Tax Burden and Economic Growth: Theory and Practice in Vietnam

Hua Liu 1, Huu Cung Nguyen 1,2* and Thu Huong Tran 1

1 Huazhong University of Science & Technology, Wuhan, China
2 Hung Vuong University, Viettri, Vietnam

Abstract. In terms of theory and practice, it has been demonstrated that reasonable tax burden can stimulate economic growth, or conversely, excessive tax burden can stifle economic growth. The purpose of this paper is to clarify the nature of the relationship between tax burden and economic growth in Vietnam in the recent time. To solve this problem, the authors will use a combination of qualitative analysis method and quantitative analysis method. The paper will answer the question which is whether the tax burden factor is one of leading important factors in stimulating economic growth in Vietnam. The paper will test the findings from qualitative analysis method by determining the contribution level of the tax burden to economic growth in Vietnam. The paper also compares the effectiveness level of the application of the tax burden policy to stimulate economic growth between Vietnam and China. The results showed that the effectiveness level of Vietnam is lower than China's.

Keywords: Tax burden; Economic growth; Economic growth and tax burden

1. Introduction

How to apply the tax burden to stimulate economic growth and increase state budget revenues is very important for each country. The fact shows that the effectiveness level of each nation in solving this relationship is different. The reason of this problem derives from the difference in natural conditions, developmental potentials, developmental environment, culture, history and government’s implementation ability. The history of tax policy application occurred in two obvious phenomenons: The first, phenomenon is that when the tax burden is used excessively, state budget revenue soars but makes a huge loss on the economy and beyond the economy’s bear and finally results in below potential of the whole social’s productivity. The second, phenomenon is tax burden decrease to increase national savings, stimulate aggregate demand, raise capital accumulation to expand business scale for enterprises. However, the state budget revenue falls in the beginning. A fall in state budget revenue, in fact, doesn’t matter in the case of country where government’s intervention in the economy is not so deep and the government needs an enough budged to do some essential tasks that can’t be done or aren’t desirable to do by private sectors.

In Vietnam, the role of tax burden in economic growth follows these above phenomenons. From the perspective to action, Vietnam usually considers state-owed enterprise system as having the dominant role in socio-economic development, yet budget allocation for this system is bigger and bigger, accounting for 45%-50% of average social investment. Nevertheless, investment and business in state-owed enterprise system are generally ineffective, arising with the situation where state-owed enterprises invest in various sectors which even unassigned, yet investment resources are scattered and losses occur in many years. To have enough capital to support for state-owed enterprise system as well as to save them from shutting down, the government has to use tax tool to collect tax from the economy. However, the using tax burden excessively places so much burden on the economy’s shoulder and this burden is beyond the economy’s ability. The aim of this paper is analyzing the tax burden’s role in Vietnam’s economic development in recent years, answering the question that is if the level of tax burden which has been applied in Vietnam so far is optimum, comparing the effectiveness of burden tax application to economic growth in Vietnam and China.

2. The Theory of the Relationship between Tax Burden and Economic Growth

2.1. Multiplier Model
First we find out the model of aggregate demand and aggregate supply (AD-AS). Aggregate demand (AD) is the total amount of goods that social can purchase at a certain price. In the context of the open economy, aggregate demand consists of four parts: The first is the consumption (C), mainly determined by the disposable income (Yd), which is after-tax personal income. The second is investment (I), that is the private’s spending on purchase of factories, equipments and inventory accumulation. The third is government spending (G) for the procurement of goods and services. The fourth is net exports (NX), the difference between total exports and imports. Thus, the aggregate demand function takes the following form:

\[ AD = C + I + G + NX \]  

(1)

Aggregate supply (AS) is the total amount of goods that firms want to supply at a certain price. Aggregate supply can be divided into the long-term aggregate supply (LAS) and the short-run aggregate supply (SAS). The short-term aggregate supply schedule is a curve that slopes upward. The long-run aggregate supply curve is a vertical at the level of potential output Y.* Specifically see Figure 1.

