm the attitude behavior of the taxpayers as the 2nd most import factor in explaining the compliance behavior of GST taxpayers with a research variance and eigenvalue of 20.055 and 3.008 respectively. The attitude of the taxpayers toward the payment of taxes has a direct impact on their decision whether to comply or not to comply with the rules and regulations of the tax laws of their respective countries.

Witte & Woodbury [24] and Kirchler et al. [25] have also affirmed this notion and conclude that the attitude of the taxpayers has a significant impact on the compliance behavior the taxpayers. Alleyne & Harris [26]; Putra & Osman [23] and Owusu et al. [27] has also posited that the attitude of the taxpayers towards taxation system has important inferences on the intention of the taxpayers to comply with the tax law.

Onu [40] have instituted that the favorable attitude of the taxpayers toward the taxation system does not assure that the particular taxpayer will adhere to the rules and regulation with hundred cent accuracy.

Thus, the results affirm the notion that the attitude of the GST taxpayers toward the GST taxation system of the country has a direct impact on their intention whether to comply or not to comply with the GST law of the country. Moreover, the Perceived Behavioral Control (PBC) in the TPB theory relates to an individual perception of easiness or difficulty in performing a certain behavior. It reflects the person's belief in their capability to successfully execute the behavior, considering both internal and external factors that may facilitate or hinder its accomplishment. This component considers elements like skills, resources, opportunities, and external circumstances that could impact one's ability to engage in the behavior.

Essentially, perceived behavioral control examines the extent to which an individual feels in control of performing the behavior, influencing their intentions and actual behavioral execution. The theory of reason action was extended by Fishbein & Ajzen [21] by incorporating PBC to explain the non-volitional behavior. However, a number of studies conducted by Bobek [36]; Dey et al. [41]; Hamid [42], Bani-Khaleed et al. [43] and Owusu et al. [27] do not found any significant impact of PBC on compliance decision of the taxpayers.

But Bobek [36] have propounded that the PBC in TPB framework intermingle with subjective norms to decide the compliance decision of the taxpayers. Similarly, Alleyne & Harris [26] also instituted

that the PBC has an impact on the compliance behavior of the taxpayers.

Moreover, Figure 3 illustrates the measurement model of the study for developing the instrumental scale for measuring the compliance behavior of the GST taxpayers with the help of the theory of planned behavior. The internal consistency of the model has been evaluated on the basis of Cronbach's alpha as presented in Table 3. As a standardized rule, the value of Cronbach alpha should be higher than 0.7, whereas the value above 0.8 is considered as good and a value of Cronbach alpha is considered as a symbol of exceptional internal consistency (Garg et al. [44]).

In our analysis, the value of Cronbach alpha ranges from 0.830 to 0.833 as displayed in Table 3 illustrating that the instrumental scale has high level of internal consistency. Moreover, the value of AVE as explicated in table III is greater than 0.5 ensuring the discriminant validity of the measurement model. Similarly, the value of Composite Reliability (CR) for all the three constructs of TPB framework is greater than 0.7 explicating the high reliability of the instrumental scale as presented in table III. The Convergent Validity

(CV) of the measurement model stipulates the convergence between the research items included in the study. CV is usually assessed with the help of the standardized factor loading of the measurement model where the factor loading of above 0.5 is usually indicate that the constructs of the measurement model are highly substantial and demonstrative of their construct.

The value of the factor loading for the measurement model of the study ranges from 0.722 to 0.829 as illustrated in Table 3 ensuring the convergent validity of the measurement model of the study. Similarly, the Discriminant Validity (DV) of the measurement model is generally assessed with the help of the AVE where the value of AVE should be greater than the value of MSV which ensure that each and every construct of the measurement model is independent and distinct from other constructs of the measurement model.

The value of AVE is greater than the value of MSV as explicated in table III ensuring the discriminant validity of the measurement model of the study. Moreover, the square root of AVE is greater than the correlation values of the construct (Table 4).

Table 3. Assessment of Discriminant Validity

Factor Name	Attitude	Subjective Norms	Perceived Behavioral Control	CR	AVE	MSV	MaxR(H)
Attitude	0.708	-	-	0.834	0.501	0.027	0.837
Subjective Norms	0.076	0.708	-	0.833	0.501	0.006	0.839
Perceived Behavioral Control	0.166*	0.025	0.709	0.834	0.502	0.027	0.843

Notes: The values in off diagonal represent the correlation between construct and diagonal value (in bold and italic) exhibits the square root of AVE obtained from observed variables.

*Significant at 1%.

Table 4. Results of goodness of fit indices

Statistical Measures	Model Fit Indices	Threshold Limit	Model Interpretation
χ^2	90.335	-	-
DF	87	-	-
χ^2/DF	1.038	Between 1 to 3	Excellent
CFI	0.998	> 0.95	Excellent
GFI	0.977	> 0.90	Excellent
SRMR	0.029	< 0.08	Excellent
NFI	0.966	> 0.90	Excellent
TLI	0.998	> 0.90	Excellent
RMSEA	0.009	< 0.06	Excellent

Moreover, the study has used the universally used goodness of fit indices as presented in Table 4 for checking the fitness of the measurement model. The computed statistics for all goodness of fit indices is within the threshold limit depicting that the measurement model is highly fit for measuring the determinants of compliance behavior of GST taxpayers with the application of TPB theory.

5. Discussion

The above discussion has explicated that GST compliance behavior is a worrying phenomenon for all countries across the globe. The governments around the worldwide are adopting different kind of taxation system to put a check on the tax evasion and tax fraud practices adopted by the taxpayers.

However, it is a bitter truth that all the taxpayers of a country can never be 100% compliant in their tax obligations, but it is also true that the compliance behavior of taxpayers may be improved by understanding the phenomenon of why taxpayer evade taxes. This may be the first study to explore the compliance behavior GST taxpayers especially with the application of theory of planned behavior.

The findings of the study as discussed above affirm that the compliance behavior of GST taxpayers is a multifaceted phenomenon which is affected by a number of factors. The results assert that the theory of planned behavior explain 60.137% of the compliance behavior of the GST taxpayers. The findings of the study illustrates that the compliance behavior of taxpayers is affected by the attitude of the GST taxpayers towards the GST taxation system of the country resulting in acceptance of first hypothesis of the study.

A number of studies conducted by Putra & Osman [23]; Witte & Woodbury [24]; Kirchler et al. [25] and Owusu et al. [27] also affirmed this notion and concludes that the attitude of taxpayers has a favorable impact on the compliance behavior of the taxpayers.

Similarly, the results affirm that the GST taxpayers are social human being who lives in society and their compliance

behavior is directly or indirectly influence by the behavior of their peer or referent group resulting in acceptance of *H2*.

The results are in line to past studies conducted by Kirchler et al. [25]; Owusu et al. [27]; Palil [28]; Lefebvre et al. [29] and Bobek et al. [31].

Moreover, the hypothesis *H3* is also accepted which explicates that PBC also play a significant role in influencing the compliance behavior of taxpayers.

Thus, the findings of the study assert in acceptance of all three-hypothesis formulated for achieving the objective of the study and conclude that the compliance behavior of GST taxpayers is positively impacted by the attitude, subjective norms and perceived behavioral control prevailing in the GST taxation system of the country.

The findings of the study may be used to comprehend the compliance behavior of GST taxpayers at nation and international levels with the application of theory of planned behavior and the findings of the study may be generalized.

However, to comprehend the compliance behavior of the taxpayers with more consistency and high predictive power, the theory of planned behavior may be extended by adding some other constructs.

Therefore, a future study may be conducted in this domain by extending the theory of planned behavior for comprehending the compliance behavior of the GST taxpayers and to generalize the findings of the study. However, the findings of the study are based on the GST taxpayers of the Indian country only and therefore the findings of the study may be used for conducting further research in this domain accordingly.

6. Conclusion

This study endeavors to explore the determinants of compliance behavior of GST taxpayers in India with the application of theory of planned behavior. The results of the study inferred that the attitude of the GST taxpayers, subjective norms and perceived behavioral control are the major predictor of compliance behavior of GST taxpayers in India explaining over

60% of research variable variance. Similarly, the results of the CFA analysis also affirm the factor extracted from exploratory factor analysis with the application of theory of planned behavior.

The finding of the study exhibits that the compliance behavior of GST taxpayers is positively impacted by the attitude of the GST taxpayers towards the GST taxation system, subjective norms and perceived behavioral control. The foremost important factor is subjective norm explaining a 20.063% of the total research variable variance in determining the compliance behavior of GST taxpayer.

The government should try to build up a common perception in the society that the payment of taxes to the government helps in transformation and development of the nation to create a common environment of trust and accountability among the taxpayers that the guardian of the country is utilizing the resources of the country in a honest and best fit manner. This common believe of the public will also help in boosting the overall compliance behavior of the GST taxpayers as subjective norms also have a favorable impact on the compliance behavior of taxpayers as explicated by the result of the study. The government should try to build a belief among the GST taxpayers that their involvement in non-compliance practices may disapprove them from their peer or social group.

Similarly, the 2nd most important factor is attitude of GST taxpayers towards the GST system of the country in theory of planned behavior. Therefore, the government should take necessary measures to transform the positive attitude of the GST taxpayers towards the GST tax payments. The government should organize various

seminars and programs from time to time to change the attitude of the taxpayers and to comprehend them the importance of payment of taxes by them in the development of the Indian economy. Similarly, the perceived behavioral control also has an impact on the compliance behavior of the GST taxpayers.

Therefore, the government should take corrective measures to remove the existing loopholes in the existing GST system to control the raising GST frauds in the country. Moreover, the sanctions of the GST law should be applied through the prism of justice and partially to a more serious category of offenses rather than simply categorizing them as misdemeanors. For this, the government may formulate a special committee and fast track tribunals for taking final decisions timely to create a sense of positive attitude among the taxpayers that their involvement in the GST fraud may result in strict punishment and heavy fines.

The organization of seminars and programs by the government against the GST frauds may help in building a sense of believe among the public that their association in the GST fraud may disapprove them from their social or referent group. As GST has a major share in own tax revenue of the Indian states, therefore, it become necessitate to formulate appropriate policies and strategies to combat the non-compliance behavior of the taxpayers to improve the taxation revenue of the country.

This study has major implications for the government and policy makers in comprehending the compliance behavior of GST taxpayers in India for devising appropriate policies and strategies to control the prevailing GST frauds in the existing GST system of the country.

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For citation

Garg S., Narwal K.P., Kumar S. Application of Theory of Planned Behavior on Determinants of GST Compliance Behavior of GST Taxpayers: An Empirical Study from India. *Journal of Tax Reform.* 2024;10(1):134–148. <https://doi.org/10.15826/jtr.2024.10.1.161>

Article info

Received December 9, 2023; Revised December 28, 2023; Accepted January 19, 2024

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Для цитирования

Garg S., Narwal K.P., Kumar S. Application of Theory of Planned Behavior on Determinants of GST Compliance Behavior of GST Taxpayers: An Empirical Study from India. *Journal of Tax Reform.* 2024;10(1):134–148. <https://doi.org/10.15826/jtr.2024.10.1.161>





Информация о статье

Дата поступления 9 декабря 2023 г.; дата поступления после рецензирования 28 декабря 2023 г.; дата принятия к печати 19 января 2024 г.

Original Paper

<https://doi.org/10.15826/jtr.2024.10.1.162>

CEO Characteristics and Tax Aggressiveness in Indonesian Family Firms: The Upper Echelons Theory Perspective

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ABSTRACT

Tax aggressiveness is an effort that companies can undertake to save on tax payments. One of the factors driving why tax aggressiveness is pursued is the presence of CEO. This study emphasizes the characteristics of CEO. Therefore, this study aims to analyze the effect of CEO characteristics on tax aggressiveness based on the upper echelon's theory perspective. CEO characteristics are divided into CEO tenure, educational background, and gender. CEO tenure in this study is proxied by how long someone has held the position of CEO, while educational background and gender are proxied using dummy variables. The choice of profitability is because profit is used as the main basis in tax calculation. The sampling technique used was purposive sampling, with an observation period of 2019–2022 in the seventy family firms listed on the Indonesia Stock Exchange (IDX). The data used is panel data and analyzed employing the EViews program. The model estimation tests feasible to use was the fixed effect model (FEM). The regression results show that CEO tenure, educational background, and gender partially and simultaneously affected tax aggressiveness. The study results generally indicate that family-owned companies tend to utilize more tax aggressiveness. At the same time, the level of education of the general director has a negative effect on tax aggressiveness, i.e. the higher the level of education, the less tax aggressiveness. The gender asymmetry is that women as family business leaders demonstrate greater tax aggressiveness than male leaders. Therefore, the benefit of this research from the government's perspective is to formulate policies to reduce efforts of tax aggressiveness, especially for companies predominantly owned by families.





KEYWORDS

CEO tenure, CEO educational background, CEO gender, tax aggressiveness, family firms

JEL E21, H26, H71

УДК 336.228

Характеристики генерального директора и налоговая агрессивность в индонезийских семейных фирмах: применение теории высших эшелонов

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АННОТАЦИЯ

Налоговая агрессивность – это усилия, которые компании могут предпринять, чтобы сэкономить на налоговых платежах. Одним из факторов, обуславливающих налоговую агрессивность, является наличие генерального директора. В данном исследовании особое внимание уделяется характеристикам генераль-

ного директора. Исследование направлено на анализ влияния характеристик генерального директора на налоговую агрессивность с точки зрения теории верхнего эшелона. Характеристики генерального директора подразделяются на срок пребывания в должности, образование и пол. Срок пребывания в должности генерального директора в этом исследовании определяется тем, как долго кто-то занимал должность генерального директора, в то время как образование и пол определяются с помощью фиктивных переменных. В дополнение к этим трем измерениям, в исследовании также использовалась рентабельность в качестве контрольной переменной. Выбор рентабельности обусловлен тем, что прибыль используется в качестве основного показателя при расчете налога. Нами использовалась целенаправленная выборка с периодом наблюдения 2019–2022 гг. в 70 семейных фирмах, котирующихся на Индонезийской фондовой бирже (IDX). Используемые данные являются панельными данными и анализируются с помощью программы EViews. В качестве критерия оценки модели использовать модель с фиксированным эффектом (МКЭ). Результаты регрессионного анализа показывают, что срок пребывания в должности генерального директора, образование и пол частично и одновременно влияли на налоговую агрессивность. Результаты исследования в целом свидетельствуют о том, что семейные компании, как правило, используют более агрессивную налоговую политику. При этом уровень образования генерального директора отрицательно сказывается на налоговой агрессивности, т.е. чем выше уровень образования тем меньше налоговая агрессивность. Гендерная асимметрия состоит в том, что женщины в качестве руководителей семейного бизнеса демонстрируют большую налоговую агрессивность, чем мужчины-руководители. Таким образом, польза от этого исследования с точки зрения правительства заключается в том, чтобы сформулировать политику по снижению агрессивности налогообложения, особенно для компаний, преимущественно принадлежащих семьям.

КЛЮЧЕВЫЕ СЛОВА

срок пребывания в должности генерального директора, образование генерального директора, пол генерального директора, налоговая агрессивность, семейные фирмы

1. Introduction

Tax aggressiveness is one of the efforts made to minimize the tax burden owed by the company. Frank et al. [1] identify tax aggressiveness as taxable income manipulation. It is conducted through tax planning, both tax avoidance and tax evasion. Tax aggressiveness needs to be considered because company policies can directly impact people's welfare [2].

On the other hand, based on the Family Business Survey conducted by PWC in 2021, it was proven that 72% of businesses in Indonesia were family businesses. PCW also revealed that the sector with the highest distribution (50%) was manufacturing. The role of the family in business and management was 87%, and 47% of CEOs were the family members of the company owner; it could also be known that the third generation led 33% of firms. The components of the director's board were more dominant from the fa-

mily, as indicated by 52%, where the rest were people from outside the family.

Martinez & Ramalho [3], Steijvers & Niskanen [4] and Chen et al. [5] mentioned that family firms have a lower effective tax rate than non-family firms. In addition, they also have a positive correlation with book-tax differences. It signifies that family firms are more aggressive in tax aggressiveness [6].

The criteria determining that a business is a family business include the percentage of ownership, voting control, power over the direction of strategy determination, hereditary family involvement, and active family members in management [7].

This tax aggressiveness research looks from the perspective of the CEO's role. Why the CEO? In this regard, the CEO as the holder of strategic control has a vital role in tax aggressiveness [8; 9]. Managerial style and characteristics also

influence managers in creating company value. Therefore, the CEO characteristics play a role in creating company value [10].

In family firms, CEOs who tend to be bolder in tax aggressiveness are influenced by demographic characteristics. Tenure is one of the factors in this CEO demographic. In this case, the upper echelons theory states that CEO tenure is a characteristic that will influence the CEO in decision-making as a company outcome.

Cheng & Zheng [11] found a positive relationship between tenure and CEO's risk-taking character. Risk-taking will affect the courage to make decisions, including in the tax sector.

Goldman et al. [12] stated that CEO tenure had a positive effect on tax planning, where the longer a person serves as CEO, the higher the level of tax aggressiveness. Their research results differ from Aliani [13], who asserted that CEO tenure did not affect tax planning.

Besides tenure, another demographic characteristic influencing tax aggressiveness is educational background. In general, education is the foremost criterion in placing a person in a position. The higher the level of available positions, the higher the educational level required. The CEO's educational background had a positive effect on CEO recruitment; the higher the educational level of the CEO, the higher the probability of being recruited [14]. Aliani [13] and Farag & Mallin [15] proved a positive relationship between CEO's higher education and corporate risk-taking. The CEO's educational background also affected his company's tax planning, especially if the CEO had a tax education background.

Another demographic characteristic that deserves to be analyzed whether this factor influences the CEOs' tax aggressiveness in family firms is gender. Aliani & Zarai [16], Charness & Gneezy [17], and Ho et al. [18] explained that CEO gender plays a role in risky financial decision making, and male CEOs tend to be more daring in tax aggressiveness. CEO gender and conservatism in accounting are mutually associated, and this relationship becomes more substantial when companies

experience disputes and high risk in decision making. Based on the phenomenon of family firms and the research gap above, this study aims to prove whether the demographic characteristics of CEOs affect tax aggressiveness.

This paper aims to analyze the effect demographic CEO on tax aggressiveness in Indonesian family firms based on the upper echelon's theory perspective.

Research hypotheses:

H1: CEO tenure has a significant effect on tax aggressiveness.

H2: Educational background of CEO has a significant effect on tax aggressiveness.

H3: CEO gender has a significant effect on tax aggressiveness.

In the next section, we will present a literature review that explains the theory used and the hypotheses we built. Next is the research method describing the population, sample, data collection techniques, variables, and data analysis techniques. The following section is the results and discussion, then closes with conclusions on the research results.

2. Literature Review

2.1. Upper Echelons Theory

Hambrick & Mason [10] put forward the upper echelons theory, explaining a company's outcome. Organizational outcomes and organizational strategies reflect the self-values of individuals who have power in the organization. Upper echelons theory presents a model related to how the role of top-level management characteristics creates organizational outcomes. The main emphasis in this theory is managerial characteristics. Managerial characteristics are indicators inherent in a manager. The top-level management characteristics are divided into two: psychological and observable. Psychological consists of basic cognitive properties and values.

Dyreng et al. [8] showed that observable characteristics comprise age, tenure in the organization, functional background, education, socioeconomic origin, and financial position. These psychological and

observable demographic characteristics will be input for a CEO in making policies for the company so that the policy is an outcome of the CEO’s demographic characteristics.

Charness & Gneezy [17] showed that tax aggressiveness is a manifestation of tax management, which basically tries to minimize the tax burden, both legally and illegally.

Ho et al. [18] showed that tax aggressiveness reflects the company’s aggressiveness in minimizing the tax burden. Tax minimization can be done through the tax planning process.

Tax planning according to Oktaviani et al. [19] is one of the stages in minimizing the tax burden as a form of tax aggressiveness. Tax planning is a series of plans in managing the recording of company transactions, the end of which is the financial statements.

The accounting arrangements at the tax planning stage are legal manipulations without violating the applicable tax rules [1].

The relationship between CEO demographic characteristics and tax aggressiveness from the perspective of upper echelons theory is reflected in Figure 1.

