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Impact of tax structure system on GDP and progressivity: The case of Vietnam

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ABSTRACT: To find out impacts of tax structure system in Vietnam on GDP and progressivity, models employed are Fixed-Effects and Two-Stage Least Squares, together with the regression model of tax progressivity. Data's source is from Vietnam General Statistics Office. It is cross-sectional time series over the period 1997-2010 for different 61 provinces in Vietnam. Findings present that Vietnam's tax policies are progressive, their integration policy impacts on the economic growth positively. In addition, the result is proved there is a significant relationship between the state budget and GDP. As a result, the budgetary expenses must be paid attention strictly. Because coefficients of value-added tax and corporate income tax are positive and significant, an increase in value-added tax or/and corporate income tax causes an increase in GDP. However, this view for a long-term is a negative impact on the economic growth, because the country can lose competitive advantages to attract foreign development investment, if keeping high tax rates. Note that several inadequacies in policies need reforms in both policies and tax structure system, in which corporate income tax must be focused, because of mobilization of financial outside the state is unstable. Currently, tax policies in Vietnam combine so many goals in each form of encouragement while the policy objectives are conflict, which makes difficulties to carry out. Existing lack of harmony among the taxes in the tax policy can cause a main reason of a decrease in the revenue target of the state and in regulating macro economy.

KEYWORDS: Tax, Fixed-effects, GDP, State budget, Investment.

1 INTRODUCTION

To push up growth and economic development up, improving policies of tax plays is a key point of each country. Tax has a mutual impact on socioeconomics and people's income, also is a main revenue of a country. Tax evasion is considered to be of serious concern to those dealing with taxation issues of a country because of several reasons, the major as it results in the loss of revenue. However it can create both positive performance and negative performance. Reference [1] finds negative impacts of taxes on openness and total tax revenue to the economic growth in twelve countries of OECD. He also argues that the tax rate of capital is reduced, it will cause the capital inflow to a country, because tax policy can be used to affect the amount of entrepreneurial activity more broadly. One of main reasons makes taxes negatively influencing company's business, because a tax plays as a kind of cost. An increase in company's cost, due to tax, make a decrease in revenue of company. As a result, it can dispirit company's mind accessing the market and causes economic growth down of a country [2], [3].

In addition, many research find a valid impact of tax on the growth rate [4], [5], [6], [7]. Those authors conclude that a decrease in tax rate causes an increase in the economic growth for a long-term. Like [4], [5] also confirm a long-term economic growth is existed if a low tax rate is taken into account. So, up 1% tax makes the decreasing from 2-3% GDP. In contrast, reference [6] argue the increasing of tax imposed on capital can recover the economy of country. Based on

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arguments of authors just pointed out, this article is going to explore the relationship between collected taxes and economic growth based on econometric models.

2 CHANGE PRESSURES IN TAX POLICY OF VIETNAM

Duration 1986-1995

Changes in tax in Vietnam mainly experienced from 1990 to 1995 to ensure state budget sufficiently. Those were prioritized in tax reforms, such as import tax imposed since 1988, return tax imposed since October 1990 (included eleven different tax rates from 0.5% to 40%) with many other taxes like excise taxes and income taxes. Shortly, changes in tax structure over this period have affected the growth of GDP and the state budget.

Duration 1996-2005

Many tax policies are changed in this period. Indeed, the 11th National Assembly approved two laws related to value-added tax (VAT) and corporate income tax (CIT) on January 1, 1999. However, VAT is popular for developed countries in over sixty years ago. Two countries had introduced VAT since 1966, by 1985, 35 countries had done so, and in 2004, 134 countries collected tax revenue with VAT [8].

Besides, tax reforms in Vietnam during 1996-2005 impressed a necessary point must be done in the early period of Vietnam's market economy associated with socialism orientation, due to the embargo lifted by the USA in 2000. Therefore, Vietnam promotes industrialization, modernization, and opens door toward the world integration. As a result, VAT is initially imposed on goods. Although its level is 10%, it levies 5% on goods of software computer, mechanical products, etc, with purposes to stimulate industrialization. To attract foreign investors, the government imposed the same level of tax rate for domestic and imported goods, which contribute into playing a fair game between local and foreign investors. Besides, income tax rates are also paid attention to changing.