Now we divide the short-term aggregate supply curve into segments, corresponding to the economic situation of each period. Segment CD showing the economy in recession, has not reached the potential output level, prices and wages have little changes, so that the positive actions of the government to rescue the economy from this crisis are needed. The rescue measures is to reduce the tax burden, thereby people would increase savings which is the basis for increasing the investment demand and the consumption demand. Then the situation of the economy will be moved to DE and EF. Segment EF indicates the situation of the economy at full employment with dramatic change in prices and wages, many times increase in output production. This is called the multiplier mechanism (see Figure 2).

Assumed in the condition of a closed economy, the income function takes the following form:

\[ Y = C + I + G \]  

(2)

To assess the impact of the tax burden on the output, authors can analyze the case of tax as a function of income, \( T = t \times Y \), t is the tax rate. Now disposable income (\( Y_d \)) is determined by the formula:

\[ Y_d = Y - t \times Y = Y - T \]  

(3)

Form of the consumption function: \( C = C_a + mpc \times Y_d \), inferred \( C = C_a + mpc \times (Y - T) \), where mpc is the marginal propensity to consume, reflecting the change of consumption when disposable income changes one unit, \( 0 < b < 1, I = I_a, G = G_a \).

The equilibrium national income function takes the form:

\[ Y_e = \frac{1}{1 - mpc} (C_a + I_a + G_a - mpc \times T) \]  

(4)

Derivative for T, the result is the tax multiplier:

\[ \frac{\partial Y_e}{\partial T} = -\frac{mpc}{1 - mpc} \]  

(5)

\([- mpc/(1 - mpc)]\) is the tax multiplier with negative value. This can explain that the changes in tax and the national income are in the opposite direction. In terms of other unchanged factors, when reducing one tax unit then national income may be increased \([- mpc/(1 - mpc)]\) unit. Thus, if only the impact of the tax burden on economic growth is considered, reducing the tax burden will stimulate economic growth.

2.2. Laffer Model
The supply side economics owes perspectives aiming at using tax instruments to stimulate economic growth. The delegates of this ideology said that economic growth rate is determined by the savings rate and have enough certain accumulation. It’s the savings from incomes that will form capital sources to expand investment and business. In this sense, they said that the State should reduce tax to increase the income of residents and enterprises with the result of increasing opportunities of investment and expansion as well as economic growth stimulation.

Delegate for the supply side economics is A.Laffer economist. He gave the theoretical curve reflecting the dependence between tax rate and total tax revenue, called Laffer curve. Based on the theoretical curve, A.Laffer proved that raising taxes in America had had a negative impact on the social production. From the critical analysis, the author of the doctrine concluded: with the tax rate determined reasonably, total tax revenue is maximized. Specifically see Figure 3 below:

![Laffer Curve](image)

In the graph of Laffer curve, the vertical axis shows total tax revenue (denoted by T), the horizontal axis shows tax rate (denoted by t). At the point O, the tax rate is 0%, achieving the highest consensus of society, but the Government does not get any tax money. When the government applies the tax rate at the point A', the growth rate of tax revenues is the highest, total tax revenue of the Government is \( T_{AB} \) corresponding to the point A located on Laffer curve with the people’s consensus reach. When tax rate rises from point A’ to point E’, the total government’s tax revenue is the highest (\( T_{max} \)) matching with the equilibrium point E, but the growth rate of tax revenues is declining, and the consensus of the people reduces up. If the government applies excessive tax burden, tax rate is beyond the point E’, the total tax revenues of the government are not only without increase but also decrease with sharp fall in the consensus of the people. Also, pressure on the high tax costs makes the scale of investment, production and business narrow, so economic growth decreases. If the government taxed at the point D corresponding to 100% tax rate, the Government would not get any tax money, because the activities of investment, production and business of the society are suspended.

Thus, when it’s need to increase capital accumulation and expand investment, production and business, A.Laffer proposes to abolish progressive tax rates and lowers company profits. In fact, the period of 1981-1986, the U.S’s tax reform was based on Laffer’s theory. the result was a lower company profit tax and the personal income tax. Then reformation of other highly industrialized countries also was influenced by this theory. However, Laffer’s theory still exists disadvantages, because in the early stages of reform, government's tax revenues reduces, the situation of the state budget deficit occurs.

