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# The Tax Policy and Macro Management: Evidence in Vietnam

D.V. Dinh<sup>a</sup>, N.T. Ha<sup>b</sup><sup>a</sup> Industrial University of Ho Chi Minh City, Ho Chi Minh, Vietnam;<sup>b</sup> Thuongmai University, Hanoi, Vietnam

## ABSTRACT

**The relevance** of the study is determined by the need to improve the tax policy of Vietnam. **The scientific novelty** of the study lies in the application of a regression model for analysing GDP dynamics to determine the optimal tax policy. **The purpose** of this study is to study the relationship between the tax-to-GDP ratio and economic growth, the optimal threshold for the tax-to-GDP ratio, and to compare empirical results with actual tax-to-GDP ratios as a basis for improving tax policy and government micromanagement. **The methodology** of this study includes a threshold regression model, a unit root test, and a cointegration test to examine the impact of the ratio of tax revenues to GDP on GDP growth. The author used actual data on the dynamics of tax revenues and GDP over a 25-year period: from 1994 to 2020, reflected the development of economic growth studies. **It is shown** that the ratio of tax revenues to GDP and GDP growth are closely related at the level of 86%. The relationship between Vietnam's tax policy and economic growth is long-term, and the optimal threshold for the ratio of tax revenue to GDP is 19%, which leads to economic growth. It is concluded that the government should make more efforts to improve fiscal policy and macro management to stimulate economic growth and reduce the budget deficit. Fiscal policy has a significant impact on business entities, that is, economic organizations that create wealth for society and high employment, which leads to a decrease in unemployment. The results of the study can be used to form the tax policy of Vietnam.

**Keywords:** Taxation; threshold model; fiscal policy; GDP growth; threshold regression

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## ОРИГИНАЛЬНАЯ СТАТЬЯ

# Налоговая политика и макроуправление: данные по Вьетнаму

Д.В. Динх<sup>а</sup>, Н.Т. Ха<sup>б</sup><sup>а</sup> Промышленный университет Хошимина, Хошимин, Вьетнам;<sup>б</sup> Университет Тхюнгмай, Ханой, Вьетнам

## АННОТАЦИЯ

**Актуальность** исследования определяется необходимостью совершенствования налоговой политики Вьетнама. **Научная новизна** исследования заключается в применении регрессионной модели анализа динамики ВВП в целях определения оптимальной налоговой политики. **Целью** данного исследования является изучение взаимосвязи между соотношением налогов к ВВП и экономическим ростом, оптимального порога соотношения налогов к ВВП, а также сравнение эмпирических результатов с фактическими соотношениями налогов к ВВП в качестве основы для совершенствования налоговой политики и макроуправления государством. **Методология** данного исследования включает пороговую регрессионную модель, тест на единичный корень и тест на коинтеграцию для изучения влияния отношения налоговых поступлений к ВВП на рост ВВП. Автор использовал фактические данные о динамике налоговых доходов и ВВП за 25-летний период: с 1994 по 2020 г., отразил развитие исследований экономического роста. Показано, что отношение налоговых поступлений к ВВП и рост ВВП тесно связаны на уровне 86%. Связь между налоговой политикой Вьетнама и экономическим ростом носит долгосрочный характер, а оптимальный порог отношения налоговых поступлений к ВВП составляет 19%, что приводит к экономическому росту. Сделан **вывод**, что правительство должно прилагать больше усилий для совершенствования фискальной политики и макроуправления с целью стимулирования экономического роста и сокращения бюджетного дефицита. Фискальная политика оказывает значительное влияние на хозяйствующие субъекты, т.е. на экономические организации, создающие богатство для общества, и высокую занятость, что приводит к снижению уровня безработицы. Результаты исследования могут быть использованы в целях формирования налоговой политики Вьетнама.

**Ключевые слова:** налогообложение; пороговая модель; фискальная политика; рост ВВП; пороговая регрессия

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## INTRODUCTION

Tax policy contributes to the government's orientation and regulates the economy in a timely and reasonable manner. The tax policy also encourages manufacturers and businesses to promote efficiency in promoting economic growth. In addition, taxes are the main source of revenue in the state budget and the government's economic management tool. Tax revenues meet public spending requirements and are also tools to regulate the domestic economy and promote development, as well as international trade. The issuance of tax policies is very important for promoting economic growth, and most countries are attentive to this issue.