Duration 2006-2010

The government set out three goals: (i) reducing tax rates; (ii) expanding taxes imposed on areas; (iii) stimulating production and investment to stabilize the government's budget. Therefore, CIT is adjusted in accordance with the international integration. Besides, Vietnam takes a commitment involved transparency for investors, because it can cause willingness of investors. VAT is also taken into account of adjustment. In addition, deduction in expenditure addition is also taken into account of adjustment, expenses considered are advertising and promotion cost, science research, technology innovation, training fees and expenditures for female labor. In addition, tariff taxes are changed, so on.

Although many policies of taxes are adjusted, effects of global economic crisis make a reduction in the government's budget. It, of course, negatively influence the economic growth. Therefore, GDP growth declined from 8% in 2008 to 5.3% in 2012 [27], reaching the bottom from last 10 years[1].

3 REVIEW OF THEORY

Many studies found the tax structure is related to economic growth in a country. To demonstrate an existing relationship between taxes and economic growth, statistical models are considered. Therefore, use ordinary leas square (OLS) model, in which GDP is the dependent variable, the independent variables include the national growth rate, the growth rate of overall productivity, foreign direct investment, collected tax, corporate income tax, goods and services tax, import tax, and so on [9]. The result showed that the dependent and independent variables have a linear relationship. Find the economic recovery of middle income countries through collected corporate tax [10].

Some authors argue that increased taxation can cause the fall in economic growth. Accordingly, Reference [1] and [11] found the negative impact of tax revenue's components such as corporate income tax and marginal tax rate on the economic growth. However, reference [12] and [13] conclude that there is positive correlation between taxes and economic growth, in which tax ratios, components of tax structure such as personal income, corporate income tax, sales tax and other will improve the economics growth in a country, which is argued by [8].

[1] *Vietnam General Statistics Office*

Use cross-country data during 1970-1997, with application of fixed effect regression, they found an increase in corporate tax rates lead to lower future growth rates within countries [14].

Under the policy of liberalization trade, the country can attracts foreign capital, which contribute into labor generation, although the early stages of liberalization, the revenue outcomes may be minor. Normally, the motivation of this activity is to set up competitive tax rates to neighbor countries. The result is that international tax competition produces higher average capital tax rates than in the absence of competition.

Use panel data for 117 countries over 32 years and find many developing and emerging market countries still heavily dependent on trade tax revenues [10].

Uses a regression model on time series data of 175 countries from 1948 to 1999, and proves that economic growth in 104 countries after they became a member of the WTO [15]. Therefore, the results indicate that there is a strong impact on the economic growth of a country, when that country sets up open policies of international business and free trading.

In recent years, countries around the world, included Vietnam, strengthen free trade policies, because changes in economic climate can cause a reduction in the economic growth. Therefore, reference [16] shows that GDP increase with a positive change in public policies, with an increase in the ratio of efficient expenditure policy.

4 METHOD AND DATA

Many papers use fix effect regressions to find out how relationship between tax and economic growth, e.g. [10], [4], [17]. With an unbalanced pool data consists of 769 annual observations for 43 countries over the period 1973-2003, reference [18] used the model U= U(Y-T, G, Lf, NT) to measure how relationship between GDP (Y), total government tax revenue (T), total government spending (G), net flow of foreign loans granted to the public sector (Lf), and total government non-tax revenue (NT). Use fixed-effect regressions based on cross-country data during 1970-1997 to measure impacts of taxes on GDP [14]. Likely, use panel data for 117 countries over 32 years, which fixed effects and two-stage least squares (2SLS) are applied [10]. Likely, reference [17] rise the model of fixed effects and 2SLS based on panel data and find that a higher provincial statutory corporate income tax rate is associated with slower economic growth. In addition, construction a regression model based on the panel data of 27 EU members countries for the period 1998-2010 to measure the relationship between corporate tax burden and economic growth [19]. Applied on arguments pointed out, fixed-effect and 2SLS in this paper are taken into account. Data used is cross-sectional time series over the period 1997-2010 for different 61 provinces in Vietnam. It is collected in each province and Vietnam General Statistics Office (GSO). As mentioned in (1), log of GDP is the dependent, remaining variables are independent. The explanatory variables are value added tax (VAT), corporate income tax (CIT), state budget (SB). These indicators in (1) are in logarithm.