3. Characteristics of Economic Growth Model in Vietnam in Recent Years

3.1. Achievements and Limitations

On the accomplishments achieved, under the impact of the expanded fiscal policy and the loose monetary policy, the achievements on macroeconomic indicators of Vietnam are quite impressive. First, Average GDP growth rate of 2002-2011 period was 7.16% and be classified in the heading of economies have average growth rate annually highest in the world. Second, GDP per capita at current prices of Vietnam grew from $114 in 1991 to $1,168 in 2010 and 2011 of estimated $1,300 (calculated according to exchange rate), from $706 in 1991 to $2,948 in 2010 (calculated according to purchasing power parity). Third, if in 1988, the economic structure of Vietnam was still in backwardness, the proportion of agriculture in GDP was approximately 46.3%, the industry-construction sector was about 24.0%, service-trade was 29.7%. But after 25 years of the economic innovation policy, the economic structure has been moved toward modernization,
the proportion of three economic sectors were 22.02%, 40.25%, 37.7% respectively. Four, in 1991, total state budget balancing revenues reached VND10,610 billion, accounting for 19.15% of GDP at current prices, meanwhile this two numbers of 2011’s were VND674,500 billion and 26.61% respectively, etc.

Besides the achievements, Vietnam economy still reveal many weaknesses, achievements are not commensurate with the cost of capital, manpower and natural resources etc. To prove this assertion, the authors will use data from the period of 2002-2011. Based on the actual situation, the period of 2002-2011 can be divided into two periods: 2002-2006 and 2007-2011. 2002-2006 period, Vietnam's macroeconomics was relatively stable and normal. Indicators such as inflation (6.5%), budget deficit (-4%), money supply growth M2 (27.1%) and current account deficit (-1.5%) were low, GDP growth rate was relatively high with average level of nearly 7.77%, the saving rate to investment was about over 95% of GDP. Meanwhile, 2007-2011 period, Vietnamese economy was relatively unusual. Indicators such as inflation (13.18%), budget deficit (-5.7%), money supply growth M2 (32%) and current account deficit (-6.8%) were high, GDP growth rate was low (about 6.55 %), the saving rate to investment was just over 83% of GDP. Thus, in 2002 - 2011 period, average economic growth rate of Vietnam was only 7.17%, lower than 1992-2001 period (7.69%), while the average inflation rate was about 9.84%, higher than other countries in the region.

The causes of these above problems primarily derived from the internal economy. Two of the the most concerned causes were economic structure and economic growth model of Vietnam which had become backward and was no longer the motivation for development. To understand the mismatch of economic structure and economic growth model in a new situation, we need to learn the basic characteristics of economic growth model that has been used by Vietnam in the recent years.

3.2. Characteristics

First, Vietnam has used the growth model by the width in the period relatively long. With this growth model, the whole society investment rate was too large (average of 2002-2011 period was about 40% of GDP), excessive dependence on capital accumulation for rapid growth (contribution of social investment for growth increased rapidly, from 5% in 1990 to 60% in 2010), contribution of total factor productivity (TFP) decreased rapidly (from 49% in 1990 down to only about 19.5% in 2010). From Vietnam's practical, when the lack of capital investment, the low human resource quality, the qualification of scientific and technology has not developed, the qualification of nation governance and corporate governance is still inadequacies, quality assessment system has not been formed, etc then the method using of the combination between growth models by the width and growth model by the depth was a combination of intelligence and conformity.

Second, the growth model based on natural factors are inherited, which has helped Vietnam growing in about the past 20 years so far has really outdated. This growth model mainly based on the exploitation of available resources, abundant labor resources, cheap labor price, labor quality not high and therefore did not meet with modern technology. Therefore, Vietnam has not attracted multinational corporations to make a breakthrough, only attract FDI enterprises with the moderately technology qualification, so the results and effectiveness of economic development were lower than potential.