2.2. The Effect of CEO Tenure on Tax Aggressiveness

Aliani [13] showed that tenure is also one of the factors that influence the character of a CEO himself. Tenure is the period for how long the person has served as CEO. As time goes by, one’s life experience, both in terms of profession and

other aspects of life, will undoubtedly increase; the same goes for a CEO. The longer a person serves as a CEO, the more experienced he will be in carrying out the duties of a CEO, both in management and other aspects of the company, that is his responsibility. Thus, the longer a person serves as CEO, the more courageous he will be in making financial decisions.

Wicaksono & Oktaviani [20] showed that CEO tenure can be seen from how long a person occupies a position as CEO in the company he leads. The longer a person serves as CEO, the more courageous he will be in making financial decisions. It happens because as a person serves as CEO, the experience in decision-making and risk will also increase. The company’s financial decisions include the form of company outcomes. The company’s outcome reflects the top-level management characteristics. The higher the CEO tenure, the higher the level of CEO tax aggressiveness.

H1: CEO tenure has a significant effect on tax aggressiveness.

2.3. The Effect of CEO Educational Background on Tax Aggressiveness

Aliani [13] showed that educational background is needed to occupy a professional position. The higher the position available at a management level, the higher the educational background required. Educational background, which is a specialization of competence, is obtained through education. Positions in management require these competencies, especially for top-level management such as CEOs.

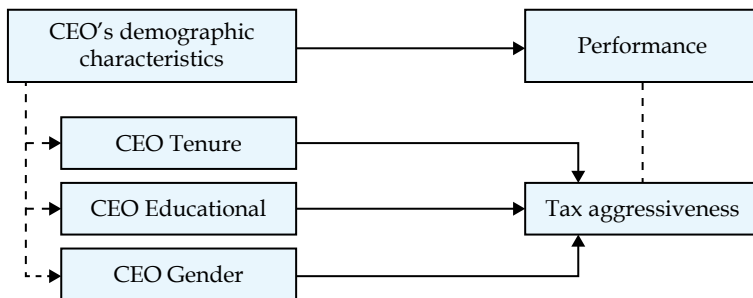


Figure 1. Framework of the relationship between CEO demographic characteristics and tax aggressiveness

Bhagat et al. [14] showed that education is a human effort to grow and develop innate physical and spiritual potentials, following the values in society and culture. The influence of educational background on a person is the driving force for development, while the main driver is the potential in the form of talents and experiences hidden in the person. To achieve this, there needs to be a learning process that will provide understanding, views, and adjustments.

Farag & Mallin [15] showed that educational background is one of the observable demographic characteristics as referred to in the upper echelon's theory. Moreover, educational background is one of the essential factors for someone to occupy a position in the company. The competence of a CEO also comes from his educational background. The higher a person's educational background, the greater the chance to occupy a CEO position. The higher the educational background of a CEO, the higher the corporate risk-taking will be. The CEO's tax aggressiveness decision is included in corporate risk-taking.

H2: Educational background of CEO has a significant effect on tax aggressiveness.

2.4. The Effect of CEO Gender on Tax Aggressiveness

Faccio et al. [21] showed that gender is an essential thing that is easy to observe. Gender brings a big difference in a person, which distinguishes between men and women. The character of risk-taking or risk-averse influences decision-making to carry out tax aggressiveness.

Aliani [13] showed that the risk-taking and risk-averse characters can be caused by differences in the fundamental qualities of individuals, namely agentic quality, and communal quality. Thus, men and women have different criteria in taking risks related to tax aggressiveness according to their characteristics.

Abele & Wojciszke [22] affirm that the two fundamental qualities are agentic and communal in social cognition. Agentic quality includes qualities in achieving tasks and goals, competence, and assertiveness, such as aggressive, ambitious,

dominant, confident, and strong. Meanwhile, communal quality refers to maintaining relationships and social functions, such as helping, being friendly, sympathetic, sensitive, gentle, and maintaining ethics. These differences in nature affect the CEO's leadership style in management and risk-taking.

Ho et al. [18] and Aliani & Zarai [16] stated that companies led by female CEOs are more conservative in financial reporting and more opposed to fraud. Women are more ethical and risk averse. Male CEOs will be more risk-takers than women. It supports the idea that male CEOs will be more risk-takers in tax aggressiveness than female CEOs.

H3: CEO gender has a significant effect on tax aggressiveness.

3. Data and Methods

3.1. Research Methodology

The population of this study was family firms listed on the Indonesia Stock Exchange (IDX) for the 2019–2022 period. A company is included in the family firm category if the founder or acquirer owns 25% or more of the company rights through investment, at least one representative of a family member is involved in the company management, and the majority of "votes" are in the hands of the founder or acquirer (or spouse, parent, child, or heir).

The research sample was taken using the purposive sampling method. In purposive sampling, selecting a group of subjects is based on specific criteria with previously known population characteristics. The following criteria determined the sample in this study:

1. Companies listed on the IDX during the 2019–2022 period.
2. Companies that met the criteria as family firms according to [13].
3. Companies that experienced profit during the 2019–2022 period.
4. Companies that published annual reports and financial reports for the period 2019–2022.
5. Companies that had complete information on CEO educational background, CEO tenure, and CEO gender.

6. Companies that had a Cash Effective Tax Rate value of less than one.

The dependent variable in this study was tax aggressiveness. Tax aggressiveness is the level of aggressiveness towards taxes through the efforts made to minimize the company's tax burden. The proxy used for this research was the Cash Effective Tax Rate. The Cash Effective Tax Rate formula (1) is as follows:

$$CETR = \frac{\text{Tax payment } i \text{ period}}{\text{Profit before tax}}$$

This study used independent variables consisting of CEO tenure, CEO educational background, and CEO gender. The independent variable data were obtained from the annual reports of the family firms published in the CEO or president director section.

The first independent variable was CEO tenure. CEO tenure is the CEO's term of office. CEO tenure was measured by how long someone has served as CEO (number of years). The measurement of CEO tenure has also been carried out in previous studies [8].

Furthermore, educational background describes what education has taken until someone finally occupies a CEO or during his tenure as CEO. Educational background in this study was gauged using Dummy. CEO with an educational background of master's degree majoring in finance, accounting, and tax was symbolized by a value of 1. Meanwhile, for educational backgrounds other than that, it was represented by a value of 0 [13].

Another independent variable was gender. Gender is the most essential thing that distinguishes one person from another, divided into men and women. Proxy against gender used Dummy. This study developed the logic that male CEOs tend to be risk-takers compared to female CEOs. Thus, male CEOs would be assigned a score of 1, while female CEOs would be assigned a score of 0 [16; 23].

Meanwhile, the control variable is a variable that has been shown to have a relationship with the dependent variable based on previous studies carried out. The control variable used in this study was profitability. Profitability is the company's ability to generate profits [2; 24]. In this study, the measure of profitability used was Return on Assets (ROA).

3.2. Sampling of enterprises

Based on Table 1, secondary data were collected utilizing documentation techniques by downloading annual reports and annual financial reports through the website www.idx.co.id. Determination of the sample used the purposive sampling method as described in the previous section. Based on the purposive sampling results, it was found that 533 companies were listed on the Indonesia Stock Exchange (IDX). Twenty-eight companies were delisted from the IDX during the period 2019 to 2022.

In addition, 392 companies did not meet the criteria for family firms as used by Price Waterhouse Cooper in its survey to reveal family firms in Indonesia. The com-

Table 1. Purposive Sampling Results

Criteria	Total
Companies listed on the IDX in 2019	533
Companies delisted from the IDX during the period 2019 to 2022	28
Companies that did not meet the criteria for family firms as used by PWC [25] in its survey	392
Companies that suffered losses	39
Companies that did not have sufficient background information on their CEO	1
Companies that did not publish annual financial statements in a specific period	1
Companies that had a CETR value of more than one (CETR > 1)	2
Final Sample	70

panies that suffered losses were 39 companies. One company did not have sufficient information about its CEO background. One company did not publish its annual financial statements for a specific period. Lastly, two companies had more than one Cash Effective Tax Ratio > 1. Thus, the final sample for this study was 70 companies.

4. Results

4.1. Results of Descriptive Statistical Analysis

Descriptive statistics include the interpretation of the mean, minimum, maximum, and standard deviation. Descriptive statistics can be seen in Table 2. The standard deviation for each variable is lower than the mean value. This result shows the data is quite good.

4.2. Estimation Model Test

The first model estimation test is conducted through the Chow Test. The Chow Test aims to determine whether the suitable estimation model for panel data

is the Common Effect Model or Fixed Effect Model.

Table 3 displays the cross-section chi-square values, indicating a probability value of 0.0000, which is less than 0.05. Therefore, the estimation model used is the Fixed Effect Model.

After determining the suitable estimation model in the first stage, the second stage Fixed Effect Model with the Hausman Test is crucial to decide whether to stick with the Fixed Effect Model or switch to the Random Effect Model.

Table 4 shows a probability value of 0.0005, indicating that the random cross-section is less than 0.05. Therefore, the estimation model used to analyze the panel data in this study is the Fixed Effect Model.

The results of the model estimation can be seen from the coefficient of determination, reflected in the R-squared value. Based on the R-squared value and the F-statistical value in Table 5, it can be stated that independent variables such as

Table 2. Descriptive Statistical Analysis

	Y_TAX AGGRESSIVENESS	X2_ EDUCATIONAL BACKGROUND	X1_TENURE	X3_GENDER	X4_ROA
Mean	0.22535	0.392857	10.67143	0.93214	0.06430
Median	0.23995	0.00000	8.00000	1.00000	0.04874
Maximum	0.81462	1.00000	48.00000	1.00000	0.45558
Minimum	0.00000	0.00000	1.00000	0.00000	0.00053
Std. Dev.	0.12720	0.48926	9.93848	0.25195	0.05685

Table 3. Chow Test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	12.210457	(69,206)	0.0000
Cross-section Chi-square	455.632855	69	0.0000

Table 4. Hausman Test

Correlated Random Effects – Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	22.062268	5	0.0005

CEO tenure, CEO educational background, and CEO gender, and control variable profitability simultaneously affected the dependent variable tax aggressiveness with an effect of 82.1%. Therefore, it is known that independent variables outside this study gave 17.9% of the influence.

4.3. Hypothesis Test Results

The results of the panel data regression analysis conclude that the best estimation method for this study is the Fixed Effect Model. Hypothesis testing in this study is conducted based on Table 5, with details as follows:

H1: The Effect of CEO Tenure on Tax Aggressiveness.

Based on the regression results in Table 5, the t-statistical probability of the independent variable CEO tenure was 0.0306, less than 0.05 ($0.0306 < 0.05$). The regression results showed that CEO tenure had a significant effect on tax aggressiveness. Thus, hypothesis *H1* was accepted, and it is stated that the CEO tenure

variable has been proven to influence tax aggressiveness. In addition, the regression coefficient for the CEO tenure variable was 0.006896, meaning that the regression coefficient was positive.

H2: The Effect of CEO Educational Background on Tax Aggressiveness.

Based on the regression results in Table 5, the educational background proved significant, with a t-statistic test result of 0.0036. The hypothesis *H2* states that the CEO's educational background is thought to affect tax aggressiveness. The hypothesis *H2* was accepted based on the educational background t-statistic test results of 0.0036, which was less than 0.005 ($0.0036 < 0.005$).

H3: The Effect of CEO Gender on Tax Aggressiveness.

The gender variable was proxied using a dummy variable, where male CEOs were assigned a value of one, whereas female CEOs were assigned zero. Based on the regression results in Table 5, the independent variable CEO gender had

Table 5. FEM Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.403047	0.072419	5.565489	0.0000
X2_EDUCATIONAL_BACKGROUND_	-0.182144	0.061896	-2.942725	0.0036
X1_TENURE_	0.006896	0.003168	2.176800	0.0306
X3_GENDER_	-0.159184	0.054412	-2.925556	0.0038
X4_ROA_	-0.487555	0.137132	-3.555367	0.0005
Effects Specification				
Cross-section fixed (dummy variables)				
Root MSE	0.053628	R-squared	0.821617	
Mean dependent var	0.225350	Adjusted R-squared	0.758404	
S.D. dependent var	0.127201	S.E. of regression	0.062522	
Akaike info criterion	-2.484935	Sum squared resid	0.805257	
Schwarz criterion	-1.524312	Log likelihood	421.8909	
Hannan-Quinn criter.	-2.099628	F-statistic	12.99755	
Durbin-Watson stat	1.844002	Prob(F-statistic)	0.000000	

a t-statistic test result of 0.0038. It denotes that the CEO gender variable was significant to tax aggressiveness. An interesting finding in this study is the regression coefficient result of the gender variable, which was 0.159184.

5. Discussion

5.1. The Effect of CEO Tenure on Tax Aggressiveness

CEO tenure is the CEO's term of office, which is how long someone has served as CEO, expressed in years. This study used a sample of family firms listed on the IDX. Therefore, CEO tenure in this study measured the year someone has served as CEO of a family firm.

Previous research has also carried out the year proxy used for CEO tenure [13; 24]. The upper echelons theory proposed by Hambrick & Mason [10] explains that the policies in a company are decided by top-level management. In making policies, a manager will be influenced by the demographic characteristics that exist in him, one of which is tenure. Making tax policies takes courage to take risks because tax violations can be subject to criminal sanctions. The longer a person serves as CEO, the more courageous he will be in making financial decisions [11].

The results of this study align with previous research [12; 13; 25], which also verifies that as the term of office increases, the CEO will dare to take risks in tax planning. Chen & Zheng [11] asserted that CEO tenure had a positive effect on risk-taking; as the CEO's tenure increases, the risk-taking CEO will increase in making a decision. Increased risk-taking will make a CEO more courageous in making decisions, including in taxes. The longer a person serves as CEO, the more experienced he will be in making decisions [26]. There are many problems faced and must be decided so that the CEO can be more confident in making decisions and risk-taking with the experience he has.

The results of this study differ from Finkelstein & Hambrick [27], Duan et al. [23] and Bhagat et al. [28] that the newly elected CEO will attract public attention.

At the beginning of the CEO's tenure, the level of tax aggressiveness is higher because of the efforts to show the CEO's best performance through the high profits obtained by the company by doing tax planning. Higher company profits will attract investors to invest in the company. The longer the tenure of the CEO, the higher the ETR, which indicates a reduced CEO tax aggressiveness. It contradicts the results of this study.

5.2. The Effect of CEO Educational Background on Tax Aggressiveness

Education is one of the factors considered for companies when recruiting employees [29]. Previously, the company would analyze the level of specific educational background required by a position currently needed by the company. When the recruitment process is carried out, the company then considers whether the applicant's educational background matches the criteria that the company has analyzed to fill the position. The educational background of the CEO has a positive effect on CEO recruitment. The higher the educational level of the prospective CEO, the higher the probability of being recruited [14].

The results of this study validate that the CEO educational background of a family firm affected the level of tax aggressiveness. Upper Echelons Theory reinforces this statement by [10], which states that the demographic characteristics of a top-level management influence the policies he makes for the company. Educational background is the character of a person who becomes a "ticket" for someone to occupy a position in the company, especially the CEO.

The results of the negative regression coefficient from educational background, i.e., -0.181992, would reduce the value of the dependent variable, namely tax aggressiveness. This result is consistent with Aliani & Zarai [16] and Astutik & Venusita [24] that educational background had a negative effect on tax aggressiveness. The regression coefficient results from the educational background of a CEO who had an accounting, tax, and finance back-

ground actually reduced the level of tax aggressiveness.

Their tax knowledge is, as described by Aliani [13], as follows. Educational background was measured by a dummy variable that gave the CEO a value of one for a master's degree graduate majoring in accounting, tax, and finance. CEOs who are experts in taxation will adopt a tax information system into three components: tax oversight, tax warnings, and fiscal failures. The most important thing is the last component, namely fiscal failure. CEOs who have a tax educational background will know things related to fiscal reconciliation to reduce the level of tax aggressiveness of a CEO.

5.3. The Effect of CEO Gender on Tax Aggressiveness

Gender is the essential thing that distinguishes humans into men and women. Aliani & Zarai [16], Wicaksono & Oktaviani [20], and Abele & Wojciszke [22] state two fundamental qualities in social cognition. Agentic quality is described by tendencies to be dominant, confident, aggressive, ambitious, and assertive. Second, communal quality is described as a person who is gentle, friendly, and maintains ethics. Communal quality is associated with women.

Moreover, these two fundamental traits make a difference in the leadership style of management and risk-taking [30–32]. The difference between the two fundamental human qualities makes the third hypothesis that CEO gender influences tax aggressiveness. It is because tax aggressiveness is the level of aggressiveness of the CEO in manipulating the company's tax burden. Meanwhile, company CEOs also vary by gender, both male and female. The fundamental quality of agentic quality and communal quality will affect their risk preferences.

According to Ho et al. [18] and Ho-seini et al. [33] companies led by female CEOs are more conservative in financial reporting and opposed to fraud. These results imply that male CEOs are more risk-takers so that they are thought to have higher tax aggressiveness. There-

fore, the gender variable in this study was measured by a dummy variable, which assigned a value of one to male CEOs.

Therefore, the hypothesis *H3* was accepted since the CEO gender variable was proven to affect tax aggressiveness. It is supported by the Upper Echelons Theory proposed by Hambrick & Mason [10], which states that demographic characteristics are divided into psychological and observable characteristics. In this case, the CEO's gender is both. Gender is something that other people can easily see in us. Meanwhile, according to Eagly et al. [30], gender brings differences in the fundamental qualities in human psychological traits, namely agentic and communal.

Thus, with the regression coefficient results, it is stated that male CEOs would reduce the level of tax aggressiveness. Undoubtedly, it is the opposite of [17; 34], which asserted that female CEOs tended to be risk-averse and men tended to be risk-takers in leading the company. Previous studies might help answer the above findings [15; 30; 35], proving that female CEOs had a significant positive impact on total risk and company-specific risk. Based on human capital and resource dependence theories, the presence of female CEOs will present different perspectives and professional experiences so that they may prefer to make riskier decisions.

6. Conclusion

Based on the results, the conclusions of this study are as follows: (1) Hypothesis *H1* was accepted by proving that CEO tenure affected tax aggressiveness; (2) Hypothesis *H2* was accepted by verifying that the CEO's educational background affected tax aggressiveness; (3) Hypothesis *H3* was accepted with CEO gender proven to influence tax aggressiveness.

However, the limitations that can be explained in this study are that the determination of the research sample, namely family firms, was only based on the company's annual report, so there may be other sources that can show that a company is a family firm, which may reveal more family firms listed on the IDX and increase the number of research samples. In addi-

tion, there are many other proxies used to measure tax aggressiveness so that by combining proxies other than CETR, it is possible to prove the insignificant relationship of variables to tax aggressiveness.

Based on the conclusions described above, the implications that can be made in this study are as follows. The current government has accommodated the CEOs' demographic characteristics of family firms, as evidenced by the research sample. Even though the average CEO had a risk-taker nature, sanctions and applicable laws and regulations could reduce the level of tax aggressiveness of CEOs in family firms.

The government needs to improve tax education for company leaders because it has been proven that educational background variables will reduce the level of CEO tax aggressiveness. Thus, the more education CEOs receive, it is possible to increase CEO awareness of tax benefits and tax sanctions, thereby increasing state revenue through taxes.

Lastly, there are still other factors that need to be analyzed and tested for their relationship to tax aggressiveness because based on the coefficient of determination results, there were still 17.8% of variables outside this study that affected tax aggressiveness.

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For citation

Oktaviani R.M., Rohman A., Zulaikha Z. CEO Characteristics and Tax Aggressiveness in Indonesian Family Firms: The Upper Echelons Theory Perspective. *Journal of Tax Reform*. 2024;10(1):149–161. <https://doi.org/10.15826/jtr.2024.10.1.162>

Article info

Received December 28, 2023; Revised January 28, 2024; Accepted February 4, 2024

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Для цитирования

Oktaviani R.M., Rohman A., Zulaikha Z. CEO Characteristics and Tax Aggressiveness in Indonesian Family Firms: The Upper Echelons Theory Perspective. *Journal of Tax Reform*. 2024;10(1):149–161. <https://doi.org/10.15826/jtr.2024.10.1.162>

Информация о статье

Дата поступления 28 декабря 2023 г.; дата поступления после рецензирования 28 января 2024 г.; дата принятия к печати 4 февраля 2024 г.