D. Baiardi et al. [1] determine the relationship between GDP per capita, total tax revenue, and the tax structure. The findings indicate a negative correlation between tax policy and economic growth, suggesting that when taxes are raised by the government, economic growth declines and that changes in tax policy have an impact on economic growth. However, the author's results only reflect the correlation between tax policy and economic growth without mentioning the optimal threshold of taxes. S. Biswas et al. [2] said that unequal income affects economic growth through tax policies, and the tax policies applied to different areas have different effects on household employment and investment. The authors also show that, for economic growth, the government enacts appropriate tax policies to reduce income inequality between low- and middle-income households. The authors apply the USA state data and micro-level household tax returns over the past three decades to find out these impacts. Although this study focuses on tax policy and economic growth, the results are limited to low- and middle-income households in a particular context. J.D. Gwartney et al. [3] They applied a threshold regression model, focusing on tax policy and economic growth through the income tax threshold, to consider tax changes from 1980 to 1990 and how they affected economic growth. These findings demonstrate that nations with lower tax rates experience faster economic expansion. Most research has examined the relationship between tax policy and economic growth, and their findings indicate that tax policy significantly impacts economic growth.

To analyze the impact of tax policy on economic growth, the literature applies the threshold regression model because it is often applied to time-series data, or the threshold can be regarded as another variable, such as the tax-to-GDP variable. If the tax-to-GDP optimal threshold is exceeded, economic growth slows down. Therefore, the government can adjust its tax policy to achieve the optimal tax-to-GDP threshold. This is a

model to find the thresholds of many indicators and can be applied in economics to find thresholds such as inflation, public investment, economic growth, labor indicators, etc. Similar to other studies, this study applied the threshold model to determine the optimal tax-to-GDP threshold. The data were collected from 1994 to 2020 in Vietnam, which is the time series that fits the model because data before 1994 do not exist and data after 2020 have not been updated.

Inappropriate taxation will have an impact on economic growth; if taxes are too high, it will reduce individual sector net profits; and if taxes are too low, it may be difficult for the government to implement its investment plans because of budget deficits. Therefore, determining the appropriate tax policy through the optimal tax threshold is necessary for economic growth and meaningful for implementing appropriate macroeconomic policies.

Empirical results show that increasing tax revenue above or below the optimal threshold of tax revenue harms the economy, which suggests that the government should maintain the optimal tax threshold for economic growth when it has tax cuts or increased taxation. Moreover, studies performed to date have been limited to the effects of taxes on economic growth in specific contexts. Therefore, this study effectively complements the literature by proposing a detailed analysis of the impact of tax rates on economic growth in Vietnam, to determine the optimal tax revenue threshold. According to the findings, tax cuts do not stimulate economic growth; rather, excessive tax cuts by the government would have the opposite effect, as explained in the section below.

## LITERATURE REVIEW

Tax policy plays an important role in economic development; therefore, the optimal tax threshold helps the government to develop an appropriate tax policy. So, several studies have focused on tax and fiscal policy issues by using optimal tax thresholds. To determine the optimal tax threshold, several models have been used to analyze the tax threshold and its impact on economic growth, such as non-linearity, threshold analysis, technical threshold dynamic panel, and the threshold regression method. Most of the literature has pointed out that the government's tax policy is not appropriate, that is, the government's tax revenue is above or below the optimal threshold, which means that the tax revenue to GDP ratio increases, so there is also This means that economic entities have to pay more taxes leading to a decrease in the profits, the companies' asset size is reduced, which will affect economic growth.