Third, take the state sector as the central motivation, state-owned enterprises as the leading role for economic-social development, while the effectiveness of the system of economic groups, corporations and state-owned enterprises was generally not matched with what the State has invested. The period of 2002-2011, total average capital of state enterprises have used for the activities of production and business accounted for about 45.12% of total investment of the corporate sector, but only contributed about 30% of GDP value. Meanwhile, the total average capital of non-state enterprises have used accounting for about 34.54% of GDP, but has contributed about 55% of GDP value. If reviewing the period of 2006 - 2010, state-owned enterprises have contributed about 24% of employment numbers, 20% of industrial production value and about 8% for growth of industrial production value.

Fourth, not yet focused adequately for the modernization process, only achieved the results from the industrialization process. In Vietnam, industrialization real has brought results very clearly, economic structure has shifted towards the industry sector accounted for the proportion of GDP was highest, corresponding to that problem was the proportion the agricultural sector have been descending. However,
compared to other countries in the region, the technological qualification of Vietnam's economic sectors were still weakly, corresponding to that the proportion the agricultural sector was declining. However, compared to other countries in the region, the technological level of the sector weakly, did not meet the demand, labor productivity and product quality lowly, used resources not most effectively. Based on the idea sources of enterprises, the proportion of processing industry with modern technology in Vietnam only about 15%. Vietnam also mainly have had the export market share in the sectors using many labor and natural resources.

Fifth, Vietnam's growth model based on budget deficit. The period of 1986 - 2001, the average budget deficit about 7,580 billion VND. In 2002 was 24,348 billion VND, roughly 3.2 times of the average of 1986-2001 period. In 2009, the state budget deficit continued to increase and reached about 115,900 billion VND, accounted for 6.99% of GDP. To offset budget deficits, government borrowed inevitably in domestic and foreign, so the total public debt of Vietnam has constantly increased over the years. Pursuant to the announcement of Economic Journal (The Economist), in 2010, the percentage of Vietnam's public debt was 50.935 billion USD and equivalent to 51.6% of GDP and too high compared to the prevalence level in the developing economies (30-40%) and the debt situation of some emerging economies such as China (17.4%), Indonesia (26.5%).


4.1. Descriptive Statistics Analysis Method

In Vietnam’s reality, the close relationship between economic growth and tax burden was expressed quite clearly. On the one hand, the government uses tax burden to promote economic growth, on the other hand, economic growth contributes to increase tax revenues. In terms of absolute value, that reciprocal relationship is shown in Figure 4. However, in terms of relative value from 2002’s to 2011’s, the tax revenue growth rates were higher than economic growth rates. For example, in comparison between values in 2003 and 2002, the tax burden growth rate was 21.07%, meanwhile GDP growth rate was 7.34%. The two indicators of 2004 compared to 2003’s were 23.96% and 7.79% respectively; 13.23% và 8.4% for 2004-2005; 19.18% và 8.23% for 2005-2006; 29.24% and 8.46% for 2006-2007; 36.28% và 8.46% for 2007-2008; 17.26% và 6.31% for 2008-2009; 24.63% and 6.78% for 2009-2010; 17.44% và 5.89% for 2010-2011. Especially, Vietnam's tax burden rates have increased over years: 17.35% in 2002, 18.34% in 2003, 19.51% in 2004, 18.82% in 2005, 19.33% in 2006, 21.26% in 2007, 22.42% in 2008, 23.44% in 2009, 24.46% in 2010, 22.45% in 2011. Yet, along with the impact of other factors (inflation, external crisis), the excessive prolonged tax burden not only doesn’t create any motivation for a brighter economy but also push the economy into recession. Specifically, economic growth rate would tend to slow down, total social output would be below potential, aggregate demand would decreased, enterprises would face many difficulties in production, the economic situation would be generally bleak.

If splitting the period of 2002-2011 into two periods (2002-2006 period and 2007-2011 period) then we will discover a very interesting problem. The economic situation of 2002-2006 period developed relatively stable, averaged GDP growth rate was about 7.77%, the average tax revenue growth rate was about 19.31% and the average tax burden rate was about 18.67%. In contrast to the previous period, the economic situation of the period 2007-2011 have been occurred relatively unusual, average GDP growth rate was about 6.55%, the average tax revenue growth rate was about 24.97% and the average tax burden rate was 22.81%. Through this figures it can be confirmed that the tax burden endured by the whole economy in the period of 2007-2011 was larger than in 2002-2006.