Original Paper

<https://doi.org/10.15826/jtr.2024.10.1.163>




The Role of Taxpayer Awareness in Enhancing Vehicle Tax Compliance in Indonesia: An Attribution Theory Approach

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ABSTRACT

This study explores the dynamics of taxpayer compliance with motor vehicle taxes, shedding light on the intricacies of transport taxation. Focusing on the mediating role of taxpayer awareness, the research employs a quantitative approach with Likert scale measurements. Primary data is gathered from 300 respondents in Bekasi Regency, Indonesia, out of a population of 1,789,548 taxpayers, using accidental sampling. SEM-PLS analysis reveals that adherence to tax rules, system updates, understanding tax intricacies, higher incomes, and taxpayer awareness contribute significantly to enhanced tax compliance within the context of motor vehicle taxation. Notably, the study finds that public education about taxes does not significantly impact compliance in this specific domain. The factors influencing taxpayer awareness encompass tax rules, system upgrades, tax knowledge, public education, and income levels. While taxpayer awareness is linked to system upgrades, tax knowledge, public education, income levels, and compliance, it doesn't connect with tax rules and compliance in the realm of motor vehicle taxation. The research implications provide valuable guidance specifically tailored to policymakers and tax authorities dealing with transport taxation. Emphasizing the significance of tax penalties, system modernization, and tailored taxpayer awareness programs can foster improved compliance in the motor vehicle taxation domain. Policymakers are urged to reassess the efficacy of tax socialization initiatives in the context of transport taxation, exploring alternative approaches for public tax education in this specific domain. Understanding the nuanced interplay among tax rules, system upgrades, tax knowledge, public education, income levels, taxpayer awareness, and compliance in the realm of motor vehicle taxation can inform targeted interventions for an overall enhancement of tax adherence in this specialized area.




KEYWORDS

taxpayer awareness, tax socialization, tax knowledge, tax system modernization, tax sanctions

JEL H21, H23, H71


УДК 336.2

Роль осведомленности налогоплательщиков в соблюдении законодательства о налогообложении транспортных средств в Индонезии: подход теории атрибуции

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АННОТАЦИЯ

В статье исследуется динамика соблюдения законодательства плательщика-ми налогов на транспортные средства, что проливает свет на тонкости налогообложения транспорта в Индонезии. Фокусируясь на посреднической роли

осведомленности налогоплательщиков, в исследовании используется количественный подход с измерениями по шкале Лайкерта. Первичные данные были получены от 300 респондентов в округе Бекаси, Индонезия, из населения в 1 789 548 налогоплательщиков, с использованием случайной выборки. Анализ SEM-PLS показывает, что соблюдение налоговых правил, их обновление, понимание налоговых сложностей, более высокие доходы и осведомленность налогоплательщиков в значительной степени способствуют улучшению соблюдения законодательства в области налогообложения транспортных средств. Исследование показало, что просвещение общественности о налогах не оказывает существенного влияния на соблюдение требований в этой конкретной области. Факторы, влияющие на осведомленность налогоплательщиков, включают налоговые правила, модернизацию системы, налоговые знания, общественное образование и уровень доходов. В то время как осведомленность налогоплательщиков связана с модернизацией системы, налоговыми знаниями, общественным образованием, уровнем доходов и соблюдением требований, она не связана с налоговыми правилами и соблюдением требований в области налогообложения транспортных средств. Результаты исследования представляют собой значимое руководство, специально разработанное для политиков и налоговых органов, занимающихся вопросами налогообложения транспорта. Подчеркивание важности налоговых штрафов, модернизация системы и специализированные программы повышения осведомленности налогоплательщиков могут способствовать улучшению соблюдения требований в области налогообложения транспортных средств. Директивным органам рекомендуется пересмотреть эффективность инициатив по налоговой социализации в контексте налогообложения транспорта, изучив альтернативные подходы к государственному налоговому просвещению в этой конкретной области. Понимание нюансов взаимодействия между налоговыми правилами, модернизацией системы, налоговыми знаниями, общественным образованием, уровнем доходов, осведомленностью налогоплательщиков и соблюдением требований в области налогообложения автотранспортных средств может послужить основой для целенаправленных мероприятий по общему повышению соблюдения налогового законодательства в области налогообложения транспортных средств.

КЛЮЧЕВЫЕ СЛОВА

осведомленность налогоплательщиков, налоговая социализация, налоговые знания, модернизация налоговой системы, налоговые санкции

1. Introduction

Taxes play a vital role in generating revenue for countries, and Indonesia is no exception, as they form the backbone of governance and represent the primary national income source¹. The payment of taxes is a manifestation of both civic duty and the responsibility of taxpayers to fulfill their tax obligations, contributing directly and collectively to national financing for activities such as national development.

One specific type of tax collection is the Motor Vehicle Tax (PKB), a regional tax that supports provincial development.

Therefore, local governments need to focus on addressing challenges in the collection of motor vehicle taxes to optimize regional revenue.

As reported by the Governor of West Java, the West Java Regional Revenue Agency (Bapenda Jabar) exceeded its revenue target, reaching IDR 32.7 trillion². This total includes IDR 22.9 trillion in Regional Original Income (PAD), with the most significant contribution coming from Regional Taxes, totaling IDR 21.1 trillion. Additionally, the Head of the West Java Regional Revenue Agency noted that the Vehicle Tax Amnesty program was uti-

¹ <https://bppk.kemenkeu.go.id/content/berita/balai-diklat-keuangan-malang-pengelolaan-sumber-penerimaan-pajak-sebagai-sumber-pendanaan-utama-dalam-pembangunan-2019-11-05-8774fd68/>

² <https://bapenda.jabarprov.go.id/2022/12/27/gubernur-jawa-barat-apresiasi-bapenda-jabar-yang-berhasil-realisasikan-pendapatan-rp32-triliun/>

lized by 2.276 million taxpayers in 2022³, indicating that a significant number of taxpayers are still not compliant with their tax obligations.

Based on the data from the author's observational study, the number of motorized vehicles in West Java Province has increased. However, the regional income has experienced a decline. This is noteworthy as the regional income from motor vehicle taxes is a crucial component in the area's development. Numerous similar studies have been conducted, but most of them focused on examining only a few variables (Table 1).

In contrast, this research considers several variables that may influence taxpayer compliance, such as tax penalties, system modernization, tax knowledge, tax socialization, and taxpayer awareness as a moderating variable. Previous research outcomes also indicate that taxpayer compliance in Indonesia is far from ideal and requires improvement.

Therefore, this study is of great importance as it conducts a more in-depth investigation, highlighting that tax non-compliance is a serious and complex issue. Taxpayer awareness is an inherent human trait, and it is from this perspective that the researcher is motivated to conduct further research on the taxpayer compliance variable.

³ <https://bapenda.jabarprov.go.id/2022/09/28/2-juta-lebih-wajib-pajak-manfaatkan-program-pemutihan-pajak-kendaraan-bermotor-2022/>

Beside that, research examining factors influencing taxpayer compliance frequently utilizes tax sanctions as an independent variable, yielding varied outcomes. Kuitim et al. [1] found that tax sanctions have nothing to do with taxpayer compliance, others assert a noteworthy impact [2].

Moreover, the mediation of taxpayer awareness in the influence of tax socialization on compliance may not be present, as the direct effect of tax socialization appears more robust [3].

This study builds upon prior research by Karnowati & Handayani [4], expanding the range of independent variables to encompass tax sanctions, tax system modernization, tax knowledge, tax socialization, and income level, with taxpayer awareness serving as the intervening variable.

The study employs the attribution theory to elucidate the behavioral link between taxpayer compliance and their inclination to fulfill tax obligations, underscoring that compliance hinges on the intentions and willingness of taxpayers. The attribution theory delves into internal factors (taxpayer awareness, tax knowledge, income level) and external attributions (tax sanctions and the modernization of the tax system).

This study aims to investigate the multifaceted factors influencing taxpayer compliance with motor vehicle taxes in Indonesia, focusing specifically on the mediating role of taxpayer awareness.

Main hypothesis of the study: The proposed relationships and mediations suggest that various factors, including tax

Table 1. Regional Revenue of Bekasi Regency Originating from Motor Vehicle Tax (PKB)

Year	Number of Vehicles/Units	Regional Revenue of Bekasi Regency from Vehicle Tax (PKB)		
		Target	Actual	Percentage (Target/Actual)
2016	1,314,542	568,756,000,000	588,758,559,450	103.5%
2017	1,446,049	598,381,000,000	638,389,874,025	106.7%
2018	1,516,084	724,159,000,000	759,245,999,870	104.8%
2019	1,552,045	833,220,000,000	834,154,907,950	100.1%
2020	1,604,539	862,845,000,000	862,786,222,525	100.0%
2021	1,753,587	988,623,000,000	987,464,234,837	99.9%
2022	1,789,548	1,097,684,000,000	1,079,551,256,450	98.3%

penalties, tax system modernization, knowledge of taxation, tax socialization, income level, and taxpayer awareness, collectively influence taxpayer compliance in the context of motor vehicle taxation in Indonesia.

2. Literature Review

Heider [5] showed that attribution theory serves as a framework for understanding individual behavior, determining the causes of behavior through internal and external factors. In this study, external factors include tax penalties, system modernization, and tax socialization, while internal factors comprise tax knowledge, income levels, taxpayer compliance, and taxpayer awareness.

2.1. Tax Sanctions (TSc)

Allingham & Sandmo [6] showed that sanctions are punitive measures against individuals violating regulations. In taxation, they guarantee adherence to tax laws. Tax sanctions, categorized as administrative and criminal, impact taxpayer compliance. Hefty penalties, such as fines and imprisonment, deter violations.

Congda [7] indicates a positive relationship between tax penalties, taxpayer compliance, and awareness, emphasizing their preventive and control roles.

Referring to the research conducted by Rizkiani [8], tax penalties can be considered a preventive measure taken by the government to prevent taxpayers from violating tax regulations. Tax penalties can take the form of administrative sanctions or criminal penalties, where administrative sanctions include fines, tax rate increases, and so on [8]. Meanwhile, criminal penalties can involve imprisonment. Therefore, with the existence of these tax penalties, it is expected that taxpayers will adhere more closely to tax compliance.

Furthermore, tax penalties have a positive impact on taxpayer compliance, indicating that the higher the penalties imposed by the government, the higher the level of taxpayer compliance [7]. This occurs because taxpayers become deterred by the penalties imposed by the government, preventing them from repeating

violations in the future [7]. On the other hand, the tax penalties imposed by the government also serve as a control to prevent taxpayers from violating tax norms. Stringent penalties for violations committed by taxpayers have a deterrent effect, preventing taxpayers from committing tax offenses.

Moreover, the research [6] also states that tax penalties have a positive impact on taxpayer awareness, meaning that heavier penalties lead to an increase in taxpayer awareness.

2.2. Modernization of Taxation System (MTS)

Tax system modernization aims to optimize revenue by creating a transparent and accountable system (Andri & Sandra [9]).

Mudjiyanti et al. [10] showed that modernization of the taxation system has a positive impact on taxpayer compliance, which is facilitated by technological advances. Furthermore, Mudjiyanti et al. [10] states that modernization encourages awareness and facilitates tax obligations so that it has an impact on regional income.

This research is in line with Turambi et al. [11] who found a positive impact of tax modernization on taxpayer awareness.

In the context of motor vehicle taxes, the modernization of the tax system represents an initiative to establish a transparent and accountable tax system by harnessing contemporary knowledge and technological advancements. Where according to Mudjiyanti et al. [10] dan Patriandari et al. [12], this comprehensive approach aims to stimulate taxpayer adherence to their tax responsibilities, thereby influencing local revenue generated from motor vehicle taxes.

The modernization of the tax system can be associated with attribution theory, as it facilitates taxpayers in meeting their tax obligations, consequently impacting taxpayer compliance. The notion of modernizing the tax system involves a transformation in the mindset and conduct of tax officials and organizational values, with the objective of shaping the Directorate General of Taxes into a professional insti-

tution with a positive public image [9]. This enhancement is anticipated to bolster public trust, productivity, and the integrity of tax officials, ultimately promoting voluntary taxpayer compliance [9].

Mudjiyanti et al. [10] state that tax system modernization is a step towards creating transparent and accountable tax administration services by leveraging the latest technological advancements. The modernization of the tax system is designed to facilitate taxpayers in fulfilling their tax obligations. They also mention that tax system modernization has a positive impact on the level of taxpayer compliance. This is due to the fact that many taxpayers, constrained by work or other commitments, can be assisted by this modernized system, allowing them to fulfill their tax obligations anywhere and anytime.

2.3. Tax Knowledge (TKn)

Tax knowledge encompasses information about tax laws, aiding voluntary compliance [13]. Leontyeva & Maybu-rov [14] shows a positive relationship between tax knowledge and awareness.

Tax knowledge is intricately connected to attribution theory, signifying an internal factor within the taxpayer that shapes behavior in meeting tax responsibilities. By comprehending taxation, taxpayers acquire insights for tax-related actions and strategies, facilitating tax planning and decision-making in fulfilling tax obligations consciously and voluntarily, devoid of external coercion [4].

Through his research on motor vehicle taxes, Congda states that tax knowledge is one of the efforts to mature an individual or group by providing information or teaching about taxation [7]. This ensures that taxpayers understand the basic concepts of taxation, impacting their voluntary decisions to fulfill their tax obligations based on these concepts.

Petra et al. [15] further found that tax knowledge can influence taxpayers in fulfilling their tax obligations. When someone understands what needs to be done, they willingly undertake the tasks, and this applies to tax compliance. When taxpayers comprehend the basic concepts

of taxation, they are voluntarily and consciously fulfill their tax obligations, thereby enhancing tax compliance.

Fulfilling tax obligations should be done conscientiously based on prevailing regulations. Understanding tax information makes taxpayers aware of the importance of meeting their tax obligations, indirectly fostering a sense of responsibility for tax payment. This aligns with study [14], indicating a positive relationship between tax knowledge and taxpayer awareness.

2.4. Taxation Socialization (TSo)

Taxation socialization educates taxpayers to enhance compliance motivation. It positively impacts compliance, emphasizing the government's role in informing taxpayers [16].

According to Ariani et al. [17], efficient socialization considers various aspects, fostering taxpayer awareness of motor vehicle tax obligations.

In alignment with attribution theory, socialization of motor vehicle taxation is an external factor influencing taxpayers to take specific actions. The government utilizes taxation socialization to convey information and offer guidance to taxpayers on all aspects related to taxation [9].

According to Karnowati & Handayani [4], tax socialization is the activity of providing information about tax regulations, enabling the general public to understand what should be done to fulfill their tax obligations. When taxpayers comprehend tax regulations, they won't feel confused about meeting their tax obligations, leading them to willingly comply.

Wulanningrat & Rachmawati [16] states in their research that tax socialization has a positive impact on the compliance of motor vehicle taxpayers. This illustrates the government's efforts to inform taxpayers about the benefits received when fulfilling their obligations and the sanctions incurred when violated. As a result, taxpayers willingly fulfill their obligations, contributing to an increased level of tax compliance. Additionally, tax socialization is a government initiative to provide information and guidance to all

taxpayers, conducted through both direct and indirect socialization methods [18]. Thus, tax socialization can cultivate taxpayer awareness of the importance of paying taxes [16].

2.5. Income Level (InL)

Puspanita & Machfuzhoh [19] showed that when correlated with attribution theory, the income level is an internal factor within the taxpayer that drives compliance with tax obligations. The additional economic gains obtained by the taxpayer, both domestically and internationally, can be fully utilized to fulfill various aspects of their life, including adhering to tax obligations.

According to Wijiyanti et al. [20], the level of income, obtained through work, influences compliance, where high income is correlated with voluntary tax payments [20]. Financial conditions positively relate to awareness and compliance [21].

Wijiyanti et al. [20] also found a positive influence of income levels on taxpayer compliance. This is because if taxpayers have a high income, they won't face difficulties in taking actions, leading them to voluntarily pay their taxes.

Puspanita & Machfuzhoh [19] states that the income level represents any additional economic earnings acquired by the taxpayer, both domestically and internationally, which can then be fully utilized by the taxpayer. It can be assumed that this income can be used for their living expenses, and if taxpayers have higher earnings, they are more likely to comply with their tax obligations.

Risna & Priono [21] reveals a positive relationship between taxpayers' income levels and their awareness, as having good financial conditions prompts taxpayers to conscientiously fulfill their tax obligations.

2.6. Taxpayer Awareness (TpA)

Taxpayer awareness involves understanding and voluntarily fulfilling tax obligations. Awareness positively influences compliance, mediating the impact of penalties, knowledge, and socialization [22]. Government-led socialization succeeds when taxpayers have inherent awareness.

Through taxpayer awareness of the role of taxation in financing a region or country, taxpayer compliance with tax obligations is consciously established, devoid of coercion from any party [8]. This is closely linked to the internal factor of attribution theory, where human behavior influences actions toward an object based on the knowledge, beliefs, and reasoning of motor vehicle taxpayers in accordance with the provisions, functions and understanding of their tax obligations in accordance with applicable laws and regulations.

Additionally, taxpayer awareness can mediate the influence of tax knowledge [21] and tax socialization [22] on taxpayer compliance. This proves that when taxpayers have knowledge, including the fundamentals of taxation, tax rates, tax functions, etc., they naturally develop awareness to fulfill their tax obligations. Moreover, government-led socialization efforts will be effective only if taxpayers have an inherent awareness of the importance of tax payment. This demonstrates that tax socialization will succeed when taxpayers have self-awareness.

2.7. Taxpayer Compliance (TpC)

Kuilim et al. [1] and McKee et al. [23] defines that taxpayer compliance reflects awareness and willingness to fulfill tax payments immediately. It involves economic, psychological, legal, and financial perspectives.

Manrejo & Yulaeli [24] showed that compliance contributes to increased tax revenue. Furthermore, Markonah & Manrejo [25] adds that there are several factors that can influence an individual's tax compliance, and these factors are related to the cost of compliance, laws / regulations on taxes, and law enforcement / implementation of existing tax regulations.

Broadly speaking, taxpayer compliance can be categorized into two types: formal compliance and material compliance. Formal compliance is related to meeting tax obligations based on the law, while material compliance involves compliance in fulfilling material aspects of tax obligations. Through compliance, taxpayers will voluntarily, obediently, and responsibly

fulfill their tax obligations and use their tax rights more wisely [4; 7], thereby contributing to increased tax revenue for the country [24; 25].

2.8. Conceptual Framework and Hypotheses

These hypotheses form the basis for testing the relationships and mediation effects within the conceptual framework. The proposed relationships and mediations suggest that various factors, including tax penalties, tax system modernization, knowledge of taxation, tax socialization, income level, and taxpayer awareness, collectively influence taxpayer compliance in the context of motor vehicle taxation in Indonesia (Figure 1).

Research hypotheses:

- H1: Applying tax sanctions encourages taxpayers to comply.
- H2: Improving the tax system positively impacts taxpayer compliance.
- H3: Having a good understanding of taxation promotes taxpayer compliance.
- H4: Tax socialization contributes positively to taxpayer compliance.
- H5: Higher income levels contribute positively to taxpayer compliance.
- H6: Taxpayer awareness plays a positive role in promoting taxpayer compliance.
- H7: Tax sanctions contribute positively to taxpayer awareness.
- H8: Enhancing the tax system has a positive impact on taxpayer awareness.
- H9: Understanding taxation positively influences taxpayer awareness.
- H10: Tax socialization has a positive impact on taxpayer awareness.
- H11: Higher income levels contribute positively to taxpayer awareness.
- H12: Taxpayer awareness serves as a mediator for the positive impact of tax sanctions on taxpayer compliance.
- H13: Taxpayer awareness acts as a mediator for the positive impact of the improved tax system on taxpayer compliance.
- H14: Taxpayer awareness serves as a mediator for the positive impact of understanding taxation on taxpayer compliance.
- H15: Taxpayer awareness acts as a mediator for the positive impact of tax socialization on taxpayer compliance.
- H16: Taxpayer awareness serves as a mediator for the positive impact of income level on taxpayer compliance.