According to the literature, economic growth and tax-to-GDP ratio are related. The empirical results demonstrate that government tax money can have both favorable and unfavorable effects on the economic progress of nations. C. Aydin et al. [4] collected data from 11 countries to determine the impact of tax policies on economic growth by applying a panel threshold model and determining a non-linear correlation. The results show that the optimal thresholds are approximately 18.00% of GDP for transition economies, 18.50% of GDP for developing economies, and 23.00% of GDP for developed economies. In addition, G. Ofori-Abebrese et al. [5] also collected data on the tax-to-GDP ratio for the period 2007–2017 and applied the threshold model to determine the economic growth rate of 8.88%. To achieve this, the optimal tax rate is 15.30% instead of the current tax-to-GDP ratio of 27.69%.

The literature also argues that tax policy is closely related to economic growth because taxes are collected from economic entities, which means that economic entities must share a part of their profits to contribute to the state budget. However, according to Keynesian, the government should borrow domestic or foreign debt for economic growth, but should not raise taxes or issue money [6].

Besides S.A. Kharusi and M.S. Ada [7] focused on studying the impact of tax policy on economic growth through the relationship between the government's external debt. The results show a negative impact of external debt on economic growth; as external debt increases, the government must repay much more, while the economy slows down. Thus, the government must consider implementing an appropriate fiscal policy for economic growth and reducing its dependence on foreign public debt [8].

Regarding government debt, economic growth, and tax policy, the authors collected 40 years of data and applied a threshold regression model to determine the correlation between public debt and economic growth of the country. In Greece, empirical results show that this correlation is a positive and statistically significant effect of debt on GDP growth. The public debt crisis in Greece started from the end of 2009 to 2010 and was considered part of the European debt crisis at that time. The debt crisis was concentrated over three years (2009–2011) with very serious consequences. The fact that the public debt crisis in Greece shows that its public debt management policy is inappropriate indicates serious weak issues related to public debt and economic growth [9, 10].

The literature is also related to public debt and economic growth, applying a threshold regression model to determine the optimal public debt threshold,

which shows that public debt and economic growth have a negative relationship when the optimal tax threshold is exceeded. Thus, an increase in public debt adversely affects Africa's economic growth. The results of this study can serve as a reference for governments to determine the public debt threshold for an appropriate fiscal policy. Therefore, the threshold model is often used to determine the optimal threshold for economic events related to economic growth [11–14].

Besides, some studies mentioned public debt, economic growth, and tax policy, and applied a threshold model to find the optimal threshold. If the economic indicators exceed the threshold or are lower than this optimal threshold, it will negatively affect economic growth [15–19]. Although these studies do not directly deal with tax policy, most public debt is related to tax policy. Therefore, this study served as the basis for developing the methodology described below.

Tax policies and economic growth are also government's concerns, so the literature investigates the correlation between tax policy and economic growth. The empirical results show that tax policy and economic growth are causally related in Ghana [20, 21].

Tax policies play an important role in each country's socioeconomic development. Considering how tax policy affects economic growth, another study examined the relationship between tax revenue, government spending, and economic growth. In the short run, there is one-way causality between tax policy and government spending, and in the long run, a two-way relationship exists between economic growth and tax revenue [22, 23].

The threshold regression model has been applied in many studies to determine the optimal public debt threshold because public debt meets capital for development investment, offsets the state budget deficit, and creates resources for the state to regulate financial market information and monetary policy implementation. However, public debt increases the pressure on national economic growth and development. S.H. Law et al. [24] explored the impact of fiscal policies on economic growth through the public debts of 71 countries. For an economy to develop, public debt must not exceed 51.65%. Based on these results, governments can formulate appropriate fiscal policies for each economy.

Most studies have used the threshold model method and other models in different research areas to analyze the impact of tax policy through the tax-to-GDP ratio, public debt, and economic growth. These methods include nonlinear modelling, threshold analysis, panel threshold dynamics, and threshold regression. These methods are often used to analyze interrelated factors in the economic field. Therefore, to explore the optimal GDP tax threshold and issues related to tax policy and

economic growth in Vietnam's economy, this study applies the threshold regression method [25].

Although there are many methods and criteria for evaluation, they depend on the research objective of each author. However, the results of previous studies are relevant only to the scope and context of the study, depending on the purpose of the literature. Therefore, this paper focuses on Vietnam's fiscal policy through the relationship between taxes -to -GDP, simultaneously, provides some criteria related to the optimal tax-to-GDP threshold for economic growth to suggest fiscal policies suitable for long-term strategic economic growth.