If considering the whole period of 2002-2011 and comparing with China, average economic growth rate of China was about 10.16%, average growth rate of total tax revenue was around 20.07% and the average tax burden rate was about 18.17%. The corresponding figures of Vietnam was about 7.16%, 22.24% and 20.74%. From here can be seen, economic growth rate of Vietnam was lower than China, while the average growth rate of total tax revenue and the average tax burden rate were higher than China. At the same time the authors also found out that gaps of tax burden rates have tendency to widen more and more over the years. For example, in 2002, the tax burden rate of Vietnam was about 1.05 times higher than China’s, in 2007 that
was 1.14 times and in 2010 the number was 1.26 times. According to the author’s ideas, this is one of important factors causing negative impacts on the economy of Vietnam, reducing the economy’s savings level, so as the productivity of enterprises and people’s spending, then the consequences are a fall in economic growth and living standards.

4.2. Quantitative Analysis Method

To enhance the persuasiveness, the authors will use quantitative analysis method to conduct an empirical analysis the impact of the tax burden to economic growth in Vietnam. The time period used by the authors is 10 years (from 2002 to 2011). Total tax revenue figures and GDP at current prices of Vietnam are of this period. Data sources are from the Ministry of Finance and the General Statistics Office of Vietnam. Application of the OLS method to perform analysis the simple linear regression between total tax revenue and economic growth of Vietnam.

Specifically, economic growth (GDP) was the dependent variable, total tax revenue (TAX) was independent variables. Regression model has the following format:

\[
GDP = \beta_0 + \beta_1 \text{TAX} + \mu_i
\]

The authors are using Eviews software. After perform operation, regression equation of the form:

\[
GDP = 179731.9 + 3.942514 \text{TAX}
\]

\[t = (4.514278) \quad R^2 = 0.991742 \quad F = 960.7962 \quad DW = 1.856381 \quad p_{-value} = 0.0000\]

According to the results this regression, the value of Durbin-Watson test by 1.856381, while the sample size n = 10, number of independent variables in the model k' = 1, deciliter dL = 0.879 and dU = 1.320. Due to dU < d < 4 – dL, the model is not autocorrelation phenomena grade 1. Due to p.value = 0.000 < \alpha = 0.05, the independent variable (TAX) totally affects on the dependent variable (GDP).
regression results also show us, $R^2 = 0.991742$, which means the change of the tax burden level explained 99.1742% of GDP fluctuation. For $\beta_1$ and $\beta_2$, the authors use the confidence interval tested method to demonstrate the suitability or unsuitability of the regression coefficients. Specifically:

Reliability $\alpha = 5\%$, deciliter $t_{(0.025; n-2)} = 2.306$. $S_e(\hat{\beta}_1) = 39814.10, S_e(\hat{\beta}_2) = 0.127191$. Symmetry confidence interval of $\beta_1$ and $\beta_2$ are:

$$\hat{\beta}_1 - t_{(0.025; n-2)} \times S_e(\hat{\beta}_1) \leq \beta_1 \leq \hat{\beta}_1 + t_{(0.025; n-2)} \times S_e(\hat{\beta}_1)$$

$$87920.585 \leq \beta_1 \leq 271543.22$$

$$\hat{\beta}_2 - t_{(0.025; n-2)} \times S_e(\hat{\beta}_2) \leq \beta_2 \leq \hat{\beta}_2 + t_{(0.025; n-2)} \times S_e(\hat{\beta}_2)$$

$$3.6492116 \leq \beta_2 \leq 4.2358164$$

**Conclusion:** When the economy does not bear the tax burden, the average GDP of Vietnam ranges from 87920.585 billion VND to 271543.22 billion VND. With 95% reliability, considering an average year, when tax burden was increased up 1 unit, the average value of Vietnam's GDP would increase from 3.6492116 units to 4.2358164 units.