3. Methods

This study employs a quantitative method with a causal approach, aiming to quantify research variables (Karunia et al. [26], Cahaya et al. [27]), representing numerical data that is subsequently analyzed mathematically (quantitatively) to derive conclusions about the interrelationships among variables (Karunia et al. [28]).

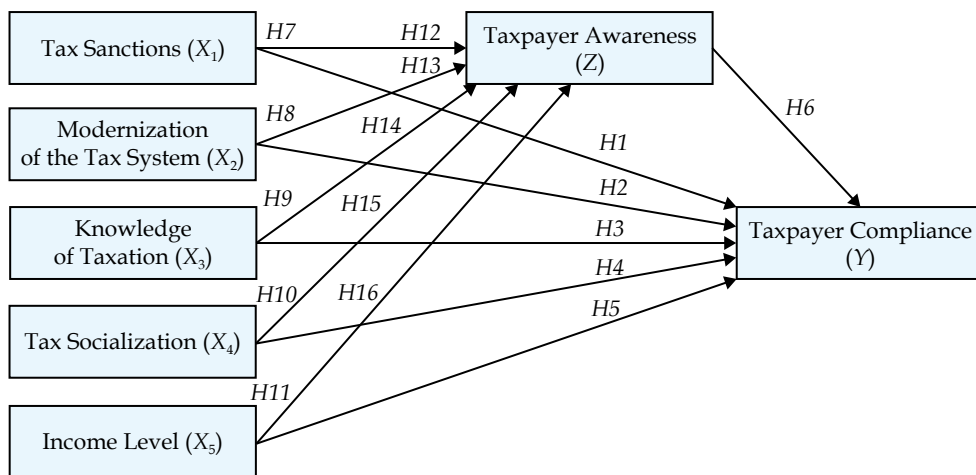


Figure 1. Conceptual Framework

This study employs an attribution theory approach to explain the connection of behavior [5] related to taxpayer compliance based on internal and external factors influencing it, such as tax penalties, modernization of the tax system, individuals' knowledge of taxes, tax socialization, and individuals' income levels as taxpayers.

The unit of analysis for this research is all motor vehicle taxpayers at the Samsat Office of Bekasi Regency, with a total population of 1,789,548 taxpayers.

In this study, nonprobability sampling is used, with accidental sampling techniques where the researcher meets taxpayers who are considered to meet the criteria as respondents (Cahaya et al. [29], Khan et al. [30]).

Based on the Isaac & Michael table with a total population (N) = ∞ and a 5% error rate [30], the sample size for this study is determined to be 349. However, the researcher rounds the result from the Isaac & Michael table to 300 respondents (Hair et al. [31]).

This study utilizes quantitative data [30; 32], and the primary data sources are derived from real-world situations, collected through the distribution of questionnaires (employing a Likert scale ranging from 1 to 5) related to the research variables. The collected data is then analyzed using the SEM-PLS analysis technique, with the support of SmartPLS tools, to examine the research hypotheses (Table 2).

According Khan et al. [30] and Sarstedt et al. [32], in the data analysis employing SEM-PLS, the testing procedure involves scrutinizing both the outer (measurement) model and inner (structural) model.

Idrus et al. [33] convey the outer model measurement is an analytical technique used to assess the validity and reliability of data, while the inner model, commonly known as the structural model, is evaluated based on the percentage of explained variance [34].

Convergent validity, discriminant validity, and composite reliability are utilized to assess the outer model in this study, while statistical tests (hypothesis testing), R-Square, Q-Square, and F-Square tests are applied for assessing the inner model [34].

4. Result

In evaluating convergent validity in the outer model, it was determined that all 35 research indicators had outer loading values > 0.70 , indicating that all questionnaire items are deemed satisfactory and suitable for subsequent testing [34]. Based on the results of discriminant validity testing, it can be inferred that the relationship value of a construct is greater than the relationship with other constructs.

Consequently, it can be concluded that the data used in this study exhibits good discriminant validity, allowing the data to proceed to further analysis [34]. Lastly, relying on the results of reliability and validity testing, it can be observed that each variable has AVE values and composite reliability values > 0.6 , signifying that the variables utilized in this study have good validity and high reliability levels [34].

In examining the inner model, for addressing the previously formulated hypotheses, the analysis involves scrutinizing the test results through t-statistics and p-values (Table 3).

The outcomes of the statistical tests presented in Table 3 lead to the following conclusions:

1. Tax penalties significantly influence taxpayer compliance, as indicated by a statistical test value of 3.471, surpassing 1.96, and a p-value of 0.001, less than 0.05. The positive original sample value underscores this impact.

2. The positive impact of updating the tax system on taxpayer compliance is evident from a statistical test value of 3.303, exceeding 1.96, and a p-value of 0.001, below 0.05. The positive original sample value affirms this influence.

3. Knowledge about taxes positively and significantly affects taxpayer compliance, supported by a statistical test value of 3.312, surpassing 1.96, and a p-value of 0.001, less than 0.05. The positive original sample value reinforces this impact.

4. Tax socialization does not seem to affect taxpayer compliance, as the statistical test value is 0.310, below 1.96, and the p-value is 0.757, exceeding 0.05.

Table 2. Questionnaire Items in the Study

Items	Questionnaire list
Taxpayer Compliance (Y)	
Y.1	I am aware of the prevailing tax regulations.
Y.2	I fulfill the administrative requirements for taxation.
Y.3	I pay vehicle taxes on time.
Y.4	I have not faced penalties for motor vehicle taxes.
Y.5	I have never breached motor vehicle tax regulations.
Tax Sanctions (X₁)	
X1.1	Penalties for violating tax regulations administratively are quite lenient.
X1.2	Criminal penalties for violating tax regulations are relatively severe.
X1.3	Tax sanctions apply to all taxpayers regardless of their status.
X1.4	Sanctions payment is made when the taxpayer pays the motor vehicle tax.
X1.5	Sanctions payment corresponds to the type of violation.
Modernization of the Tax System (X₂)	
X2.1	Paying vehicle taxes is more effective using the Samsat drive-thru.
X2.2	The procedure for paying vehicle taxes is easier using the Samsat drive-thru.
X2.3	The e-Samsat program facilitates convenient payment of PKB from home.
X2.4	The e-Samsat program serves as an option for me with limited time.
X2.5	Paying vehicle taxes is more time efficient as I don't need to visit the Samsat office.
Knowledge of Taxation (X₃)	
X3.1	I recognize the tax's role in funding regional development.
X3.2	I understand the procedures for paying taxes at the Samsat office.
X3.3	I comprehend the procedures for tax payment through e-Samsat.
X3.4	I am capable of settling taxes at the Samsat office.
X3.5	I can pay taxes through ATMs, Internet Banking, etc.
Tax Socialization (X₄)	
X4.1	Samsat Bekasi Regency officials conduct tax education.
X4.2	Samsat officials hold seminars on motor vehicle taxes.
X4.3	I receive information on motor vehicle taxes through social media.
X4.4	I receive information on motor vehicle taxes through billboards.
X4.5	I receive information on motor vehicle taxes through the radio.
Income Level (X₅)	
X5.1	I dutifully pay taxes even with a low income.
X5.2	The size of the tax is not a reason for me not to pay taxes.
X5.3	I am able to pay the amount of tax imposed.
X5.4	Tax rates are imposed according to the type of vehicle owned.
X5.5	My income can meet basic needs and fulfill obligations.
Taxpayer Awareness (Z)	
Z.1	Paying motor vehicle taxes is my contribution to regional development.
Z.2	I fulfill the applicable administrative requirements.
Z.3	I am conscious that motor vehicle taxes contribute to regional revenue.
Z.4	I consistently allocate funds for motor vehicle tax payments.
Z.5	I ensure timely payment of motor vehicle taxes.

5. Income levels have a positive and significant impact on taxpayer compliance, evident from a statistical test value of 2.761, surpassing 1.96, and a p-value of 0.006, less than 0.05. The positive original sample value supports this influence.

6. Taxpayer awareness significantly and positively influences taxpayer compliance, with a statistical test value of 3.170, exceeding 1.96, and a p-value of 0.002, less than 0.05. The positive original sample value strengthens this impact.

7. Tax penalties positively and significantly impact taxpayer awareness, demonstrated by a statistical test value of 2.534, surpassing 1.96, and a p-value of 0.011, less than 0.05. The positive original sample value confirms this impact.

8. Modernizing the tax system positively and significantly impacts taxpayer awareness, with a statistical test value of 3.454, surpassing 1.96, and a p-value of 0.001, less than 0.05. The positive original sample value reinforces this impact.

9. Knowledge about taxes positively and significantly influences taxpayer awareness, supported by a statistical test

value of 2.689, surpassing 1.96, and a p-value of 0.007, less than 0.05. The positive original sample value strengthens this impact.

10. Tax socialization significantly and positively influences taxpayer awareness, evident from a statistical test value of 3.680, surpassing 1.96, and a p-value of 0.000, less than 0.05. The positive original sample value confirms this impact.

11. Income levels have a positive and significant impact on taxpayer awareness, with a statistical test value of 3.847, surpassing 1.96, and a p-value of 0.000, less than 0.05. The positive original sample value supports this influence.

12. Taxpayer awareness does not seem to mediate the influence of tax penalties on taxpayer compliance, as the statistical test value is 1.816, below 1.96, and the p-value is 0.069, exceeding 0.05.

13. Taxpayer awareness mediates the impact of the modernization of the tax system on taxpayer compliance, evidenced by a statistical test value of 2.162, surpassing 1.96, and a p-value of 0.031, less than 0.05. The positive original sample value supports this mediation.

Table 3. Statistical test results

Variable relationships	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
Direct Effect					
TSc → TpC	0.198	0.198	0.057	3.471	0.001
MTS → TpC	0.202	0.203	0.061	3.303	0.001
TKn → TpC	0.191	0.194	0.058	3.312	0.001
TSo → TpC	0.018	0.019	0.059	0.310	0.757
InL → TpC	0.174	0.172	0.063	2.761	0.006
TpA → TpC	0.190	0.188	0.060	3.170	0.002
TSc → TpA	0.152	0.152	0.060	2.534	0.011
MTS → TpA	0.212	0.209	0.061	3.454	0.001
TKn → TpA	0.162	0.164	0.060	2.689	0.007
TSo → TpA	0.222	0.223	0.060	3.680	0.000
InL → TpA	0.219	0.218	0.057	3.847	0.000
Indirect Effect					
TSc → TpA → TpC	0.029	0.029	0.016	1.816	0.069
MTS → TpA → TpC	0.040	0.040	0.019	2.162	0.031
TKn → TpA → TpC	0.031	0.030	0.014	2.153	0.031
TSo → TpA → TpC	0.042	0.042	0.018	2.352	0.019
InL → TpA → TpC	0.042	0.040	0.016	2.582	0.010

14. Taxpayer awareness mediates the influence of tax knowledge on taxpayer compliance, supported by a statistical test value of 2.153, surpassing 1.96, and a p-value of 0.031, less than 0.05. The positive original sample value strengthens this mediation.

15. Taxpayer awareness mediates the influence of tax socialization on taxpayer compliance, as indicated by a statistical test value of 2.352, surpassing 1.96, and a p-value of 0.019, less than 0.05. The positive original sample value supports this mediation.

16. Taxpayer awareness mediates the influence of income level on taxpayer compliance, substantiated by a statistical test value of 2.582, surpassing 1.96, and a p-value of 0.010, less than 0.05. The positive original sample value confirms this mediation.

Based on the outcomes of the R-Square examination, it can be deduced that the Adjusted R^2 measure for the taxpayer compliance factor stands at 0.859 or 85.90%, and the Adjusted R^2 measure for the taxpayer awareness factor is 0.849 or 84.90%. Hence, it can be inferred that the R-Square test findings indicate a favorable model fit, as they surpass the threshold of 0.67 (Table 4).

Upon performing the Q-Square computation using the formula $1 - [(1 - R_1^2) \times (1 - R_2^2)]$, the result yields

0.979 or 97.9%. This implies that 97.9% of taxpayer compliance can be elucidated by factors such as tax penalties, tax system modernization, tax knowledge, tax socialization, and income level, while the remaining 2.1% is attributed to other unexamined elements (Table 5).

Lastly, examining the F-Square test results reveals that taxpayer awareness, system modernization, and tax penalties are classified as high, indicating F-Square values exceeding 0.35. Tax knowledge and income level, concerning taxpayer compliance, fall within the moderate range, featuring F-Square values between 0.15 and 0.35. Conversely, tax socialization exerts an insignificant impact on taxpayer compliance, with an F-Square value below 0.02.

5. Discussion

Based on the outcomes of the initial hypothesis $H1$ testing, it is evident that tax penalties exert a positive and significant influence on taxpayer compliance, aligning with prior studies [11].

This discovery indicates that heightened government-imposed tax penalties result in increased compliance among motor vehicle taxpayers in Bekasi Regency. The prospect of facing substantial penalties motivates taxpayers to adhere to tax obligations, preventing elevated payments. Furthermore, high tax penal-

Table 4. R-Square model test results

Dependent Variables	R Square	R Square Adjusted
Taxpayer Compliance (TpC)	0.861	0.859
Taxpayer Awareness (TpA)	0.852	0.849

Table 5. F-Square model test results

Variables	TpC	TpA	MTS	TKn	TSc	TSo	InL
TpC							
TpA	0.386						
MTS	0.376	0.400					
TKn	0.334	0.227					
TSc	0.374	0.210					
TSo	0.000	0.458					
InL	0.296	0.458					

ties act as a deterrent against repeated violations. Additionally, responses from the questionnaire suggest that universally applied tax penalties, irrespective of an individual's social status, lead to prompt tax obligation fulfillment, thereby enhancing overall taxpayer compliance.

In conclusion, elevated government-imposed tax penalties discourage taxpayers from violating tax regulations, ultimately contributing to increased compliance among motor vehicle taxpayers.

Moving on to the results of the second hypothesis *H2* testing, they also reveal that the modernization of the tax system positively and significantly impacts taxpayer compliance, in line with earlier research by Mudjiyanti et al. [10] and Patriandari et al. [12]. This suggests that higher levels of tax system modernization correspond to increased compliance among taxpayers.

The objective of modernizing the tax system is to ease taxpayers in fulfilling their tax obligations, making compliance more accessible. Responses from the questionnaire indicate that government commitment to providing convenience, such as drive-thru services, contributes to timely tax payments.

The implementation of tax system modernization through the West Java Samsat Mobile (Sambara) application, enabling taxpayers to pay motor vehicle taxes from home through internet banking or ATMs, further aids the government in achieving accountable and transparent governance (Karunia et al. [35]), while facilitating taxpayers in meeting their tax obligations [36].

As for the results of the third hypothesis *H3* testing, they also demonstrate that tax knowledge positively and significantly impacts taxpayer compliance, aligning with earlier research [13; 22]. This implies that taxpayers with a good understanding of the fundamentals and functions of taxation are more likely to comply with their tax obligations.

According to [22], taxpayer compliance occurs when taxpayers possess good knowledge of general regulations, tax functions, and applicable tax systems. Following attribution theory, tax knowledge

is an internal factor influencing an individual's behavior.

Therefore, taxpayers with good tax knowledge are more likely to promptly fulfill their tax obligations. Furthermore, responses from the questionnaire suggest that taxpayers with knowledge of tax payment procedures at the Samsat office find it easier to fulfill their tax obligations, leading to timely payments.

Regarding the results of the fourth hypothesis *H4* testing, it is established that tax socialization does not influence taxpayer compliance. This finding aligns with prior research by Jayusman et al. [37], which suggests that government socialization activities do not impact the compliance of motor vehicle taxpayers.

The research findings indicate that varying levels of tax socialization will not affect the compliance of motor vehicle taxpayers in Bekasi Regency. This is further supported by the questionnaire distribution results, where counseling efforts by Samsat officers in Bekasi Regency are perceived as low.

Therefore, tax socialization becomes less effective and lacks influence on the compliance of motor vehicle taxpayers in Bekasi Regency, even though taxpayers have correctly completed tax administrative requirements. To provide information, understanding, and guidance to taxpayers regarding tax regulations and functions, the role of the government and all responsible units is crucial.

Based on the findings from the fifth hypothesis *H5* testing, it is established that income levels exert a positive and significant impact on taxpayer compliance. This result aligns with prior research [10], indicating that individuals' income, derived from their employment, influences their ability to fulfill tax obligations.

This observation is also relevant to attribution theory, where income levels are considered an internal factor, attributing an individual's behavior to their internal characteristics. Thus, the fulfillment of tax obligations is intertwined with individuals' spending capacity; higher income corresponds to increased taxpayer compliance, and vice versa. Respondent

responses from the questionnaire support this, revealing that taxpayers with higher income levels contribute to compliance with timely tax payments.

Moving on to the outcomes of the sixth hypothesis *H6* testing, it is determined that taxpayers have a positive and significant effect on taxpayer compliance. This aligns with earlier research [8; 38], indicating that heightened taxpayer awareness correlates with increased compliance.

According to Kuilim et al. [1], taxpayer awareness is characterized by knowing, complying with, and fulfilling tax obligations in accordance with laws and regulations, driven by a desire and determination to meet these obligations. This aligns with attribution theory, categorizing it as an internal factor, where individuals act based on their internal motivations.

This finding is supported by respondent answers from the questionnaire, demonstrating that taxpayers are aware that paying taxes is their contribution to regional development, motivating them to make timely payments of motor vehicle taxes.

Regarding the seventh hypothesis *H7* testing, it is established that tax penalties have a positive and significant effect on taxpayer awareness. This aligns with the research by Idrus et al. [33] that suggests taxpayer awareness is shaped as government sanctions for violations increase. The findings indicate that higher government-imposed sanctions lead taxpayers to realize the significant consequences of violating tax regulations and the impact on the taxes they pay, acting as a deterrent.

Respondent answers from the questionnaire support this, with the majority stating that uniformly applying tax penalties without considering an individual's social status creates awareness among taxpayers, motivating them to contribute to regional development by paying taxes.

This underscores the deterrent effect of severe sanctions, preventing taxpayers from engaging in tax violations, and emphasizes that violating tax regulations leads to larger tax payments, highlighting the positive impact of tax penalties on taxpayer awareness.

Based on the findings of the eighth hypothesis *H8* testing, it is determined that the modernization of the tax system has a positive and significant effect on taxpayer awareness. This result aligns with previous research by Turambi et al. [11], suggesting that an easier system for taxpayers to fulfill their tax obligations increases their awareness of tax responsibilities. The findings also indicate that modernizing the tax system facilitates taxpayers, leading to heightened awareness of taxation and increased compliance with tax obligations.

This aligns with the theory proposed by Mudjiyanti et al. [10], stating that modernizing the system through the use of the latest technology enhances transparency and accountability in the tax system. The impact of modernization results in taxpayers being aware of their tax obligations, contributing to increased compliance. Respondent answers from the questionnaire support this, evaluating that the use of drive-thru Samsat facilities facilitates taxpayers in meeting their tax obligations and contributes to self-awareness for participating in regional development.

Based on the outcomes of the ninth hypothesis *H9* testing, it is evident that tax knowledge plays a positive and significant role in shaping taxpayer awareness. This result is consistent with previous research by Ratnawati et al. [14], emphasizing that individuals with a deep understanding of tax matters consciously fulfill their tax obligations. The findings suggest that increased knowledge of tax payment procedures correlates with heightened awareness.

This is corroborated by responses from the questionnaire, where taxpayers well-versed in the tax procedures at the Samsat office exhibit an increased awareness of tax payment. Thus, individuals equipped with a comprehensive understanding of the simplicity and significance of taxation, along with knowledge of all facets of tax-related matters, consciously acknowledge the importance of meeting tax obligations as their contribution to national, regional development, and the economy.

Moving on to the tenth hypothesis *H10* testing, it is established that tax socialization exerts a positive and significant influence on taxpayer awareness. This finding aligns with prior research [16; 22], indicating that increased use of information media for socialization in public spaces enhances taxpayer awareness.