## METHODOLOGY AND HYPOTHESES DEVELOPMENT

This study applies a threshold regression model to empirically analyze tax on GDP and economic growth because threshold models are widely used in financial and macro analyses because of their simplicity and clarity in policy implications. B.E. Hansen [26] proposed a threshold model with a fixed-effects estimate, which is commonly used for time-series data.

E. J. Hannan and B. G. Quinn [27] showed that economic growth is expressed as a percentage. By taking the difference of GDP between years, most countries use this index to formulate macro-policies such as high employment and inflation policies.

$\Delta_{GDP}(\%)$  is the GDP growth rate variable, the GDP growth rate is the annual change in a country's economic output, which is an important indicator used to measure the health of the economy. ( $Tax\%$ ) is the tax-to-GDP ratio, the tax-to-GDP ratio is the ratio at which the government's budget receives tax revenue compared to the gross domestic product (GDP). The World Development Indicators website has data collected from 1994 to 2020 in Vietnam, that are accessible there.<sup>1</sup>

S. Biswas et al. [28] examined how tax policy impacts economic growth and how the dynamics of economic growth are impacted differently by government taxation. Economic growth is the increase in the gross domestic product (GDP), gross national product (GNP), or national output per capita (PCI) over a given period. Regarding economic growth and tax policy, studies have focused on exploring economic growth and tax policy as well as how economic growth affects social welfare, such as inflation, unemployment, etc. [29–31].

According to B.E. Hansen [26] the paper applies a threshold regression model to estimate and assumes

these thresholds are constant over time. The data from a balanced panel of tax-to-GDP and economic growth are as follows  $(y_{it}, q_{it}, x_{it} : 1 \leq i \leq n, 1 \leq t \leq T)$ , in which the subscript  $i$  indexes the individual and the subscript  $t$  indexes time, The dependent variable  $y_{it}$  ( $\Delta_{GDP_{it}}$  is GDP growth) is scalar, the threshold variable  $q$  is scalar and the regressor  $x_{it}$  ( $Tax\%$  is a tax-to-GDP ratio) is a  $k$  vector, so the model is written as:

$$\Delta_{GDP_{it}} = \mu_i + \beta_1 Tax\%_{it} I(q_{it} \leq \gamma) + \beta_2 Tax\%_{it} I(q_{it} > \gamma) + \omega_{it}. \quad (1)$$

In which  $I(\dots)$  is the indicator function, so the formula (1) is written:

$$\Delta_{GDP_{it}} = \begin{cases} \mu_i + \beta_1 Tax\%_{it} + \omega_{it}, & (q_{it} \leq \gamma) \\ \mu_i + \beta_2 Tax\%_{it} + \omega_{it}, & (q_{it} > \gamma) \end{cases}$$

The formula (2) is set up for compact as follows:

$$Tax\%_{it}(\gamma) = \begin{cases} \beta_1 Tax\%_{it} I(q_{it} \leq \gamma) \\ \beta_2 Tax\%_{it} I(q_{it} > \gamma) \end{cases} \text{ and } \beta = (\beta_1, \beta_2) \text{ so that (2) equals}$$

$$\Delta_{GDP_{it}} = \mu_i + \beta_1 Tax\%_{it}(\gamma) + \omega_{it}. \quad (2)$$

D.N. Gujarati [32] showed that the observations are divided into two levels, this depends on whether the threshold variable  $q_{it}$  is smaller than or greater than the threshold  $\gamma$ , besides, the levels are distinguished by differing regression slopes,  $\beta_1$  and  $\beta_2$  which is required that the elements of  $x$  are not time-invariant. Furthermore, model (2) is assumed as the threshold  $q_{it}$  is not time-invariant,  $\omega_{it}$  is independently distributed and identically distributed with zero mean and finite variance  $\delta^2$ , excluded lagged dependent variables from  $Tax\%_{it}$  variables:

Multi-threshold regression model, according to [26], if there exists a two-threshold effect, the regression model is defined in a reduced form as follows, with the assumption that  $\gamma_1 < \gamma_2$ :

$$\begin{aligned} \Delta_{GDP_{it}} = & \mu_i + \beta_1 Tax\%_{it} I(Tax\%_{it} \leq \gamma_1) + \\ & + \beta_2 Tax\%_{it} I(\gamma_1 < Tax\%_{it} \leq \gamma_2) + \\ & + \beta_3 Tax\%_{it} I(Tax\%_{it} > \gamma_1) + \omega_{it}. \end{aligned} \quad (3)$$

The paper only focuses on research methods for the two-threshold regression model, so this model is applied for estimating countries' optimum tax threshold and GDP growth.

G. Schwarz [33] showed that testing the threshold regression model is to test whether the threshold value is statistically significant in Equation (3), which is necessary to test the following hypothesis:

<sup>1</sup> World-Bank-Development. World Development Indicators. 2020. URL: <https://data.worldbank.org/indicator/GC.TAX.TOTL.GD.ZS> ; World-Bank-Development. World Development Indicators. 2020. URL: <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG> (accessed on 15.08.2023).



The hypothesis  $H_0 : \beta_1 = \beta_2$  leads to  $H_0$  is rejected, if the hypothesis  $H_0 : \beta_1 \neq \beta_2$ ,  $H_0$  is not rejected, it can be concluded that the threshold effect between the variable  $\Delta_{(GDP_t)}$  and the variable  $\Delta_{(GDP_t)}$  of equation (3) does not exist, so the hypothesis  $H_0 : \beta_1 \neq \beta_2$ ,  $H_0$  is accepted. Besides, to test the existence of the threshold effect, [26] applied the bootstrap method to calculate the likelihood ratio.

H. Akaike [34] said that, the ADF test result, which is Akaike's Information Criterion, was used to select the optimal  $k$  lag for the ADF model. Thus, the  $k$  value is chosen when the AIC is the smallest:

Testing hypothesis:

$H_0 : \beta = 0$   $\Delta_{(GDP_t)}$   $Tax_{\%t}$  are the non-stationary data time-series)

$H_1 : \beta < 0$   $\Delta_{(GDP_t)}$   $Tax_{\%t}$  are the stationary data time-series).

The cointegration test for data series according to [35] is to determine the number of linear combinations of cointegration between stationary time series at the first difference, thereby showing how many relationships exist in an equilibrium system in the long run. M.H. Pesaran and Y. Shin [36] showed that Johansen's cointegration test, which is used in a multivariate framework, is applied to determine cointegration relationships between dependent and independent variables, so the paper applied this model to test whether the variables are I(0) or I(1) variables, and Johansen's methodology takes its starting point in ARDL model of order  $p$  given by S. Johansen [37]:

$$Z_t = AZ_{(t-1)} + \dots + A_n Z_{(t-n)} + \beta X_t + \varepsilon_t, \quad (3)$$

where  $Z_t$  is the vector for the degree of difference 1 – I(1) independent and dependent variables,  $X_t$  is the vector of the non-random variable and  $\varepsilon_t$  is the error correction term, according to D. Dickey and W.A. Fuller [38], J. G. MacKinnon [39] the study applied methodology to explore the impact of the tax on GDP and GDP growth in Vietnam, America, and South Africa.

The above method is the basis for exploring the optimal thresholds of tax to GDP and how it affects economic growth if the tax revenue exceeds or collects taxes under this optimal threshold, so these issues are discussed below.

## RESULTS

The paper applied unit root testing to check whether a time series variable is non-stationary, the results show that the economic growth and tax-to-GDP variables are non-stationary at lag I(0), as both Prob.\* of 0.1319

and 0.6192 are greater than alpha at 0.05, and the test critical values of GDP are  $-3.71145$ ,  $-2.98103$ , and  $-2.629906$ , respectively, which are greater than the Augmented Dickey-Fuller test statistic of GDP of  $-2.4787$ , alpha at 1%, 5%, and 10%, respectively. The tax-to-GDP variable is similar to the GDP variable (see Table 1).