To demonstrate which country has applied the tax burden tool to stimulate economic growth more effectively, the authors continue analyze the simple linear regression model for China's case. The review period is the period of 2002-2011, data sources are from the Ministry of Finance and the General Statistics Office of China (see Figure 5). Software that the authors are using Eviews software. After perform operation, regression equation of the form:

$$\text{GDP} = 2808245.0 + 5.309769 \text{TAX}$$

$$t = (2.802374) \quad (25.41908)$$

$$R^2 = 0.987770 \quad F = 646.1298 \quad DW = 1.334150 \quad p\_value = 0.0000$$

According to the results this regression, the value $d$ of Durbin-Watson test by 1.334150, while the sample size $n = 10$, number of independent variables in the model $k' = 1$, deciliter $d_U = 0.879$ and $d_L = 1.320$. Due to $d_L < d < 4 - d_U$, the model is not autocorrelation phenomena grade 1. Due to $p\_value = 0.000 < \alpha = 0.05$, the independent variable (TAX) totally affects on the dependent variable (GDP). The table of the regression results also show us, $R^2 = 0.987770$, which means the change of the tax burden level explained 98.7770% of GDP fluctuation. For $\beta_1$ and $\beta_2$, the authors use the confidence interval tested method to demonstrate the suitability or unsuitability of the regression coefficients. Specifically:

Reliability $\alpha = 5\%$, deciliter $t_{(0.025; n-2)} = 2.306$. $S_e(\hat{\beta}_1) = 1002095.0, S_e(\hat{\beta}_2) = 0.208889$. Symmetry confidence interval of $\beta_1$ and $\beta_2$ are:

$$497413.9 \leq \beta_1 \leq 5119076.1$$

$$4.828071 \leq \beta_2 \leq 5.791467$$

**Conclusion:** When the economy does not bear the tax burden, the average GDP of China ranges from 497413.9 million CNY to 5119076.1 million CNY. With 95% reliability, considering an average year, when tax burden was increased up 1 unit, the average value of China's GDP would increase from 4.828071 units to 5.791467 units.

Through quantitative analysis method with the simple linear regression model, we can confirm that the period of 2002-2011, China has applied the reasonable tax burden level to impact to economic growth more effectively than Vietnam. This may be one of the important factors first important to impact positively to the high economic growth rate in China in the recent period.

5. **Conclusion and Lessons for Policy**

Through the qualitative analysis method, the authors have shown that the excessive tax burden has been occurring in Vietnam by the findings in this paper. This situation is proven by using the data of tax burden rate and making comparison between Vietnam and China where tax burden rate is lower than in Vietnam. Through the quantitative analysis method, the results have shown that when tax burden was increased 1 unit, the average value of Vietnam’s GDP would increase from 3.6492116 units to 4.2358164 units, while the average value of of China’s GDP would increase from 4.828071 units to 5.791467 units. Thus, the results were calculated from the two methods are consistent. To solve this fact, the authors believe that one of necessary actions to cut down the tax burden rates due to the following reasons:
First, an increase in people’s savings will make social consumption go up, a rise in capital accumulation will soar investment, expand production and business. To do this, the government needs to cut some tax categories, reduce some tax rates. For instance, corporate income tax rate is 25% which is quite high in this situation. Thus, the level of 20-22% is the most appropriate for now, it can be reduced. Regarding to the current personal income tax, the deduction level for taxpayers is 4 million VND/month, family circumstance deduction is 1.6 million VND/month which has been applied from 2009 and became out of date since the Vietnamese inflation now is 50% rise compared to in 2009.

Second, as analyzed in the part 3, during the present time, corporations and state owned enterprises mainly run business and production ineffectively, making losses and waste. Besides, the contribution to GDP and job creation of these companies is lower than of private sectors, whereas the investment in them is much higher. From this situation, it’s need to resize the state-owed enterprise system and make zoom for private one to decline the pressure on the state budget and cut the tax burden down on citizens.

Third, the ratio contributed into state budget is much larger than the economy’s ability. Additionally the inflation rates are much higher than in regional countries and lead to a fall in consumption and production of the whole society and the effectiveness of public spending hasn’t match with the spending fund. Therefore, the government should reduce the public spending to reduce tax burden, fees and charges for the society. The priority aims of tax policy are long-term source for state budget and promote accumulation opportunity for enterprises. In long term, this is beneficial to the economy.

6. References


[12] Websites:

   The General Department of Taxation of China: http://www.chinatax.gov.cn