Tax socialization involves disseminating information about tax regulations, enabling the general public to comprehend the actions required for fulfilling tax obligations [4]. When taxpayers have a clear understanding of tax regulations, confusion is minimized in meeting tax obligations, leading to voluntary compliance. Government-led socialization enhances taxpayers' insight, making them aware of the importance of fulfilling tax obligations.

This is further supported by respondent answers from the questionnaire, where the majority asserts that providing information in public spaces using the latest information technology will elevate taxpayer awareness, contributing to regional development.

Regarding the eleventh hypothesis *H11* testing, it is evident that income levels have a positive and significant impact on taxpayer awareness. The findings suggest that higher income received by taxpayers enhances their welfare, fostering awareness and the ability to pay taxes. With this income, taxpayers can allocate resources to meet their economic needs or engage in other activities, fostering awareness of fulfilling tax obligations. This finding is reinforced by respondent answers from the questionnaire, where taxpayers with high income and the capacity to pay taxes are conscious of paying taxes to contribute to regional development.

Based on the twelfth hypothesis *H12* testing, it is determined that taxpayer awareness does not mediate the influence of tax penalties on taxpayer compliance. This aligns with previous research [14]. It indicates that sanctions and awareness alone are insufficient to boost taxpayer compliance, as taxpayer awareness cannot mediate sanctions on taxpayer compliance. Sanctions, imposed externally by the government as punishment for tax-

payer violations, and taxpayer awareness, representing an individual's willingness to fulfill tax obligations voluntarily, are distinct factors.

In reality, taxpayers often have interests beyond fulfilling tax obligations, complying only to meet administrative requirements outside the tax context. This finding is supported by respondent answers from the questionnaire, leading to the conclusion that there is no relationship between the three variables. Low compliance with administrative requirements by taxpayers and high sanctions imposed by the government do not impact taxpayer compliance in meeting tax administrative requirements.

Regarding the thirteenth hypothesis *H13* testing, it is evident that taxpayer awareness mediates the influence of the modernization of the tax system on taxpayer compliance. This aligns with previous research by Turambi et al. [11]. It implies that an easier system for taxpayers to fulfill their tax obligations through modernization, coupled with high awareness among taxpayers, results in high taxpayer compliance.

The modernization of the tax system is expected to enhance taxpayer compliance, supported by the internal factor of taxpayer awareness. This research demonstrates that taxpayer awareness can mediate the impact of modernization on taxpayer compliance, as evidenced by respondent answers from the questionnaire. The ease of fulfilling tax obligations through the drive-thru Samsat system, along with taxpayer awareness that tax payment is a contribution to regional development, leads taxpayers to pay their taxes on time.

Based on the fourteenth hypothesis *H14* testing, it is established that taxpayer awareness mediates the influence of tax knowledge on taxpayer compliance. This aligns with previous research [39]. The research indicates that taxpayers with good tax knowledge and high awareness contribute to increased taxpayer compliance. This occurs when taxpayers possess knowledge of the basics of taxation, functions of taxation, and tax penalties,

leading to an awareness of complying with tax obligations. Additionally, based on respondent answers from the questionnaire, the majority also express that understanding tax procedures and awareness of tax payment will lead taxpayers to pay their taxes on time and contribute to development.

Based on the outcomes of the fifteenth hypothesis *H15* testing, it is established that taxpayer awareness serves as a mediating factor in the impact of tax socialization on taxpayer compliance. This discovery aligns with earlier research [22; 44]. The findings indicate that elevated government-led socialization, coupled with heightened awareness, leads to increased taxpayer compliance.

This underscores that government efforts to impart understanding of taxation to taxpayers are not fully effective without the individuals' intrinsic awareness to voluntarily fulfill tax obligations. This is substantiated by tax socialization endeavors, which manifest as government activities providing information and assistance to taxpayers regarding applicable tax rules. Taxpayers become cognizant of their rights and obligations, fostering an inherent awareness of fulfilling tax obligations.

Additionally, conclusions drawn from respondent answers in the questionnaire suggest that government socialization efforts through billboards in public areas, combined with taxpayer awareness of paying taxes to contribute to regional development, will impact timely tax payments.

In relation to the sixteenth hypothesis *H16* testing, it is evident that taxpayer awareness plays a mediating role in the influence of income level on taxpayer compliance. This finding is in line with prior research [21]. The findings suggest that higher levels of taxpayer awareness and income lead to increased taxpayer compliance. Income level itself is a pivotal factor for taxpayers because they utilize the money earned through work or services to meet their tax obligations.

However, regardless of the amount of taxpayer income, compliance cannot be achieved without an awareness of the sig-

nificance of fulfilling tax obligations. This is corroborated by respondent answers from the questionnaire, where taxpayers, equipped with the ability to pay their taxes and coupled with awareness that paying taxes is a part of regional development, fulfill their tax obligations on time.

6. Conclusion

Based on the outcomes of the conducted research and subsequent data analysis, it is evident that tax penalties, system modernization, tax knowledge, income level, and taxpayer awareness play crucial roles in enhancing taxpayer compliance. However, tax socialization does not demonstrate a significant impact on taxpayer compliance. These factors collectively underscore the importance of targeted interventions in tax policy and administration.

In practical terms, the study proposes several recommendations for relevant authorities:

1. Provide detailed and comprehensive information to taxpayers regarding the requirements for fulfilling their tax obligations.

2. Maintain high levels of tax penalties imposed by the government for tax violations to deter potential violators and prevent future non-compliance.

3. Enhance the e-Samsat system for fully online operation to increase taxpayer engagement with the system.

4. Conduct socialization efforts to inform taxpayers about available payment methods, maximizing the utilization of existing facilities.

5. Intensify socialization efforts to educate taxpayers about tax regulations, fostering increased compliance.

6. Adjust tax rates based on taxpayers' abilities, ensuring that the tax burden is manageable for all taxpayers.

7. Conduct socialization campaigns encouraging taxpayers to pay their taxes on time to avoid late payment penalties.

The theoretical significance of this research lies in its contribution to the understanding of factors influencing taxpayer compliance, providing a foundation for future studies in the realm of tax admini-

nistration. On a practical level, the recommendations offer actionable insights for policymakers and tax authorities, guiding the development of effective strategies to enhance compliance.

However, it is crucial to acknowledge certain limitations. The research scope is specific to motor vehicle taxes in Indone-

sia, and the findings may not be universally applicable. Additionally, external factors influencing taxpayer behavior, which were not extensively explored, may contribute to variations in compliance levels. These limitations emphasize the need for caution when generalizing the results beyond the study's context.

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Acknowledgements

The researcher expresses gratitude to Perbanas Institute and all parties involved in this research.

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For citation

Erasashanti A.P., Cahaya Y.F., Yuniarti R., Rifaldi M., Prasetyo J.H. The Role of Taxpayer Awareness in Enhancing Vehicle Tax Compliance in Indonesia: An Attribution Theory Approach. *Journal of Tax Reform*. 2024;10(1):162–180. <https://doi.org/10.15826/jtr.2024.10.1.163>

Article info

Received January 5, 2024; Revised January 27, 2024; Accepted February 10, 2024

Благодарности

Авторы выражают благодарность Институту Пербанас и всем сторонам, принимавшим участие в данном исследовании.

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Для цитирования




Erasashanti A.P., Cahaya Y.F., Yuniarti R., Rifaldi M., Prasetyo J.H. The Role of Taxpayer Awareness in Enhancing Vehicle Tax Compliance in Indonesia: An Attribution Theory Approach. *Journal of Tax Reform.* 2024;10(1):162–180. <https://doi.org/10.15826/jtr.2024.10.1.163>

Информация о статье

Дата поступления 5 января 2024 г.; дата поступления после рецензирования 27 января 2024 г.; дата принятия к печати 10 февраля 2024 г.



Manipulation of Transfer Pricing Rules by Multinational Enterprises in Developing Countries: The Challenges and Solutions

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ABSTRACT

Domestic revenue mobilisation has become a topical issue in developing countries, and their capacity to regulate multinational enterprises (MNE) transactions to minimise Base Erosion and Profit Shifting (BEPS) remains a formidable task. Faced with legislative deficiencies, implementation incapacities, and being at the nascent stages of adopting transfer pricing (TP) regulation, developing countries have remained at the mercy of MNEs' BEPS practices. The complexity and intricacies of intragroup transactions have an impact on profit allocation, thus affecting the distribution of taxing rights across countries where these MNEs operate. This study explores the regulatory policies toward international transfer pricing in the context of developing nations and the associated challenges. The paper proffers possible solutions to improve TP regulation and implementation. Specifically, the paper centres its attention on Zimbabwe, one of the developing nations that have implemented transfer pricing legislation in recent years. Mitigating the impact of BEPS through efforts, such as regulating and managing TP would avail potential substantial finance to shift developing countries from aid dependence to self-sustenance, yet these efforts face a lot of hurdles. Research that contributes to knowledge development in the area, evaluates the hurdles faced and contributes to policy and implementation improvements becomes vital. This study found that Zimbabwe is faced with challenges such as lack of legislative clarity, lack of comparability data, shortage of resources, lack of capacity and dysfunctional double taxation agreements in dealing with transfer pricing. The study recommends Zimbabwe should improve legislation, create TP databases, improve revenue authorities' capacity, and increase stakeholder awareness of TP.

KEYWORDS

transfer pricing, multinational enterprises, base erosion, profit shifting, Zimbabwe Revenue Authority (ZIMRA)

JEL H25

УДК 336.02

Манипулирование правилами трансфертного ценообразования транснациональными корпорациями в развивающихся странах: проблемы и решения

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АННОТАЦИЯ

Мобилизация внутренних налоговых доходов стала актуальной проблемой в развивающихся странах, а их способность регулировать операции транснациональных корпораций с целью минимизации размывания налогооблагаемой базы

и вывода прибыли из-под налогообложения (BEPS) остается сложной задачей. Столкнувшись с недостатками законодательства, находящегося на начальном этапе принятия регулирования трансфертного ценообразования, развивающиеся страны полностью остаются в рамках применения практики BEPS. Сложность и запутанность внутригрупповых сделок сказывается на распределении прибыли, тем самым влияя на распределение налоговых прав между странами, где работают эти транснациональные корпорации. В статье исследуется регуляторная политика в отношении международного трансфертного ценообразования в контексте развивающихся стран и связанных с этим проблем. В статье предложены возможные решения по совершенствованию регулирования и реализации трансфертного ценообразования. Основное внимание уделяется Зимбабве. Это одна из развивающихся стран, которые в последние годы внедрили законодательство о трансфертном ценообразовании. Смягчение воздействия BEPS с помощью таких мер, как регулирование и управление трансфертным ценообразованием, позволило бы использовать потенциал существенного финансирования развивающихся стран для перехода от помощи к самообеспечению. Однако эти усилия сталкиваются со многими препятствиями. Жизненно важными становятся исследования, способствующие развитию знаний в этой области, оценке стоящих перед ними препятствий и способствующих совершенствованию политики и ее реализации. Наше исследование показало, что Зимбабве сталкивается с такими проблемами, как отсутствие законодательной ясности, отсутствие сопоставимых данных, нехватка ресурсов и сохранение дисфункциональных соглашений об избежании двойного налогообложения в области трансфертного ценообразования. В исследовании обосновываются рекомендации Зимбабве усовершенствовать законодательство, создать базы данных по трансфертному ценообразованию, расширить возможности налоговых органов и повысить осведомленность заинтересованных сторон о трансфертном ценообразовании.

КЛЮЧЕВЫЕ СЛОВА

трансфертное ценообразование, транснациональные корпорации, размывание налогооблагаемой базы, вывод прибыли из-под налогообложения, налоговое управление Зимбабве (ZIMRA)

1. Introduction

Domestic revenue mobilisation has become a topical issue in developing countries [1], with one of the focal and fundamental issues under discussion being tax revenues generated from the taxation of activities by multinational enterprises (MNEs). Core to this debate are the challenges emerging due to transfer pricing (TP) [2–4].

TP is generally defined as the pricing and transfer of goods and services that are sold between autonomous divisions of a company or group of companies. Notwithstanding this definition, contemporary literature in economics, accounting, taxation, and law has paid renewed focus on transfer pricing as a tool employed by MNEs to reduce their global tax obligations by shifting profits from high tax jurisdictions to low tax jurisdictions (tax havens) [3].

TP has been described as an avenue used for the purpose of tax planning, tax avoidance and tax evasion (abusing taxing rights), with the main objectives being minimisation of tax obligations or outright escape from tax. MNEs often manipulate TP to their benefit, but at the same time depriving and siphoning countries of millions and at times billions.

TP is described as the greatest profit-shifting problem in international taxation in developing countries [5; 6]. As posited by Sebele-Mpofu et al. [3], the United Nations Conference on Trade and Development (UNCTAD) Report in 2020 explains that Africa is losing approximately \$89 billion (estimated to equal the aggregate total annual receipts of development aid and foreign direct investment inflows) through illicit financial flows (IFFs) because of illegal activities, abusive transfer pricing, corruption, trade mispricing and mis-in-

voicing, tax avoidance and evasion among other ways. Sebele-Mpofu et al. [3] further emphasise the need to address the different dimensions in which the TP scourge presents itself as it arguably contributes to IFFs that deprive African nations and their people of their significant domestic revenue, weaken transparency and accountability and reducing trust in African institutions.

TP is not illicit but the deliberate mispricing of transactions (over or under-pricing) and manipulation to shift profits or minimise tax obligations is abusive and unethical tax avoidance [7–9]. Abusive TP remains one of the pressing issues facing revenue authorities, policymakers, and tax practitioners worldwide. Of the estimated US\$89 billion in annual IFFs, transfer pricing is argued to account for around US\$55 billion [3].

Tax-driven transfer pricing moves taxing rights from countries in which tax rates are perceived to be high to those countries with lower tax rates, yet in most developing countries retaining of taxation rights of MNEs' incomes are essential for revenue generation as more than 60% of the national revenues are generated from taxation in most of these developing countries [10].

Tax revenue mobilisation in developing countries is important for economic development, poverty alleviation, infrastructural development, social security, and fulfilment of citizens' expectations with regard to improving health, education, and the general standards of living [11].

MNEs positively contribute to developing economies through foreign direct investment (FDI), infrastructural investment and development, employment creation, innovation and novel technologies (which are essential in the dynamic and ever-changing globalised business world) and contribute to the welfare of citizens through their various corporate social responsibility efforts.

However, their negative impact on revenue mobilisation through tax avoidance and evasion, abuse of tax treaties and abusive TP arrangements have generated a lot of scrutiny and outcry [7; 9].

Highlighting the costly nature of tax revenue losses due to TP in Africa, Sebele-Mpofu et al. [3] approximates the losses to tax havens at \$9.6 billion (roughly 2.5% of total tax revenues) in 2014. It is also problematic for revenue authorities to maintain a balance between their revenue generation objectives and enforce their legitimate taxing rights with the need to still provide a considerably fair, stable, predictable, and conducive investment environment [7].

With too much aggressiveness in tax policy, the same strategy at reducing Base Erosion and Profit Shifting (BEPS) and improving domestic revenue mobilisation, can result in exposing MNEs to double taxation and overly burdensome tax obligations.

De Mooij & Liu [12] acknowledge these mixed ramifications and unresolved puzzles that exist within the current tax avoidance literature and hence called for further research in this area.

Rathke et al. [13] also found differences in the strength levels of some transfer pricing rules compared to others. Therefore, this study contributes to the theoretical debate on how transfer pricing regulation affects taxation and BEPS in developing countries. The study also develops a conceptual framework to unpack the challenges and possible solutions to TP manipulation in developing countries.

It is against this background that this paper focuses on exploring the legislative regime associated with international TP in developing countries as well as the challenges faced in implementation, particularly anchoring on Zimbabwe, one of the African nations that adopted the OECD TP guidelines and enacted TP regulation in 2016.

The paper has three main objectives, the first being, to investigate the challenges of transfer pricing in a developing context by focusing on Zimbabwe. Secondly, the paper endeavours to explore the suggested solutions and efforts made by developing countries from both literature and empirical research towards mitigating these challenges. Thirdly, the paper aims to make possible suggestions on how to improve TP regulation, implementation

and manage these challenges to make TP regulations more effective.

Since the adoption of TP regulation is still in its early development stages in developing countries, with some having adopted the regulation (Zimbabwe, South Africa, Kenya, Tanzania among others) and some yet to, research that contributes to knowledge development in the area, evaluates the hurdles faced and contributes to policy and implementation improvements is vital.

Research hypotheses: MNEs are more likely to engage in TP manipulation in developing countries due to challenges associated with weak tax administration issues in these countries.

Article structure: This article is made up of six sections. The first section gave an introduction to the paper while the second section of the paper reviews related literature to put into perspective the problem of TP manipulation in developing countries. The third section of the paper describes the research methodology adopted for collecting and analysing data for the paper. The fourth section presents the findings of the paper while the fifth section provides a brief discussion of the findings. The sixth section concludes the paper and makes recommendations on how to mitigate TP manipulation by MNEs in developing countries.

2. Literature Review

Tax-motivated TP has been a topical discussion in both developed and developing countries, due to the increase in MNEs activities and the existence of tax havens. Developing countries especially in the African continent suffer the most from TP abuse [14; 15].

Approximately 60% of trade transactions flowing in and out of Africa are mispriced by more than 11% on average, amounting to an estimated capital flight portion of around 7% of African trade [16].

Developing countries have sought to deal with TP to reduce income shifting and capital flight [9].

The application of the arm's length principle in pricing has been advocated for as an important measure to tackle

the challenge. The OECD, UN and other various country-by-country guidelines have been crafted suggesting several TP methods that can be used to determine the arm's length principle [8; 17].

Zimbabwe adopted TP legislation in 2016. Zimbabwe has been working on legislative reforms for transfer pricing purposes in a bid to protect its tax base. For many years, the country has had the arm's length principle (ALP), but in the form of general anti-avoidance measures. In 2012 it started being actively involved in transfer pricing training of the revenue agents, and in 2014 the anti-avoidance measures were revised but lacked clarity on the application of the ALP. The year 2016 came with specific transfer pricing rules (section 98B as read with the 35th schedule of the Income Tax Act 1996 (Chapter 23:06) which adopted the ALP as prescribed by the Organisation for Economic Co-operation and Development (OECD) and placed a demand on taxpayers to prepare contemporaneous documentation.

Nonetheless, the rules still lacked sufficient guidance leading to additional amendments to the Income Tax Act (Statutory Instrument 109) in 2019 [7]. The recent amendments are an attempt to address the weaknesses of the specific transfer pricing rules and provide guidance on the documentation requirements, preparation, and submission deadlines as well as penalties for non-compliance. Zimbabwe also introduced a TP return specifically dedicated to TP transactions.

2.1. Challenges of Transfer pricing regulation and management in developing countries

Mitigating the impact of illicit financial flows through efforts, such as regulating and managing TP would avail potential substantial finance to fund education, health, productivity, and infrastructural needs of developing countries, yet these efforts face a lot of hurdles [4; 7].

McNair et al. [18], while studying developing countries that included Mozambique and Sierra Leone summarise these constraints as the skills and informational gaps, the absence of effective transfer pri-

cing legislation, weak capacities to implement, evaluate, monitor TP legislations, or even take appropriate legal action where legislation abuse has been noted.

Indeed, most developing countries have no adequate TP regulations or where it exists, it is inadequate and weakly developed or there is no expertise to clearly articulate it and MNEs often exploit these capacity weaknesses and underdeveloped to their advantage, robbing developing countries of taxing rights and the much-needed tax revenues. Sebele-Mpofu et al. [7] reiterate these challenges in Zimbabwe.

Beer & Loepnick [19] group them into lack of watertight TP regulation (policy, documentation, and legislative clarity), inadequate knowledge of TP regulation amongst different stakeholders (such as taxpayers, tax administrators, tax court officials and tax consultants), absence of comprehensive databases and weak implementation capacities (experience and expertise, financial resources, unsound staffing policy, and the absence of specific TP implementation, administration and monitoring team).

Wealth et al. [20] affirms the lack of sufficient and appropriate regulation and administrative TP guidelines, scarcity of information and poor capacity as major obstacles to effective regulation of TP and productively taxing MNEs, exposing developing countries to more aggressive and exploitative TP arrangements.