As mentioned above, the data for GDP and tax-to-GDP are non-stationary at lag I(0); therefore, they continue to be 1<sup>st</sup> difference. The results show that both datasets are stationary at I(1) at the first difference; specifically, Prob. \* of GDP and tax-to-GDP are 0.0020 and 0.0010, respectively, which are less than alpha (0.05), indicating that both data are stationary at an alpha of 1%, 5%, and 10%. In other words, both variables have test critical values for GDP ( $-3.724070$ ,  $-2.986225$ , and  $-2.632604$ ), which are less than the t-statistic values ( $-4.415401$ ) at the alpha levels of 1%, 5%, and 10%. Tax-to-GDP data are interpreted similarly to the GDP data (see Table 2).

Although the data were fit and statistically significant with the model through tested data for stationarity at the first difference I(1), the cointegration test is necessary; thus, this study applied this method to consider whether the model is a spurious regression model, which shows that Vietnam's model has a cointegration at 0.05, specifically, the Critical Value of 3.841466 is greater than the Trace Statistic of 1.051070, so it has a cointegration at alpha 0.05 (see Table 3).

The results show that the regression threshold model of Vietnam in the case of taxes-to-GDP  $< 19.298549\%$ , with a p-value of 0.0106 less than alpha of 0.05, this shows that Vietnam's tax-to-GDP is fit and statistically significant; however, to find the optimal threshold, the study applied the threshold specification method, so Vietnam's tax-to-GDP optimal threshold level is 19.19478%, and the correlation of the two variables is relatively close, with the R-squared of 65.2693% (see Table 4).

The inverse roots of the AR characteristic polynomial graph were applied to examine the stability of the threshold regression model, assuming that it is stable if the residual is a stationary time series and all solutions of the feature polynomial lie in the unit circle or if the computational modulus is less than 1. Therefore, this study relies on the stability of the threshold regression model to determine whether taxes-GDP and GDP growth have been stable.

In addition, the time-series data are tested using the inverse roots of the AR characteristic polynomial method to determine whether they fit the model, where the dot symbols are outside the circle, or if the test value of the time-series data is greater than one unit, which

Table 1

## Summary of Unit Root Test at Lag I(0)

Item	Alpha level	Vietnam	
		GDP I(0)	TAX I(0)
Augmented Dickey-Fuller test statistic		Prob.*: 0.1319	Prob.*: 0.6192
		t-Statistic	t-Statistic
		-2.478759	-1.288550
Test critical values:	1%	-3.711457	-3.711457
	5%	-2.981038	-2.981038
	10%	-2.629906	-2.629906

Source: Compiled by the author from Eview 9.0.

Note: \* MacKinnon [39] one-sided p-values.

Table 2

## Summary of Unit Root Test at Lag I(1)

Item	Alpha level	Vietnam	
		D(GDP) I(1)	D(TAX) I(1)
Augmented Dickey-Fuller test statistic		Prob.* 0.0020	Prob.* 0.0010
		t-Statistic	t-Statistic
		-4.415401	-4.702749
Test critical values:	1%	-3.724070	-3.724070
	5%	-2.986225	-2.986225
	10%	-2.632604	-2.632604

Source: Compiled by the author from Eview 9.0.

Note: \* MacKinnon [39] one-sided p-values.

Table 3

## Summary of Vietnam's Unrestricted Cointegration Rank Test (Trace) of tax to GDP and GDP growth (Lags interval (in first differences): 1 to 2)

Item	Hypothesized	Eigenvalue	Trace Statistic	0.05	Prob.**
	No. of CE(s)			Critical Value	
Vietnam	None *	0.559614	20.73354	15.49471	0.0074
	At most 1	0.042849	1.051070	3.841466	0.3053

Source: Compiled by the author from Eview 9.0.

Note: \* Trace test indicates 1 cointegrating eqn(s) at the 0.05 level; \* denotes rejection of the hypothesis at the 0.05 level; \*\* MacKinnon [39] one-sided p-values.

does not fit the model and is unstable or statistically significant. Therefore, the model is rejected. However, these empirical results show that Vietnam's data time series are inside the circle; that is, all the estimation values of the variables are less than one, so the data are fitted to the threshold regression models (see Fig.).