According to (1), i represents the number of provinces in Vietnam, t is time period (year) and ε_{it} is error term. We also include the dummy variables, which D1 is the dummy variable presents change in VAT policy started since 2000, this means, 1 being from 2000 onwards, 0 as the time from before 2000. D2 presents a change in corporation income tax imposed since 2004, 1 being since 2004 onwards, 0 before 2004. D3 equals to 1 since Vietnam was a member of the WTO in 2007 onwards and 0 the period before 2007.

$$\ln GDP_{it} = \alpha_o + \alpha_1 \ln VAT_{it} + \alpha_2 \ln CIT_{it} + \alpha_3 \ln SB_{it} + \alpha_4 D_{1i} + \alpha_5 D_{2i} + \alpha_6 D_{3i} + \varepsilon_{it} \quad (1)$$

To find out the implication of the structure of a nation's tax system, the equation (2) was used by [20], [21], [22].

$$\tau = \tau_0 + \tau_1 y \quad (2)$$

Where τ_0 is a base level of the marginal tax rate and τ_1 determines the degree of progressivity of the tax system. If $\tau_1 = 0$, the marginal tax rate is independent of income, implying a proportional tax system. For $\tau_1 \prec 0$, the tax system is regressive, and for $\tau_1 \succ 0$, the tax system is progressive [23].

To measure tax progressivity, the regression model shown in (3) was developed [24] and found tax progressivity is bad for economic growth.

$$\ln T_t = \alpha_0 + \alpha_1 \ln GDP_t + \varepsilon_t \quad (3)$$

where Tt is the tax revenue in period t. Duration 1965-1995, Iceland and Spain are progressive for tax structure system, because their progressivity are 1.08 and 2.01 respectively [24]. Other countries with high progressivity are Denmark, New Zealand, Swedent, and Switzerland.

Based on equation (2) and equation (3), this paper also applies the model of progressivity to evaluate Vietnam's structure tax system.

5 EMPIRICAL ANALYSIS AND DISCUSSION

Based on cross-sectional time series over the period 1997-2010 for different 61 provinces in Vietnam, figure 1 produced means that there is an increase in GDP, VAT, TCI and TB during 1997-2010, in which the provincial buget is always highest value, this is not surprised, because it is a main revenue source gathered by many revenues, e.g. taxes. With that VAT is a main contribution to the budget, its share of 32% on average from 1997-2010, while tax on corporate income accounts for average of 14%.

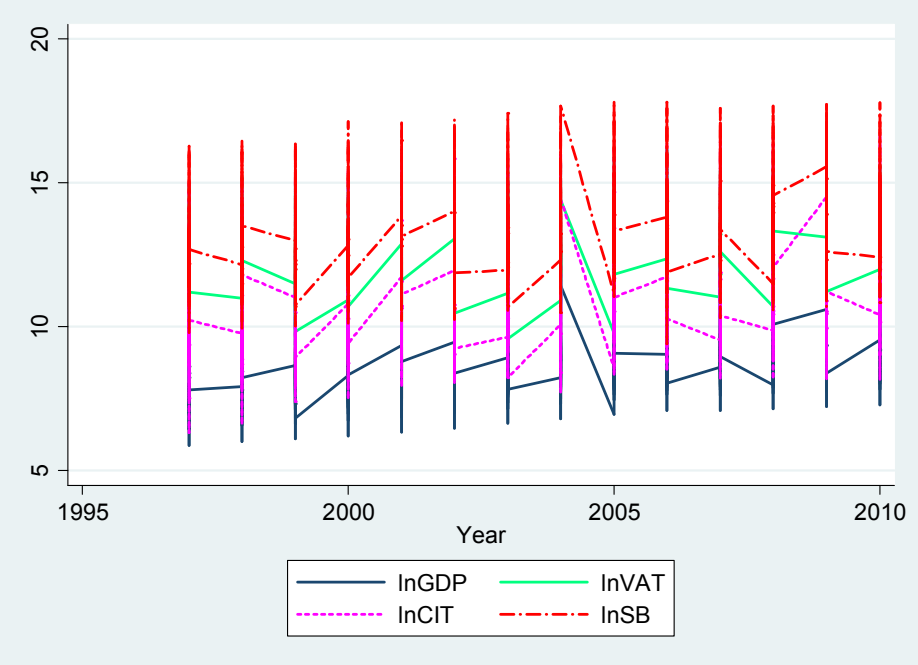

Fig. 1. Presentation of GDP, VAT, CIT, SB (in logarithm) duration 1997-2010

Source: Vietnam General Statistics Office (GSO)