Mpofu & Wealth [21] allude to the challenges of applying the arm's length principle as one of the major obstacles to enforcing TP rules in developing countries and thus enabling profit shifting by MNEs [22].

Acknowledging the need to pay close attention to the obstacles to effective regulation of MNE transfer pricing activities in Tanzania, Luhende [23], tables the various issues as likely problems. The issues include lack of awareness of TP regulations by taxpayers, absence of comparable data, companies and transactions, uncertainty around the TP documentation to be filed with the Tanzanian Revenue Authority (TRA), difficulties in carrying out TP au-

ditions and inadequate capacity at TRA to effectively administer TP policy and regulation.

Barrogard et al. [24] through desktop research and a survey of seven developing countries that are German Development partners (Cameroon, Gambia, Burkina Faso, Democratic Republic of Congo, Uganda, Honduras, and Liberia) allude to the lack of comparable information to use for TP, lack of prioritisation of BEPS mitigation measures, lack of awareness, expertise, and capacity inadequacies.

It is evident from the discussion that despite the urgent need to regulate TP arrangements in developing countries due to the globalised nature of transactions as well as the importance of minimising revenue leakages and illicit flows, it remains a formidable task. It is also clear that these developing countries share similarities in these challenges to a greater extent, but there are also challenges that are unique to each national context [7; 21], hence the need to contextualise the investigation of the complexities as well as to tailor make possible solutions to developing countries and to country-by-country settings. The different challenges are categorised in terms of similarities and discussed comprehensively below.

2.1.1. Challenges and Subjectivity of the arm's length principle

The arm's length principle advocated for in the TP regulations is somewhat subjective. Several challenges and disadvantages of the arm's length principle make it difficult for TP regulations to be effective. These have been tabled by various researchers such as Oguttu [6], Luhende [23], Cooper et al. [25], Wier [26] and Silberstein [27]. Key among the hurdles is the heavy dependence on the availability of comparable data, which may be unavailable or not readily accessible [6; 7].

Oguttu [6] also stresses how it is more vexing for African states to apply the comparability analysis which is the basis for the arm's length principle that is believed to curb TP manipulations. The principle also puts immense documentation provision responsibilities on the revenue

authorities and taxpayer, heightening administrative and compliance burdens imposed on these respectively.

It can also create confusion and uncertainty on how certain transactions are treated for both taxpayers and administrators where comparability data is not there or readily available [23; 25].

Where data on comparable information is not in existence and an uncontrolled price exists that must be adjusted to make it more comparable, the process may be subjective and complex if not arbitrary. In some instances, the arm's length price does not cater for limited packaging costs, reduced marketing and distribution costs, economies of scale and networks profits and other advantages enjoyed by member companies within a group [23; 28].

Most developing countries have no minimum conditions in place such as tax treaties and double taxation agreements to curb and minimise the likely double taxation implications that might emanate from the enforcement of the arm's length principle [21].

In addition to the above challenge, the application of the principle has significant implications for capacity building in the form of skills, technical expertise and technological needs for governments and their tax administrators.

2.1.2. Tax Administration Capacity

Inadequate and weak capacity, together with lack of expertise have been alluded to as the constraints to effective tax administration in developing countries [29] as well as to effecting implementation of the national TP rules [30] or OECD and UN TP guidelines in developing countries and African countries [9]. The application of the OECD and UN transfer guidelines is still in its infancy in most developing implying that there is limited experience and very few specialists, who are generally not yet fully equipped.

In some developing countries such as Tanzania [23] and Zimbabwe [3; 7], even though revenue authorities (such as TRA and ZIMRA respectively), tax consultants, accounting and taxpayers have embarked on various activities towards capacitation,

these are not enough. It continues to be challenging for TP laws to be administered competently and professionally.

The gravity of this challenge is expressed by Cooper et al. [25], stating that "a lack of administrative capacity can lead to a disregard for the legislation, or alternatively may result in "innovative" and poorly targeted enforcement. The former may result in further erosion of the tax base, because of opportunistic investor behaviour or simply tax avoidance or a bias towards risk aversion in countries with stronger administrative capacity." Contrary to the situation in developing country revenue authorities, MNEs and their tax advisory departments hire professional, highly qualified, and experienced individuals who are conversant with TP issues. With financial resources at their disposal, they give them opportunities for continuous professional development (CPD), thus putting them in a more privileged position to arrange the TP activities of MNEs in a complex manner and even in defending their TP and tax decisions in a court of law.

These professionals are no match for revenue officers, who are sometimes inexperienced and not well trained [23]. Even where capacity building is progressively on the right track and revenue authorities having trained specialists, it is hampered by high staff turnover. It is often difficult to retain them due to poor remuneration and they leave for more lucrative and higher-paying jobs in accounting firms, the private sector and ironically these MNEs [7].

Beebejan [31] points to a general concurrence that the shortage of resources exacerbates the capacity constraints to effective TP regulation.

Mashiri et al. [8] splits these capacity constraints into financial constraints, lack of experience and expertise, lack of sound staffing policy and lack of specific transfer pricing teams. Despite the separation of these constraints, they are interrelated in the way they impact TP regulation, implementation, and taxation of the activities. For example, financial resources shortages and lack of expertise as discussed above.

Lack of sound staffing policy and lack of specific TP administration teams impacts negatively on the development of appropriate experience and expertise.

2.1.3. Inadequate, absent, or weakly developed TP Regulations

Barrogard et al. [24] adduce that BEPS is not prioritised in most developing countries where there are knowledge gaps, administration gaps and at times commitment of the nation at the policy design level, implementation of the tax policy and its communication to revenue administrators is disconnected and disorganised.

Most developing nations have inadequate, or no TP regulations and enforcements as acknowledged by Blumenthal & Ratombo [32].

With respect to African countries, Shongwe [28], states that “African countries have traditionally either not updated their laws or have narrow definitions in their laws that allow MNEs to structure transactions either with aggressive transfer pricing mechanisms or through excessive debt structuring to shift profits to low tax jurisdictions”.

Affirming this challenge, the UNCTAD Secretary-General asseverates that nearly half of Sub-Saharan African nations lack

adequately crafted TP policies, rules, regulations as well as administrative capacity in their jurisprudence. Sebele-Mpofu et al. [7] adduces that there is a scarcity of TP guidelines tailored to the contexts and needs of developing countries. These shortcomings leave these developing countries exposed and with little capacity to stand up against MNEs even in these countries’ own courts, let alone international courts.

Wealth et al. [33] observes that even where TP regulations are in place, the complexity of the tax systems opens many arbitrage opportunities that lead to profit shifting between different tax jurisdictions, with varying tax laws. Contrary to availing a level playing, this ends up disadvantaging developing countries, while favouring developed ones.

Reiterating this concern, Shongwe [28] posits that “In African countries, primary rules on TP lack clarity and risk being ineffective in addressing complex transfer pricing arrangements”, thus opening room for abusive tax planning and making the investment climate less favourable.

A snapshot of the level of development of TP legislation in a few selected African countries is shown in Table 1 as adapted from Shongwe [28] and buttressed with information from Mashiri et al. [8].

Table 1. Level of Development of TP legislation in selected African countries

Country	TP implementation Regulations or guidelines	Comprehensive documentation requirements and penalties	Yearly disclosure of related party transaction requirements
Botswana	TP rules currently being developed	No	No
Cameroon	2012 Finance Law	Yes	Yes, upon request
Malawi	Section 41 of the Income Tax Act (ITA)	Yes, No clear-cut penalties for TP	No, upon request
Zambia	Section 97A if the ITA	Yes, no TP-specific penalties	No, Upon request
South Africa	Well-developed TP laws	Yes	Yes
Tanzania	Anti-avoidance Section 33 of the ITA	No, Penalty powers discretionary	Yes
Kenya	Section 470 of the ITA	Yes	Yes, but not widespread
Lesotho	No specific TP rules, Arms’ Length prices referred to in ITA	No	No
Zimbabwe	TP introduced in 2016 in the ITA	Yes	Yes
Uganda	ITA	Yes	No, on request

Source: [28]

2.1.4. Complexity of MNEs transactions and lack of cooperation by MNEs

Various researchers [3; 9] highlight that developing and emerging economies are faced with challenges such as lack of capacity and expertise, weak negotiating power and corruption in effectively monitoring and regulating TP arrangements and even in administering taxes on MNEs income generating activities, the complexity of the MNEs transaction compounds these constraints.

The complexity of these transactions that are intra-group or between subsidiaries of a group or subsidiaries and parent company have an impact on the profit allocation, thus affecting the distribution of taxing rights across countries where these MNEs operate. TP transactions have increasingly become very complex due to the growth in globalisation, the rise in the sophisticated financial sector and cross-border mergers [16].

The intricacy of transactions has led to intractable battles over the taxing rights and ease of profit shifting from developing countries that have weak or no capacity to either keep an eye on the TP activities or challenge such activities. MNEs have abundant financial and technical resources to engage in complex global transactions and procedures or to hire highly qualified experts to conceal such transactions through creative accounting and special purpose vehicles [7].

Due to a lack of adequate expertise, developing countries may find it challenging if not impossible to trace, track and tap these into the tax base. The lack of expertise and transaction intricacy are also a stumbling block to effective auditing of these transactions or even raising a strong case that can be successfully argued in a court of law [21].

As outlined by the Sebele-Mpofu et al. [3], MNEs are often not willing or “economical” when it comes to information sharing when asked by tax administrators and auditors. At times they provide voluminous information to confuse tax administrators and auditors. This makes dispute resolution and liability assessment a formidable task. The ineffectiveness

of DTAs in ensuring access to information and sharing compounds the lack of cooperation challenges. Information might take long to be provided or it might be incomplete when provided.

2.1.5. Information Asymmetry

The information asymmetry privileges developed countries at the expense of developing countries, as the developed countries often infringe on the rights of developing countries with less information. The availability of resources, both financial and technical (tax experts, knowledgeable revenue officers and legal experts on TP) in developed countries give the already politically domineering developed countries an upper hand in getting TP information from MNEs [18].

On the other hand, the lack of resources and weak political standing of developing countries stifles their negotiation and enforcement capabilities and capacities, leading to failure to get relevant information [16].

Taxation and TP regulation depend on information. This information power imbalance gives more power and leverage to both taxpayers, revenue officers and legal and tax experts in developed countries, allowing them to be more aggressive in their tax planning and TP decisions to the detriment of the less powerful developing countries’ taxpayers, revenue administrators and the courts [15; 18].

Cooper et al. [25] acknowledge the difficulties in adopting the arm’s length principle for both developed and developing countries. They face similar challenges of informational constraints; the differences lie in the capacity to handle them. The researchers state that “administrators in more developed economies may face the same challenges of incomplete or asymmetric information, but often have a more refined set of policy and administrative tools to address these challenges”.

There is also a general lack of knowledge or awareness on TP issues in many developing countries [23]. The tax knowledge gap is one challenge that makes tax administration a difficult task and tax compliance problematic in developing countries.

Citizens are either unaware of certain tax policy issues or in case where they are, they don't have adequate knowledge on how to compute the taxes, or procedures to follow to submit returns and settle the tax liability [34].

This lack of awareness is even greater for TP, which is in the early adoption stages or inception in most developing countries [28]. For example, in some developing countries like Zimbabwe, Kenya and Tanzania, notwithstanding the development and dissemination of information on the application of the TP guidelines and the required documentation, most taxpayers are still unaware of these or do not fully comprehend the regulations and documentation requirements. This compromises compliance [7; 8].

The lack of sufficient knowledge is not only affecting taxpayers but tax officers as well as tax consultants [16]. In addition to the lack of databases, even where they are available, tax officers have no adequate knowledge to conduct the relevant economic analysis based on these databases and even customise the information to national context becomes a complex exercise.

This compromises TP implementation, audits, monitoring, and dispute resolution [3]. Generally, all stakeholders are trying to grasp the regulations, considering the concept is still in its early stages. Tax authorities are trying to provide adequate documentation, consultation, and fall-back in case of disagreements.

2.1.6. Political obstacles and power imbalances between developed and developing economies

The unfair distribution of power between developed and developing countries is substantial, especially in relation to information [16; 18]. Tax administration in developed countries is more sophisticated, developed and equipped with financial resources, technical skills, and expertise, coupled with a political muscle to deal with TP issues as compared to those in developing countries. These evident disparities in the ability to handle TP aspects have seen developing and emerging economies on the receiving end of unfair,

aggressive, and exploitative TP activities and decisions. This results in a greater share of profits being allocated to the more assertive, capacitated and politically forceful developed economies, hence resulting in BEPS. This is often done for fear of antagonising and stirring tax disputes with these aggressive nations.

Kabala & Ndulo [16] point to the lack of political will to deal with TP issues and the absence of a unified and consistent regional focus on tax avoidance and evasion curbing as other problems that hinder the effective application of TP.

There is no political will to address the issues of TP and BEPS in most developing countries, perhaps due to a lack of understanding of the issues and their impact [1; 24].

There is also no uniform and consistent approach to curbing tax evasion and avoidance even through regional organisations such as the Economic Community of West African States (ECOWAS), Southern African Development Community and African Tax Administration Forum (ATAF), among many such bodies [16].

Sebele-Mpofu et al. [7] acknowledges the need for a combined effort considering the globalised nature of the business world and the tremendous growth in international trade and cross-border transactions.

Kabala & Ndulo [16] portend out that ATAF is making commendable efforts to empower member states on different aspects on taxation including TP and providing a platform for expertise and knowledge sharing, discussions on challenges of tax administration and BEPS and mapping of solutions.

Kabalo & Ndulo [16] further explain the argument by discussing how HMRC assisted South Africa by seconding a specialist to South Africa Revenue Services SARS, who in turn after being capacitated made available their experts to ATAF to assist member countries in crafting their TP legislation, build capacity and capability in these African countries too.

There is indeed a great need to do more in TP regulation development, provide experts to assist member countries with

advice on dispute resolutions, knowledge sharing on TP and databases, direction on risk analysis as well as general tax administration.

2.1.7. Ineffective TP dispute resolution mechanisms

Kabala & Ndulo [16] advance that most developing countries in general and African nations, in particular, have no appropriate legislation and regulation on TP matters and most have adopted the OECD transfer pricing guidelines, without building legal capacities and institutions for their effective implementation. The judicial systems and tax courts are ill-equipped to constructively handle the cases and revenue authorities are technical weak to defend their cases.

This leads to some promising cases being dismissed on grounds of merit [7; 20]. This is affirmed by Sebele-Mpofu et al. [30] who submit that many developing countries lack strong and robust legal systems as well as dispute resolution frameworks. These ineffective judicial systems and fragile legislative structures lead to protracted TP cases or revenue authorities losing most cases and loss of taxpayer confidence if disputes take forever to resolve.

2.1.8. Lack of comparable companies, databases, and transactions

The lack of identifiable comparable prices is a fundamental hurdle confronting developing countries [16; 32].

It is often problematic for developing countries' revenue officers, taxpayers, and TP auditors to find comparable data, items, and transactions to allow for comparability assessment and determination of costs and prices of goods based on the arm's length principle [21; 32].

It could be due to the fact there are relatively few companies operating in some sectors. Even more challenging is establishing an internal comparable uncontrolled price (CUP) because, in some instances, intra-group transactions are unique to the parent and its subsidiaries. Compounding the comparability analysis pitfall is the lack of national databases that can be used for comparability purposes in

most developing countries, Tanzania included [23] and Zimbabwe [8].

In short, where the internal CUP is non-existent, there are no comparable transactions and prices in the open market and there is no comparable national database, the taxpayer is left with no option but to adopt a margin and justify it. This already brings an element of subjectivity and leaves room for abuse as transfers can still be made to related enterprises in low-tax jurisdictions. These enterprises can act as merely re-invoicing entities, thus enabling BEPS. Due to information asymmetry and confidentiality issues, it is difficult for tax authorities to check whether the transferred items are sold at arms' length in the tax haven. The lack of comparability databases impacts negatively also on the successful conduct of TP audits [28; 32].

Revenue authorities in developing countries find it difficult to audit effectively without adequate comparative information or benchmarks. Comparability data is normally from European and Asian markets and these markets' fundamentals differ from those of African markets [16].

The other formidable aspect of lack of comparability data has to do with intangibles, the difficulties in their measurement and valuation leave room for abuse and exploitation, as it is practically hard to trace pricing issues [16; 28; 32]. Efforts are being made in some developing countries such as Tanzania, Kenya, and Zimbabwe among others (refer to Table 1) to create an enabling environment by availing appropriate policy documentation, working facilities and making TP databases accessible (at times even through subscribing to some of the established databases) in order to fully operationalise TP guidelines in line with international ones such as the OECD and UN transfer pricing guidelines.

The other problem emanating from the lack of databases in developing countries is that in most cases databases on TP assessments have information relating to developed countries making comparability challenging or even customisation [32; 33].

There have been worthwhile attempts to address the challenge, but these have been slow and gradual, as these efforts are

also hampered by financial constraints. The cost constraints and challenges of accessing comparability data impede both successful regulation of TP and compliance to these regulations by revenue authorities and taxpayers respectively.

2.2. Suggested solutions and efforts made so far towards mitigating the challenges of TP

It is indisputable that MNEs are a vital fountain of economic growth, investment, global innovation, and government revenue, but on the other hand, they undesirably employ avenues to exploit variations in national tax laws and systems across countries of operation through strategies such as mis-invoicing, mispricing, and TP. The aggressive tax planning decisions often applied by these MNEs weaken tax bases and the fairness of tax systems, especially for developing nations [25].

TP is considered a “financing for development issue” because failure to collect adequate revenues hampers the country’s ability to gather enough financial resources

to finance public expenditure [34]. Having discussed that regulating MNEs activities through TP is a formidable task with various challenges it is imperative to find solutions to mitigate these challenges and protect tax bases from transfer mispricing.

Sebele Mpofo et al. [30] make three vital suggestions to policymakers in order to alleviate the challenges of TP. These are: (a) the need to target taxpayers and transactions that are likely to pose the greatest risk to TP and revenue mobilisation; (b) transfer pricing documentation and disclosure requirements to be commensurate with the needs and capacity of revenue administration and should not be so significantly different from the needs of trading partners in order not to cause undue compliance and administrative burdens; (c) capacitation and equipping of tax administration to efficiently, effectively, uniformly and productively address TP aspects.

Table 2 presents a summary of a few selected previous studies on the challenges and possible solutions to TP in developing countries.

Table 2. Summary of selected studies on the challenges and possible solutions to TP

Researcher(s)	Countries of focus	Methodology	Challenges	Suggested solutions
Mashiri et al. [8]	General perspective	Theoretical review (deductive theorising)	Information asymmetry and frail TP audits	Capacitate tax authorities and regulate tax practitioners
Shongwe [28]	African countries	Review of literature (policy brief)	Weak legislation, poor administration capacity and lack of access to information	Improve and modernise TP regulations and Regulation through customisation of ATAF arm’s length guidelines, TP guidance and Audit process suggestions
Barrogard et al. [24]	Cameroon, Burkina Faso, DRC, Gambia, Honduras, Liberia and Uganda	Desk study and Survey study	Lack of BEPS prioritisation or strategic link in policy crafting, communication, and administrative implementation. Lack of data for comparability, awareness, capacity, and resources	Build capacity in terms of legislation, expertise, technical resources, information technology and creating databases
Blumenthal & Ratombo [32]	South Africa	Qualitative, interpretive literature review	Resources and capacity constraints, limited access to and availability of comparable data. Strong reliance on use of alternative dispute resolution, no Advanced Pricing Agreement to encourage compliance, limited guidance on the handling of double tax agreements	South Africa’s TP regulation is ahead of other developing countries but there is a need to continuously improve the dispute resolution mechanism, develop TP skills and expertise and investigate TP mispricing

2.3. Conceptual framework

From the literature reviewed it was evident that the challenges of TP impacted the effectiveness of the TP as well as how revenue authorities used TP to regulate the activities of MNEs to reduce BEPS and tax revenue leakages. It became evident that the suggested solutions could be the moderating variables to help mitigate the impact of these challenges on the effectiveness of TP (Dependent variable).

This relationship is schematically displayed in Figure 1. The presentation is such that the first point on the challenges corresponds with the possible solution under the suggested solutions.