## DISCUSSION

Based on the empirical results, governments with appropriate tax policies, especially Vietnam, should adjust to suit the economic growth, the empirical results show that GDP and the tax revenue rate are closely related because high GDP growth contributes to increased tax

Table 4

## Discrete Threshold Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
<b>Taxes – to – GDP &lt; 19.298549</b>				
Taxes – to – GDP	0.238789	0.084191	2.836271	0.0106
C	2.211116	1.577643	1.401531	0.1772
<b>19.298549 ≤ Taxes – to – GDP</b>				
Taxes – to – GDP	–0.070903	0.088651	–0.799796	0.4337
C	7.379289	1.757826	4.197964	0.0005
Optimal threshold: Adjacent data values: <b>19.19478</b>				
R-squared: <b>0.862693</b>				
Adj. R-squared: 0.766276				

Source: Compiled by the author from Eview 9.0.

Note: Dependent Variable: Vietnam's GDP Growth; Threshold variable: Vietnam's taxes-to-GDP.

revenue. In addition, when the government's tax policy is unreasonable, the GDP growth decreases and vice versa. A reasonable tax revenue rate stimulates business activities, consumption, and the GDP growth.

The above empirical results are based on the hypothesis to evaluate the stationarity of the data, showing that the data is non stationarity at the difference  $I(0)$ ; thus, hypothesis  $H_0$  is accepted. The results of the stationarity test for both Vietnam's variables are non-stationary at the difference  $I(0)$ . Normally, GDP is calculated at the end of the year through the final goods and services. Therefore, a tax policy is a long-term process carried out by economic entities. The tax policy includes value-added tax, corporate income tax, import and export taxation, and special consumption tax. However, corporate income and value-added taxes contribute significantly to budget. Therefore, the results indicate that enacted tax policies do not affect economic growth immediately. Currently, an individual economy is identified as an important factor for economic development in Vietnam.

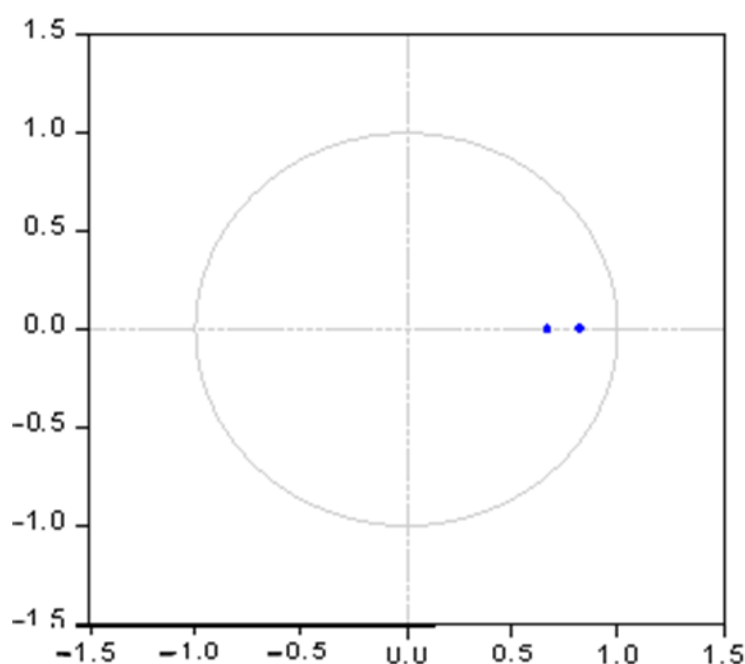
However, when the results of the stationarity test for both Vietnam's variables are stationary, hypothesis  $H_1$  is accepted. They are stationary at the difference  $I(1)$ , which shows that as Vietnam increases or decreases its tax ratio to GDP, there is an impact on GDP in the following year. As mentioned above, when fiscal policy is issued by the government, economic entities need to have time, which is usually a year, to assess the issues related to their production and business and consider the effects of fiscal policy on them. Therefore, the

empirical results reflect the economic nature and are meaningful to policymakers.