As depicted in figure 2, an increase in lnVAT causes a raise in lnGDP, similarly for lnCIT and lnSB. As a result, there may be linear relationships between lnGDP as a dependent variable and independent variables, e.g. lnVAT, lnCIT, lnSB. Based on statistical evidence, all tax structures are significant and correlated with GDP [4]. However, those relationships are negative. This result is also consistent with the most previous studies of taxes such as [25], [26], [17].

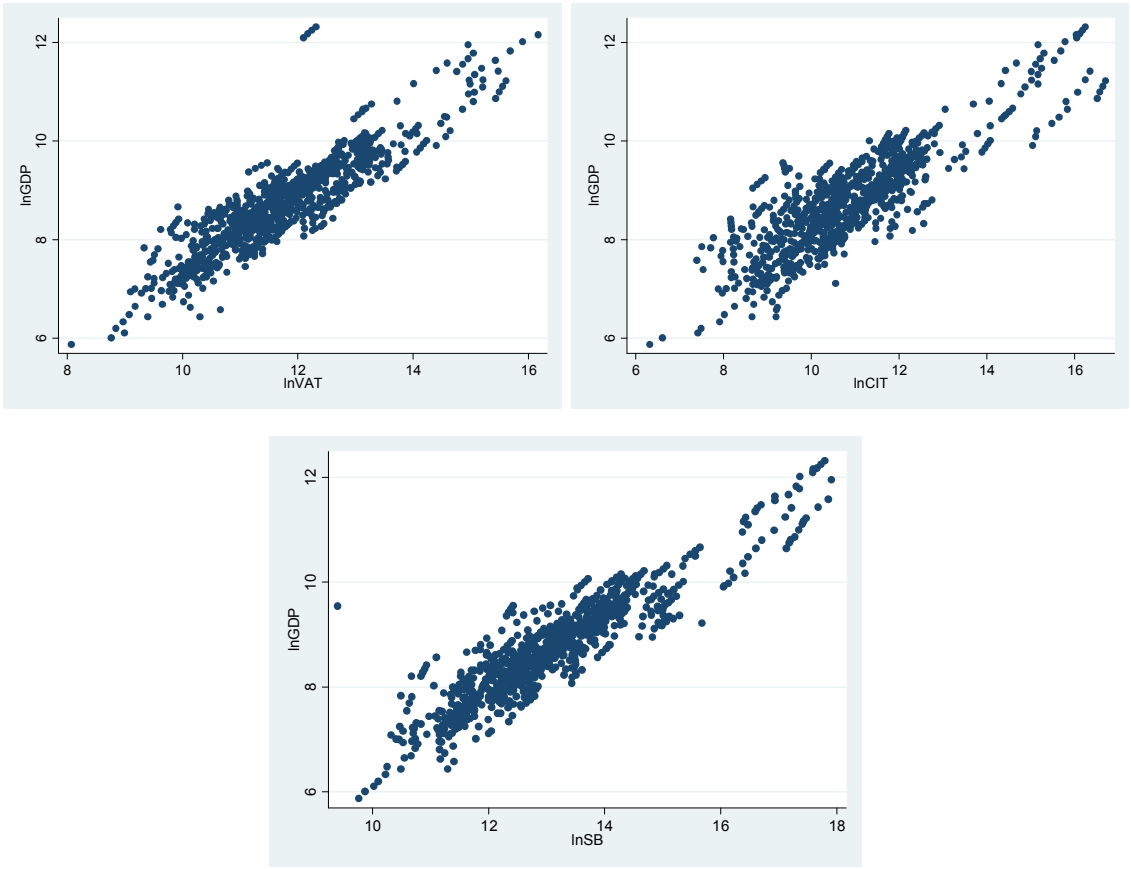

Fig. 2. Correlation between lnGDP and lnVAT, lnCIT, and lnSB

Source: GSO

To confirm the relationship between tax structure and economic growth, we can check results in table 1. Accordingly, fixed-effects and Two-Stage Least Squares (2SLS) are employed with 850 observations, and their R-squared are 0.843 and 0.867, respectively. In addition, F test of two models are significant at any level, conclusion is the model of (1) is goodness of fit. As mentioned in table, coefficients estimated in fixed-effect regression are significant at any level, while coefficients of lnCIT in 2SLS is significant at 10% and of D2 is not significant at all. As a result, findings mean that tax structures in Vietnam duration 1997-2010 have a significant and positive impact on GDP. It means that if the tax cuts 1% introduced by the provincial government, the economic growth will fall down around 0.1%. This result is opposite to Lee and Gordon (2005) [14]. Therefore, according to Lee and Gordon, a cut in the corporate tax rate by 10% points will raise the annual rate by one to two percentage points. Similarly, a 1% point cut in the corporate tax rate is related to a 0.1-0.2% point increase in the growth rate [7].

D1 presents an evidence of changes in Government policy for VAT. As resulted in regressions, the rate of VAT changed since 2000 has a positive impact on the growth of GDP. Similarly, D2 is significant in fixed-effect regression, this can conclude that changes in corporate income tax from 28% to 25% since 2004 onward is positive for the economic growth. As a result, changes in Vietnam's tax structure prove a positive influence to the economic growth. In addition, the result also confirm a positive change in Vietnam's integration policy to being a member of WTO, because there is an evidence of the significant relationship between D3 and GDP.