3. Research Methodology

In addition to using the conceptual framework displayed in Figure 1 above, the methodology was guided by Creswell & Clark [35].

This study adopted an interpretivism research paradigm as it is suitable for research that seeks to have in-depth knowledge of a phenomenon. Epistemologically, the study sought to understand and give meanings through interpretations attached to the views and actions of study participants. The fundamental principle is contextualisation, interpretation, and derived meanings within the study context (in this case TP within developing while specifically focusing on Zimbabwe).

This study employed an exploratory design as this design is ideal for researching or investigating under-researched areas or subjects that are in their nascent stages of development and implementa-

tion. Employing interviews with various informants allowed the researchers to get rich and insightful information on the TP regulatory regime in Zimbabwe, while the review of literature gave detailed insights into the situation in other developing countries.

This study adopted a qualitative research approach. The approach takes into consideration a variety of approaches and multiple truths within what is termed the interpretive, naturalistic or constructivist world view [36].

The research approach has to do with discovery (exploring) and giving a descriptive analysis, hence interviews were employed for data gathering to allow for in-depth data gathering.

The study targeted MNEs’ tax consultants, Ministry of Finance Officials and Zimbabwe Revenue Authority (ZIMRA) officers. Qualitative studies are known for small samples [37] and these can be identified through purposive sampling and snowballing [35; 38] as was the case in this study.

Samples of between 3 and 10 were used and these stakeholders were sampled because of their intense knowledge of TP. In some cases, these experts referred the researchers to those they considered the best in the area, thus snowballing, this was most common with MNEs’ Tax consultants, ZIMRA officers and Ministry of Finance Officials.

Wealth et al. [33] argues that the outcomes of TP are a result of rational decisions taken by the various economic actors influenced by different understanding and

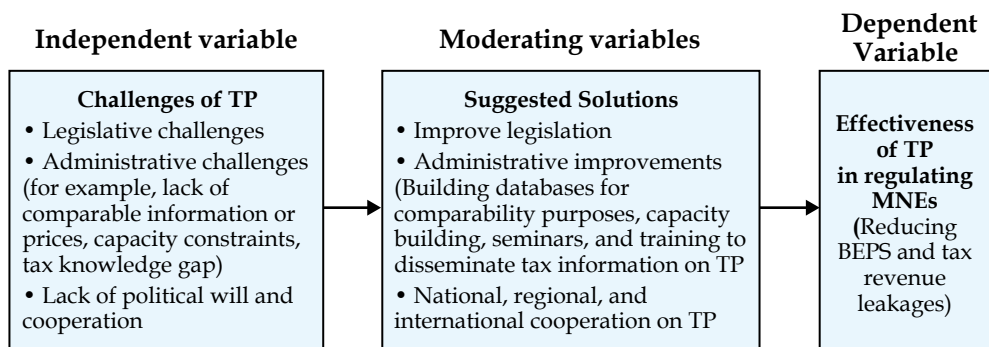


Figure 1. Conceptual framework

interpretations of the legislation. These different interpretations could possibly reflect the roles played by these stakeholders, policymakers, regulators, taxpayers, and tax administrators (implementers of policy).

This research combined document examination and analysis (court cases, TP guidelines including OECD guidelines and UN standards on TP, TP legislation in Zimbabwe, budget statements, media briefs and previous studies on TP in developing countries) and in-depth interviews.

In-depth interviews were conducted with the different stakeholders (10 ZIMRA officers, 10 MNEs' Tax Consultants and 3 Ministry of Finance Officials). In-depth interviews were chosen because they are more suitable for exploratory research as they enable one to dig more for and seek clarification and at the same time tap on non-verbal cues [35].

Considering that TP was an under-researched area it was important to gain a deeper understanding of the TP legislation and its constraints to effective enforcement from the various stakeholders that have experience on the subject matter. Interviews were initially conducted with two respondents one tax officer and one MNEs tax consultant to test for clarity and appropriateness of questions in addressing the research objectives and eliciting adequate information. Revision and elimination of questions were done accordingly, where necessary.

The qualitative research permitted multiple crystallisations of the TP phenomenon which was essential for its exploration and investigation into the challenges and suggested solutions. For example, ZIMRA officers as the enforcers of TP legislation shared their knowledge on TP and the challenges that they faced in administering them as well as what they thought could be ideal solutions or ways to improve the status quo. The department consisted of 22 team members at the time of research. For both domestic and International TP, the focus was on those dealing with international issues. Ministry of Finance officials were pivotal as the policymakers who craft the TP policy. Lastly, the MNEs' tax consultants were key to

the study as the pivotal participants as the taxpayers or the ones to be regulated.

The documents reviewed included the Zimbabwe Income Tax Act and TP legislation, International TP Guidelines (OECD and UN) as well as the National Budgets statements as well as cases. This was because tax law in Zimbabwe is drawn from legislation, Acts of Parliament, pronouncements in the budgets and legal precedence or decided court cases.

Further to addressing the credibility and trustworthiness of the results through pre-testing of interview guides, the researchers took notes during interviews and tape-recorded them where informed consent was granted. Participant feedback was also employed. Data was analysed employing both deductive and inductive approaches in content analysis for both the interview scripts and examined documents.

The researchers used a Computer Aided Qualitative Data Analysis Software known as ATLAS.ti. Data presentation and analysis followed the guidance of Braun & Clarke [39], who advocated for matching themes derived from the data with study objectives. Data presentation was largely narrative in nature with a few numerical expressions. Data presentation was also aided by using quotations for elaborative, clarification and evidence purposes.

The interviewed stakeholders were given identification codes and individual numbers for analysis purposes and from here onwards they were described using the code names, MOF (Ministry of Finance Officials), ZIMRA (Zimbabwe Revenue Authority Officers) and TC (MNEs Tax Consultants). An example of the coding is TC1, for tax consultant 1.

4. Results

As highlighted earlier, the study results were presented in a thematic manner as guided by the themes that emerged from data analysis and the research objectives. Before delving into the challenges of TP in Zimbabwe, it was important to have an appreciation of the TP legislation in Zimbabwe and how it relates to international best practices such as the OECD and UN transfer pricing guidelines.

The analysis presents itself under three themes. Theme 1 focuses on the applicability of the international guidelines on TP to the Zimbabwean context (4.1), Theme 2 centres on the challenges of TP in Zimbabwe (4.2) and theme 3 was built on the suggested solutions to TP in developing countries and Zimbabwe in particular (4.3).

4.1. Application of International TP guidelines (OECD and UN guidelines) to the Zimbabwe setting

It was evident from document analysis that Zimbabwe sought to follow the OECD and UN guidelines as a basis for their TP legislation and it became necessary to evaluate their applicability and appropriateness to Zimbabwe. This was because also from literature review it was evident that researchers found these guidelines lacking in some important dimensions as they relate to developing countries [6; 30] and African countries [28; 33].

During the interviews, it was evident that ATAF was considered an important player in providing guidelines on TP in Africa, especially to member countries such as Zimbabwe. This was consistent with literature from Shongwe [28] that ATAF provides guidance to African member states on TP in order to help them fully comprehend international guidelines.

The interview results were grouped in terms of those that found either the OECD, UN or ATAF guidelines applicable to Zimbabwe from their understanding and assessment. This was done using yes and no as representing what was deduced from the discussion. The results are presented graphically as shown in Figure 2.

From Figure 2, it was evident that there was a consensus among stakeholders that the OECD guidelines were the commonly applied guidelines with all the MOF officials and TCs concurring. The majority of ZIMRA officers (70%) also shared similar sentiments. The UN guidelines were found to be less applied as compared to the OECD, with 67% of the MOF officials acknowledging their application and only 40% and 29% of the ZIMRA officers and TCs agreeing to them being applicable. ATAF guidance was found to be ineffective and only 10% of ZIMRA pointed to the contrary.

It is not surprising because the bulk of the studies referred to the OECD guidelines as the widely adopted guidelines by both developed and developing countries.

The interviewees indicated that even mandatory to adopt the OECD guidelines, they felt persuaded to adopt these as they are frequently updated to respond to the changing risk environment and tax evasion and avoidance strategies. This was highlighted by ZIMRA6 who made it clear that even though the authority was not tied to any specific body they preferred the OECD.

The ZIMRA officers and TCs pointed out that Zimbabwe’s TP legislation differed from the OECD in that the country applied TP legislation also to domestic transactions in local companies (this was not explored further because the focus of the study was on MNEs and international transactions). This was found to be burdensome especially to small and medium enterprises in the country [20].

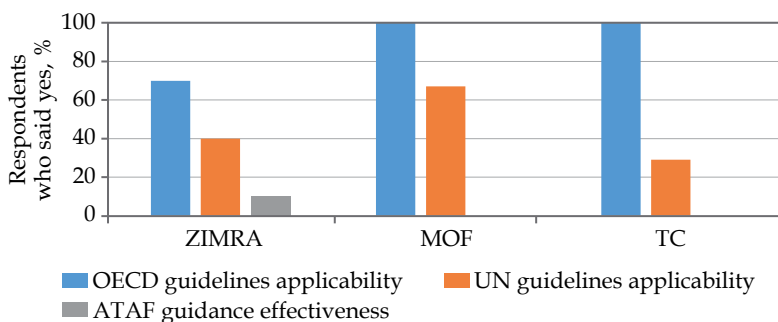


Figure 2. Adoption of International guidelines in Zimbabwe

Even though interviewees concurred to a greater extent on the adoption of the OECD guidelines, they were quick to point out that these are not without problems. They were described as voluminous, confusing, and difficult to comprehend, with TCs calling on ZIMRA to simplify them. ZIMRA officials on the other hand acknowledged that these were not wholly suitable for Zimbabwe as they are more applicable to developed countries (OECD countries and European countries).

ZIMRA4 affirmed the concern as follows: “As a country, we adopted the OECD regulations without any amendments. We have the advantage of applying guidelines that are acceptable internationally, but administering them in our environment is very challenging, especially applying the recommended transfer pricing methods for testing for adherence to the arm’s length principle. The shortage of comparable information and the prevailing economic conditions in the country making it difficult to apply transfer pricing rules and even to audit productively”.

Barrogard et al. [24] when studying TP in developing, including African countries like Cameroon, Tanzania and Burkina Faso arrived at an alike conclusion arguing that contextualising was key. The researchers emphasised the need to select those minimum standards and actions that addressed the TP challenges in each country as the economic environment settings differ. The other issue making the use of the OECD guidelines problematic was identified as the lack of comparable databases for transactions. This led to the use of foreign databases which were often difficult to use or not entirely comparable, hence bringing in subjectivity and inaccuracies. This was also shared by Mpfu & Wealth [21].

There was a general feeling especially among ZIMRA officials, that despite the current ineffectiveness of ATAF in creating TP guidelines for African countries, it was the ideal body to guide the African continent on the matter. This thought has been shared by the Kabala & Ndulo [16] suggesting that ATAF can have a register

to document the needs of African countries in relation to TP and seek assistance from the OECD, World Bank, and IMF in a more focused way.

Kabala & Ndulo [16] express that there is need to assess the appropriateness of the OECD guidelines for developing countries and Africa and formulate TP guidelines that are more focused on addressing challenges that are unique to the African continent. The researchers further explain that ATAF can be the right organisation to spearhead the project.

There was a general acceptance among interviewees (TCs and ZIMRA officers) that notwithstanding the adoption of the OECD guidelines in Zimbabwe, there was an irrefutable need to keep evaluating them for applicability, relevance and effectiveness and taking corrective measures where necessary.

4.2. Challenges of TP in Zimbabwe

The major objective of TP is to prevent or reduce BEPS by equipping revenue authorities with appropriate legal and administrative measures to do so. However, it remains problematic how the efforts to protect the tax base can be balanced with the need to maintain a favourable investment climate to foster international trade and continue to be a destination of choice for FDI [25].

Theme 2 dealt with the challenges of TP in Zimbabwe. After a detailed discussion of the challenges under literature review (Section 2), it was important to empirically explore these challenges in the Zimbabwean context. Zimbabwe presents a developing country context but is unique in terms of the economic, legal, and political settings. Literature tabled various challenges such as the shortage of resources, weak capacity, non-availability of comparable databases, weak legal systems, complex legislation, and complexity of MNEs transactions among others [30; 31].

This study categorised the challenges into two broad groups: Challenges relating to TP legislation (4.2.1) and those relating to implementation capacity constraints (4.2.2).

4.2.1. Challenges Relating to TP Legislation

This study, through a deductive coding data analysis approach, categorised the challenges into three broad groups: Lack of comparability databases, unclear documentation requirements and unclear TP legislation as presented in Figure 3.

The MOF officials indicated that they were not the best target participants on the challenges as they liaise more with ZIMRA on the implementation issues as the administrators of tax policy, so it was best to get information on the challenges from ZIMRA officials and tax consultants. For this reason, results presented relate to ZIMRA and TCs.

Different reasons appeared topical and ranking top as fundamental constraints, as viewed from the perspectives of the different stakeholder groups (interviewees). For example, for TCs (100%) the major stumbling block to effectively implementing TP regulations is the lack of clarity in legislation, yet only 30% of ZIMRA officials acknowledged it as a hurdle. For ZIMRA officers, the biggest challenge was the lack of comparability databases (90% in agreement) and 71% of TC were in acknowledgement.

These have all been alluded to in literature as challenges to TP by different researchers such as Kabala & Ndulo [16], Sebele-Mpofu et al. [7] and Oguttu [6]. The only difference, in this case, is the significance attached to them by interviewee groups thus, reflecting the multiple views of participants’ experiences, occupational challenges, and their different orientations as the taxpayers (TCs) and the regulator (ZIMRA).

This resonates well with the interpretivism literature that argues the world is subjective and must be viewed from the perspective of those who experience the subject matter [35; 36] and McKerchar [40] who argues that challenges and solutions in the tax discipline will depend on the perspective of the stakeholder studied.

The differing opinions are reflective of the subjective views of the phenomenon built from interactions and relationships between MNEs, TCs and ZIMRA. As for the inadequacy or unclear documentation, the majority from both groups were of the view that indeed documentation was lacking (71% of TCs and 60% of ZIMRA officers). TC1 explained that the lack of legislative clarity was frustrating to MNEs and other taxpayers.

Unclear TP legislation. The lack of legislative clarity was highlighted in several developing countries [18; 24] and in African countries [7; 16]. Given this background and the fact that it was pointed out by interviewees. It was necessary to further unpack it in the Zimbabwean context. TCs and ZIMRA officials acknowledged that Zimbabwe still needed to do a lot in simplifying and clarifying the TP regulations.

TC3 expressed that: “In my view, the TP rules have not been a game changer; we just took the bare bones of TP very shallow in terms of content and not aligned to the Zimbabwean setting. I don’t think it has impacted on FDI; however, it is an important aspect of FDI”.

ZIMRA officers also shared concern on the lack of legislative clarity, with ZIMRA8 asseverating that: “There is an outcry

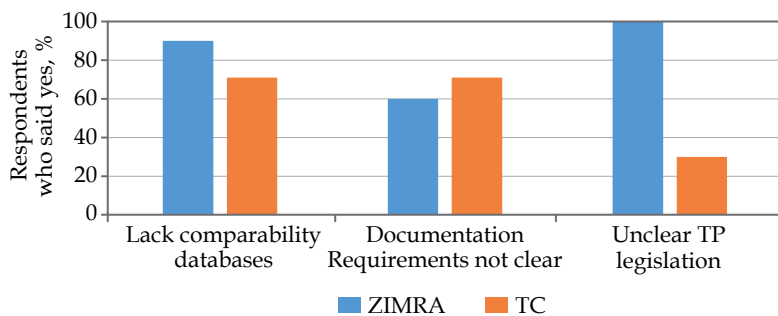


Figure 3. Challenges Relating to TP Legislation

on the legislation being difficult to comprehend and I don't know how foreign investors will take it and I don't think transfer pricing is really a hindrance to foreign investment, the issue of language must be simplified. Some taxpayers were saying, whose standard are you using and what standard of transfer pricing are you using to say this is a comparable transaction?"

This suggests the need to make the adopted OECD guidelines more aligned to the Zimbabwean situation and to educate taxpayers more on TP regulation.

Legislation clarity or lack of it was further explored under the following sub-themes: Existence of clear deadlines and penalties, the use of APAs, Effectiveness of the Fiscal Appeal Court and consistency in the application of TP legislation. The results are presented in Table 3.

Inconsistency in the application of TP legislation and the inexistence of effective deadlines for submission of TP documentation. Only 20% of ZIMRA officials pointed to the existence of effective deadlines, with the majority clearly stating that they did not have a clear deadline on when the TP documentation should be lodged with ZIMRA. All the TCs argued that the deadlines were non-existent.

This is contrary to the suggestions by researchers such as Lohse & Riedel [41], Nguyen et al [42] and Luhende [23], who emphasise the need to have clear documentation requirements and deadlines for submission to enhance TP as a tool to reduce profit shifting, aggressive tax planning and tax evasion.

The TCs indicated that their clients kept the TP documentation as part of the risk management and tax planning strate-

gies to minimise the tax exposure in case ZIMRA comes for TP audits.

Unavailability of an Effective penalty system. Despite the emphasis by Lohse & Riedel [41] on the criticalness of having specific and clear penalties for TP abuse, it is clear in Table 1 that most African countries fall short of this legislative need. Zimbabwe is no exemption. Zimbabwe is experiencing a similar problem as 90% of the ZIMRA officers acknowledged the weakness and all the TCs agreed.

ZIMRA officers indicated that they applied general penalties as outlined in Section 46 of the ITA, Chapter 23:06. The lack of penalties makes tax administration ineffective. This problem of penalties was alluded to by Lohse & Riedel [43] and by Shongwe [28] in most African countries.

The discretionary nature of penalties in most African countries leads to the abuse of power, exploitation of taxpayers and corruption as indicated by Kabala & Ndulo [16]. The statutory Instrument 109 of 2019 has sought to make improvements in these areas [7].

Ineffective use of APAs. The APAs were argued to be ineffective in Zimbabwe. The majority of ZIMRA officers pointed out that they have never used or invoked APAs at any point in time since the introduction of TP in 2016. TCs argued that APAs were non-existent in Zimbabwe.

TC3 expressed that: "maybe we can talk about DTAs in Zimbabwe, otherwise APAs are not there. The DTAs are also ineffective and provide not much guidance or information in dispute resolutions".

Ineffectual Fiscal Court of Appeal. ZIMRA officers indicated that in the absence of specific deadlines and penalties for TP

Table 3. Legislative measures and the perceptions on their effectiveness

Measure	ZIMRA (% of those acknowledging)	TCs (% of those acknowledging)
Inconsistency in application of TP legislation	86	90
Ineffective use / non-availability of APAs	90	100
Inexistence of effective deadlines	80	100
Non-availability of an effective penalty system	90	86
Ineffectual Fiscal Court of Appeal	100	86

and the use of general penalties covered in Section 46 of the ITA, the implication was that even in dispute resolution; the general procedures for assessing income tax disputes were applied. This led to interviewees admitting that the fiscal court was ineffective.

The TCs acknowledged that dealing with this court was frustrating because many of their cases were still pending resolution. The TCs suggested that the ineffectiveness could be linked to three things: the court being understaffed, lack of clear and effective legislation and lack of legal expertise to handle the complex TP cases.

TC1 was of the view that the one judge who dealt with tax cases be it the income tax, capital gains or Value Added Tax (VAT) cases was swamped by too much work. The lack of clear legislation and expertise compounded the difficulties in effective dispute resolution.

Sebele-Mpofu et al. [7] highlighted this while studying the effectiveness of TP audits and dispute resolution in Zimbabwe. This ineffectiveness in the legal system leads to ZIMRA losing cases and robs it of a chance to self-assess its legislative and administrative capacity and having a legal precedence foundation to improve on. It is also prejudicing taxpayers, burdening them with uncertainty and leading to them losing trust in tax administration. Trust in government and its institutions, is an important determinant of the willingness of taxpayers to pay their tax obligations [11].

Lack of Comparability Databases. The challenge of lack of comparable databases was found to be weighing heavily on the effectiveness of TP legislation in Zimbabwe as evidenced by the study results in Figure 3. The problem cuts across most developing countries [6; 24; 30] and African countries [7; 16].