Based on methodology, this study applies a threshold regression model to determine the optimal conditions for each model. If tax revenues exceed this level or lower, the economy slows down.<sup>2</sup> According to Revenue Statistics in Asia and the Pacific 2022 – Viet Nam, and Tax-to-GDP ratio compared to other Asian and Pacific economies and regional averages, 2020, Vietnam's tax-to-GDP ratio was 22.7% in 2020, above the Asia and Pacific average of 19.1% by 3.6 percentage points. It was below the OECD average (33.5%) by 10.8 percentage points. Based on formula (2), economic growth is forecasted at the optimal tax-to-GDP threshold as follows.

The model forecasts that GDP growth is 0.238789% (the tax-to-GDP ratio variable) + 2.211116% (the coefficients of the constant) = 2.449905%; the case  $19.298549 \leq \text{taxes-to-GDP}$  shows that beta is negative, which means that the two variables are negatively correlated; when the tax variable increases, the GDP variable decreases, and vice versa, and its p-value is 0.4337, which is greater than 0.05 alpha, so the model, in this case, is not suitable and has no statistical significance. According to aggregated data from the Ministry of Finance, tax is the main source of budget revenue, often accounting for more than 70% to more than 80% of total state budget revenue. The tax revenue-

<sup>2</sup> URL: <https://www.oecd.org/tax/tax-policy/revenue-statistics-asia-and-pacific-vietnam.pdf> (accessed on 15.08.2023).



**Fig. Vietnam's Inverse Roots of AR Characteristic Polynomial**

Source: Compiled by the author from Eview 9.0.

to-GDP gradually decreased from 24% (2006–2008) to 18% (2014–2019). The density of indirect taxes increased sharply, whereas the density of direct taxes decreased rapidly.

## CONCLUSION

This paper applied a threshold regression model to discover the optimal threshold tax-to-GDP ratio, and built a model to predict the influence of thresholds on economic growth. In addition, there are suggestions for fiscal policies for each tax that the government should refer to when formulating fiscal policies in line with economic growth.

The results show that tax policy has positive effects on Vietnam's economic growth through the optimal tax-to-GDP thresholds. The tax policy includes taxes, and each tax has a different contribution. Almost all these taxes account for a large proportion of the budget, therefore, the government should prioritize the appropriate adjustment of tax rates for each economic

entity. Simultaneously, the government improved its management to maintain revenue and promote each tax's role in economic growth. Based on the empirical results, governments should make greater efforts to improve fiscal policies to promote economic growth and reduce budget deficits.

Based on the empirical results, the government should make greater efforts to improve fiscal policies to promote economic growth and reduce budget deficits. Fiscal policy greatly affects economic entities; that is, economic organizations create wealth for society and high employment, leading to reduced unemployment. Tax-to-GDP ratio has a positive effect on GDP growth when tax policy is implemented based on an optimal threshold of tax-to-GDP. Currently, Vietnam's tax-to-GDP ratio tends to decrease, which has helped to increase enterprises' capital to reinvest in production and economic growth. In addition, tax policies should have incentives to attract domestic and foreign investors, which can help businesses improve their competitiveness.

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### ИНФОРМАЦИЯ ОБ АВТОРАХ / ABOUT THE AUTHORS



**Doan Van Dinh** — Cand. Sci. (Econ.), Faculty of Finance and Banking, Industrial University of Ho Chi Minh City, Ho Chi Minh, Vietnam

**Доан Ван Динь** — кандидат экономических наук, факультет финансов и банковского дела, Промышленный университет города Хошимин, Хошимин, Вьетнам

<https://orcid.org/0000-0003-4569-5152>

*Corresponding author / Автор для корреспонденции:*

citydinhninh@yahoo.com

doanvandinh@iuh.edu.vn



**Ngyuen Thi Ha** — Cand. Sci. (Econ.), Faculty of Accounting — Auditing, Thuongmai University, Hanoi, Vietnam

**Нгуен Тху Ха** — кандидат экономических наук, факультет бухгалтерского учета — ревизия, Университет Тхыонгмай, Ханой, Вьетнам

<https://orcid.org/0009-0006-8517-0667>

ha.nt@tmu.edu.vn

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