Similarly, D2 depicts changes in tax policy imposed on corporate income tax from 28% to 25% since 2004 onward, this decision is a positive impact on GDP. It has created good conditions for actors in the market to maintain and expand their business, not only for local investors, but also for foreign investors. D3 presents the period that Vietnam economy is verified a member of WTO in the beginning of 2007. Because the coefficient of D3 is positive and significant at any level, conclusion is Vietnam's GDP growth is existed after 2007. This can be positive changes in economic policies of Vietnam.

Table 1. Results of fixed effects and 2SLS

Variables	Fixed-effects		2SLS	
	Coefficient	P-Value	Coefficient	P-Value
lnGDP	0.100	0.000	0.208	0.000
lnCIT	0.104	0.000	0.058	0.054
lnSB	0.110	0.000	0.381	0.000
D1	0.269	0.000	0.719	0.000
D2	0.319	0.000	0.047	0.218
D3	0.159	0.000	0.097	0.009
Constant	4.5611	0.000	0.482	0.005
R-Squared	0.843		0.867	

In terms of applying equation (3) into panel data, its estimation is resulted in (4) as below. This result means the real progressivity of Vietnam is good for economic growth. In sum, because the coefficient of lnGDP is positive, the tax system of Vietnam is progressive, as proven.

$$\ln T = 1.86 + 1.18 \ln GDP \quad (4)$$

*(12.95)***[2] (71.84)****

6 CONCLUSION

With data of cross-sectional time series over the period 1997-2010 for different 61 provinces in Vietnam, fixed-effects and 2SLS are employed, together with the regression model of tax progressivity. Findings present policies of Vietnam's tax structure are progressive and its integration policy positively impacts on the economic growth consistent with [15], which the performed regression shows a positive effect of variables lnVAT, lnCIT, lnSB and dummy variables of D1, D2, D3 on the growth. Conclusion, an increase in VAT or/and CIT causes a rise in the growth of GDP, which is in line with [6]. However, this view for a long-term is negative impact on the economic growth because the country can loose competive advantages of tax policies. In addition, changes in tax burden will affect saving behavior of consumers or taxpayers.

As found by some paper, reduction of the tax burdent will have a greater effect in the economic growth of a country, also attract more FDI. Note that accessing the WTO of Vietnam since 2007 is a positive impact on GDP, but it can be a main pressure for the government pay attention to reforming tax rate.

In general, the structure of the tax system in Vietnam must have the appropriate changes to be in line with the economic development. Budget expenditures must be also paid attention considerably, because the result is proved that there is a significant relationship between the budget and GDP.

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