The ZIMRA officers explained that they rely on international TP databases such as “One source” and “KT Mine” for comparability information. TCs highlighted that though using foreign databases was permissible by law, it did not provide accurate results. This reliance on other foreign databases was not without challenges,

the officers indicated that it was expensive and took too much time and effort.

Referring to ZIMRA TC1 pointed out that: “Unfortunately, they don’t have many comparables from Zimbabwe or Africa, they are basically getting comparables from around the world, but we all know that the economic situations are different because we can’t say that Zimbabwe is on the same scale as Europe. Foreign databases mainly give comparables which are not in Africa. Remember in Africa transfer pricing is still work in progress, so the databases do not have comparables from Africa, but we still use them for comparability and that’s why we use the median and advise our clients to charge a price that is closer to the median”.

The poor economic situation in Zimbabwe heightens the problem as more and more companies close or move out of Zimbabwe, leaving only a few companies or even one company in certain lines of business. It thus becomes an arduous task to find comparable data or even query the TP used by the taxpayer leading to the ability of ZIMRA to curb BEPS through TP being curtailed.

4.2.2. Implementation Capacity Constraints

Implementation capacity constraints have been alluded to in most tax literature on the challenges of tax administration in developing countries [10] and with respect to TP [23; 30].

As shown in Figure 4, it was clear that indeed ZIMRA was incapacitated in various aspects to deal with TP effectively. Five broad issues on capacity became the centre of discussion during the interviews: inadequate experience, scarcity of financial resources, lack of expertise, unsound staffing policy and the lack of a specific team dedicated to TP.

From Figure 4, that TCs and ZIMRA officers were of the view that indeed there were capacity limitations at ZIMRA.

Inadequate experience and Lack of expertise. Most of the TCs pointed out the lack of sufficient experience (86%) and expertise (71%) as some of the major limitations facing ZIMRA in dealing with TP. ZIMRA officers shared the same views with 50%

and 30% acknowledging the issues respectively. The differences in the emphasis on the matters reflect the perspectives of the taxpayer and regulator and are expectedly varied.

ZIMRA believes they are not far off when it comes to experience and expertise as they undergo some learning and training yet TCs argue that ZIMRA still has a long way to go in addressing the two areas. On the contrary, TC2 argued: “ZIMRA is incapacitated; it doesn’t have the right personnel to challenge the pricing by MNEs and even to get a proper understanding of these rules. I have said this before”.

The TCs argue that they are more knowledgeable than ZIMRA officers on TP issues, indicating this is mostly the reason why ZIMRA loses TP cases in courts as they (TCs) exploit the loopholes in TP legislation.

One wonders whether this does not create a conflict of interest for the TCs. When faced with a conflict of interest, whose interest do they serve those of ZIMRA or those of MNEs? The possibility of a conflict-of-interest overexposing or sharing of information arising due to consulting tax consultants, other tax authorities, the private sector and developed countries [7]. It is necessary to strike a balance between consultation and conflict of interest.

On the weaknesses in expertise, TC6 was concerned especially with the inadequacy in scrutinising the activities of the mining sector yet it is the most vulnerable area to BEPS. He explained that: “In

tackling this problem, it is not enough to have accountants and economists at ZIMRA dealing with TP, there is a need for lawyers and geologists who have a better understanding in some respects that the tax officers lack. And to minimise overreliance on outsourced skills”.

The challenge was further emphasised by TC8, saying that: “ZIMRA doesn’t have the capacity to establish or scrutinize mining transactions to see whether the losses are genuine which is a limitation as mining operations require a lot of expertise and most of ZIMRA staff are just accountants who don’t know the geophysical knowledge, the geological movements and how the mining operations take place”.

The mispricing and mis-invoicing risk in the mining sector was emphasised, with respect to Zimbabwe by Kwaramba et al. [44].

Scarcity of financial resources. The scarcity of financial resources has been lamented as the biggest stumbling block to effective capacitation of ZIMRA by interviewees (ZIMRA 3, 7 and 10) in this study and the majority of TCs (86%) and researchers such as Sebele-Mpofu and Mususa (29) and Wealth et al (20).

This is reiterated by ZIMRA 3, stating that: “The issue of resources where we are saying these are cross border transactions and for us to be able to really interrogate and probe them, we also now need to send officers maybe to other tax jurisdictions. That means resources and honestly resources are what we don’t have as a country”.

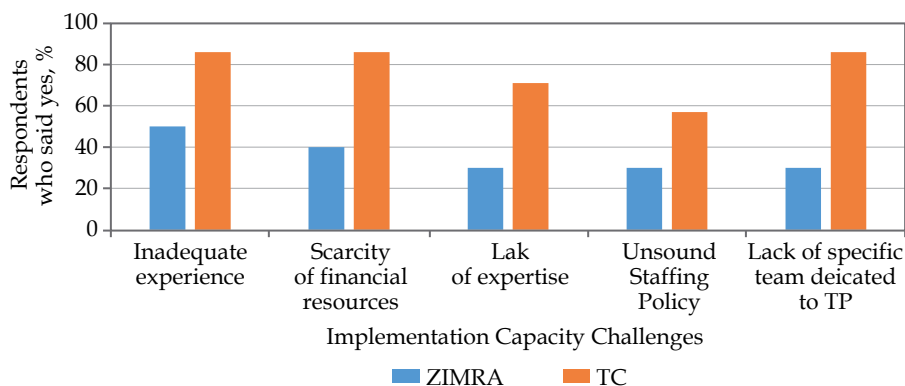


Figure 4. TP implementation Capacity Challenges

In developing countries, financial constraints have been pointed out by several scholars [44]. The lack of adequate financial resources compounds the other challenges. For example, improving experience and expertise requires investment in the continuous development of employees through training, secondment to other revenue authorities in the region or in developed countries so that understudy systems and learn or even hiring experts from experienced revenue authorities such as SARS or those in the OECD countries.

In addition, due to the lack of financial resources developing countries and Zimbabwe included, failed to retain qualified and experienced personnel [8; 23].

This was emphasised by TC2: “In as much as ZIMRA does training programmes the challenge is in ZIMRA there is high staff turnover, I for one received training from Australia and I left ZIMRA due to poor salaries. Apart from training, they need to have practical exposure to countries that have started this thing a long time ago for example South Africa. In my experience at ZIMRA, I was lucky to get exposure. I was based at Sunninghill Megawatt building with South African Revenue Services, where we would carry out joint audits. Theory is easy for anyone even if you were to write an exam you would pass but practical implementation requires exposure and experience. They also transfer staff very often; you find that someone who specialized in transfer pricing but is transferred to do customs work”.

The issue was emphasised by Ogutu [9], who stressed that developing countries’ tax authorities need to address the loss of staff quickly and urgently, through competitive and market-related remuneration of their staff. The problem is compounded by the misuse of funds by government officials as pointed out TCs 2 and 3. This poor governance quality was highlighted by Sebele-Mpofu [10] as responsible for poor tax morale in Zimbabwe.

Unsound staffing policy and lack of specific team dedicated to TP. ZIMRA officers in their totality acknowledged that staffing that matches the person’s expertise and

experience with the job or department needs was lacking. They suggested that policies on the ground were not conducive especially, the constant transfers and increased staff turnover. The challenge was also affirmed by TCs and was also referred to in literature by Mashiri et al. [8].

Interviewees from both the stakeholder groups (ZIMRA and TCs) indicated that ZIMRA was poorly staffed, and that most of the staff members were trainees who often grapple with complex TP transactions and issues and even with other tax administration issues in general. There was dissatisfaction also with the lack of a dedicated department to deal with TP issues.

Further to this ZIMRA officers and TCs highlighted that the centralisation of dealing with TP issues in Harare was rather unfair and ill-advised. They recommended a need for decentralisation and for having TP experts and auditors in all the ZIMRA regional offices to speed up resolution of TP issues and for convenience to taxpayers (TCs 2, 4, 5 and 6).

4.3. Suggested Solutions to the challenges of TP

To build on the recommendations made from the study, interviewees were asked to make suggestions on the possible solution to alleviate the challenges they pointed out in the discussions. These were grouped into improving clarity in legislation, creation of databases capacitation and improving national, regional, and international cooperation issues of TP and tax administration in general. The results are presented in Table 4.

Table 4. Solutions Suggested by Interviewees to the Challenges of TP, %

Suggested Solutions	TCs	ZIMRA
Improving legislative clarity	100	90
Creation of databases	71	100
Improving cooperation on national, regional and international level on TP	86	90
Capacitation	100	100

As presented in Table 4 interviewees emphasised the need to improve TP legislation as they alluded to the lack of clarity in legislation as well as the difficulties in comprehending and consistently applying the TP regulation. There was a general concurrence with almost all interviewees agreeing to this important fact (100% of TCs and 90% of ZIMRA officers).

The need for capacity building at ZIMRA was unanimous. Participants agreed that a lot needs to be improved in relation to capacity and the most topical areas were training and development, expertise development and exposure, remuneration and retention of employees and above all provision of adequate financial resources to make the capacitation efforts a success.

The creation of databases was also emphasised, along with the improvements in cooperation on a national, regional, and international scale. The creation of databases is important and requires regional or continental cooperation. For example, the creation of an African TP dataset for African countries as suggested by [16; 30].

While Kabala & Ndulo [16] avow that “African countries should participate in the global rulemaking so that African voices, interests and experiences are reflected in emerging global rules”, Sebele-Mpofu et al. [30] posit the efforts towards improving TP legislation enforcement need to be considered from the legislative, administrative, and political perspectives.

The others suggestion from various participants were the need for political will and commitment, reduced political interference in tax administration, improvement and capacitation of the fiscal court, taxpayer education and awareness programmes and the need for stakeholder consultation on TP matters.

5. Discussion

This paper sought to explore the legislative regime associated with international TP as well as the challenges faced in implementation, particularly in Zimbabwe. It emerged that while Zimbabwe has made significant strides, putting in place some TP regulatory measures, it remains challenged in a number of ways ranging from

legislative capacities and implementation capacities as MNEs continue manipulating the existing systems. The existing legislation is marred by a lack of clarity and inconsistencies in the application.

Wealth et al [20] buttressed this by emphasizing the burdensome of the laws to local companies hence giving a competitive advantage to MNEs. ZIMRA is also limited in its capacity to enforce these laws by the lack of comparability databases, non-availability of APAs, non-availability of an effective penalty system, inadequate experience, scarcity of financial resources, lack of expertise, unsound staffing policy and an ineffective Fiscal Court of Appeal. This limited capacity poses a high transfer pricing risk to the nation through the exploitative behaviour of MNEs [33].

The literature and primary findings show that these challenges are not without remedy. Zimbabwe is recommended to improve the clarity of its legislation by also adopting what other tax jurisdictions have done.

Shongwe [28] also highlights the need to modernise legislation and train auditors who are dedicated to TP since MNEs’ transactions are intricate and complex. The Zimbabwean Government is also expected to capacitate its revenue agent by equipping it with all the resources that it requires to fulfil its mandate.

While creating local databases that will assist with comparability analysis, compared to ALP, Oguttu [16] suggests possible alternative methods that could substitute the glorified ALP. These methods may be worth exploring in Zimbabwe to ensure a custom-made system that addresses Zimbabwe’s special needs. Improving cooperation on a national, regional, and international level on TP is also emphasized to abate this long-standing problem of TP abuse.

The paper established that Zimbabwe was facing challenges of TP manipulation by MNEs operating in the country due to several challenges. While some of the challenges were directly linked to weak tax administration institutions, some of them were indirectly linked but were more inclined to the governance and po-

litical environments in the country. From the paper, it was evident that economic incentives in the form of lower tax rates, tax incentives, tax exemptions and certain allowable deductions create opportunities for MNEs to manipulate TP, resulting in base erosion and profit shifting. This reduces the taxable income of MNEs, thus leading to revenue losses for the country. Weak TP regulations coupled with lack of resources make it challenging for developing countries like Zimbabwe to enforce TP legislation effectively. The lack of clear documentation compounds the problem.

It was also clear that there is lack of capacity and expertise within tax authorities to effectively identify and address TP manipulation. The capacity and technical expertise inadequacies affects TP legislation administration and enforcements, audits and investigation. Therefore, the need for investments in digital infrastructure and digital transformation of tax administration can contribute significantly to strengthening tax administration and reducing the vulnerability of developing countries and Zimbabwe in particular to TP manipulation by MNEs.

The study makes several recommendations.

Firstly, there is need for improvements in TP legislation and the use of DTAs and APAs. Borrowing from reviewed literature and echoed by study participants, this study recommends a continuous evaluation of the OECD and UN guidelines for adequacy, relevance, and reasonableness in a developing country context and for policymakers to strive to customise these to their national settings. ATAF should continue to work towards the creation of TP regulations by Africa for Africa. The creation of databases is another matter that must be addressed with urgency and requires partnership, communication, respect, and cooperation among nations. This can be done through regional bodies such as ATAF, ECOWAS and SADC among others or international organisations such as the IMF and World Bank. The use of APAs and DTAs is encouraged especially as a way of minimising disputes or putting in measures for dispute

resolution, but care must be exercised as previously, these have been exploited by powerful developing countries to the disadvantage of developing countries. It is, therefore, imperative that these countries should only enter into those agreements when capacity building has been done to support them especially, the APAs. As for the DTAs developing countries and especially African nations should investigate these, appraise their impacts on revenue mobilisation, otherwise “the impact of the DTAs might challenge the legitimacy of tax regimes, legal institutions and democratic processes” [16].

Secondly, Capacitation of ZIMRA in terms of technological resources, technical skills, and human resources. The need of capacity building in developing country revenue authorities, including ZIMRA cannot be overemphasised because participants lamented the weak capacities of the revenue authority.

Thirdly, increased cooperation is key to improving the effectiveness of TP legislation in developing countries. TP is a global phenomenon and not a country problem, so no country can do it alone. Hence information sharing and exchange are important pillars to cooperation. Resources can also be shared on a regional, continental, or international basis through bodies such the UN and OECD to foster effective cooperation. *Fourthly*, the study recommends continuous research on TP. Research is an important tool to improving policy, thus there is need for continued research and research collaborations on the issues of TP on developing and African countries to learn, implement and improve TP. Revenue authorities, tax consultants, the judiciary, other professionals, and academics should all contribute to this research because the issue of IFFs cannot be ignored.

Lastly, the paper recommends the need for increased stakeholder education, awareness, and engagement on TP issues. Stakeholder engagement and taxpayer education and awareness programmes should be undertaken to communicate TP policy in order to have a stakeholder buy in the policy.

6. Conclusions

As outlined in the introductory section, the paper had three main objectives. These were to investigate the challenges enabling TP manipulation in a developing country context, to explore the possible solutions to address the problem of TP manipulation in developing countries and to come up with recommendations towards reducing the vulnerability of developing countries to TP manipulation by MNEs. To attain these objectives, the paper discussed the challenges that emanated from the research, and these encompass the complexity of MNEs' transactions, weak and fragile tax administration systems, capacity constraints, weak legislation and limited financial resources.

On the second objective, the solutions identified include enhancement of legislative clarity, creation of arm's length price databases, increased national and international cooperation as well as capacity building for revenue authorities in developing countries.

Concerning the third objective recommendations for alleviating the vulnerability of developing countries to TP abuse by MNEs, the study proposed the harnessing of digital technologies in tax administration, stakeholder consultation, strengthening of legislation, capacitation of tax authorities and revisiting the economic incentives awarded to MNEs.

The study concludes that TP is an important concept in BEPS and accordingly governments should seek to understand the challenges of TP and work towards reducing their impact on developing economies.

The study identified several challenges from literature review and empirical research, and these include lack of databases, lack of legislative clarity, weak judicial and court systems that are not in tandem with the efforts of the tax authorities in TP dispute resolutions, lack of adequate TP knowledge among various stakeholders as well as weak capacities. This could be possibly linked to the fact that TP regulation, adoption and application are still in their infancy in Zimbabwe. There is room for improvement in the future.

The empirical evidence extends some of the views shared by other researchers as discerned from the literature review and summarised in the conceptual framework. The findings from the study could be grouped in line with the conceptual framework. For example, the legislative challenges could cover the level of adoption of TP legislation, the lack of clarity in the legislation, inadequate documentation as well as unclear policy on penalties. These challenges also affect the administration and enforcement part of TP regulation especially when it comes to monitoring, audit, and dispute resolution.

On the other hand, the administrative challenges encompass the difficulties in applying the arm's length principle due to the lack of comparable information and the unavailability of databases. These administrative challenges are further compounded by power imbalances between developed and developing countries as well as the lack of political will and commitment to enforcing TP legislation among developing countries. The capacity constraints challenges include the lack of financial resources, human capital, and technical expertise to effectively implement, monitor, audit and penalise accordingly. Therefore, efforts to improve TP should focus on addressing these seemingly deficient areas.

This study contributes to policymaking and to the theoretical body of knowledge on TP. For example, due to the differences in the economic, legal, and political environments in countries, contradictions and complexities surrounding the TP concept can stimulate further research that can change the TP narrative and regulation. Policymakers can also be influenced into building effective and robust TP frameworks and effectual fiscal courts and ultimately reduce BEPS and its negative impacts.

The conceptual framework is also a contribution to knowledge on the TP debate and can also be used as a guiding tool for policymakers on the focal variables that need focusing on in addressing the TP legislation enforcement challenges.

The study had the following *limitations*.

Firstly, the qualitative nature of the study and the fact that the study adopts interviews as the data collection method means the study suffers from data reliability weaknesses as well as the lack of generalizability of findings. This weakness could be addressed by future researchers by adopting interdisciplinary methods such as the pragmatic approach which allows for combining both the qualitative and quantitative approaches through the mixed method research design.

Secondly, the exploratory setting of the study as well as the use of purposive sampling which is viewed as both powerful and subjective at the same time are both notable limitations. Thirdly, due to the sensitivity of tax issues, hypocrisy, and the management of impressions (opinions) by the different stakeholder groups cannot be overruled as well as their influence on information subjectivity. In their subjectivity, the opinions of these different interviewees were pivotal

to this research, in giving an insight into TP in developing countries and Zimbabwe as well as laying a foundation for future research.

Considering the findings and recommendations of the study, further research is recommended in the following areas: (1) TP for intangibles since it was pointed out as one of the problematic areas for TP regulation and the most abused as well as management fees; (2) research to advance TP rules in Zimbabwe with a special focus on the vulnerable mining sector. Commodity pricing in the extractive industry is an important area for research in African countries as the greater part of BEPS happens in this industry; (3) African countries need to do more research on the creation of the African TP and databases; (4) on the opportunities and challenges of the recently introduced digital service taxes in mobilising revenue from digital MNEs and reducing tax avoidance and evasion in developing countries.

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For citation

Eukeria W., Mpfu F.Y. Manipulation of Transfer Pricing Rules by Multinational Enterprises in Developing Countries: The Challenges and Solutions. *Journal of Tax Reform. 2024;10(1):181–207.* <https://doi.org/10.15826/jtr.2024.10.1.164>

Article info

Received August 1, 2023; Revised December 5, 2023; Accepted January 30, 2024

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Для цитирования

Eukeria W., Mpfu F.Y. Manipulation of Transfer Pricing Rules by Multinational Enterprises in Developing Countries: The Challenges and Solutions. *Journal of Tax Reform. 2024;10(1):181–207.* <https://doi.org/10.15826/jtr.2024.10.1.164>

Информация о статье

Дата поступления 1 августа 2023 г.; дата поступления после рецензирования 5 декабря 2023 г.; дата принятия к печати 30 января 2024 г.

Journal of Tax Reform

2024. Vol. 10, no. 1

Editor in Chief

Igor A. Mayburov

Design and layout *Tatyana A. Loskutova*

Signed in the press on 15.04.2024.

Edition size 2 Mb



Журнал налоговых реформ

2024. Т. 10, № 1

Главный редактор

Игорь Анатольевич Майбуров

Дизайн и верстка *Т. А. Лоскутовой*

Дата выхода в свет 15.04.2024.

Объем издания 2 Мб

Издательство Уральского университета
620000, г. Екатеринбург, ул. Тургенева, 4

