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Corporate Income Tax Burden and its Determinants: Evidence from Vietnam

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Abstract

The corporate income tax is one of the important taxes in tax system of the countries. Its burden is different between developed countries and developing countries. In Vietnam, the corporate income tax is a most important tax and its contribution to the state budget is higher than other taxes. The purpose of this article is to analyze the determinants of corporate income tax burden in Vietnam. Through the descriptive statistics method, the findings show that the corporate income tax burden is the highest in all of Vietnam's taxes, about 10% per year during the period of 1999 - 2012. Through the empirical method, the author finds that there are three quantitative factors and one qualitative factor affecting the burden of Vietnam's corporate income tax, includes revenue from corporate income tax, GDP at current prices, tax rate and time trend.

JEL classification numbers: H21, H24, H26, F23
Keywords: Tax burden, Corporate income tax, Corporate income tax burden

1 Introduction

In countries, name of this tax law may be different as company income tax law, corporate income tax law, corporate tax law, profit tax, etc., but their nature is similar. The country regulates this tax in a separate law, or some other countries combines corporate income tax and personal income tax in a law, because they argue that the two types of income taxes are closely related to each other, so regulates them in a tax law will more accessible. Although its name is the corporate income tax, but this tax also applies to the income of individuals, business institutions not established by the corporate law, and the part of taxable income is the remaining income after has been deducted the costs related to the process of production and business.
From past to now, many economists said that the corporate income tax is a tax in the role

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as an important tool to regulate the macro economy and social justice is least efficient, at the same time it can cause significant welfare losses to the economy. Determining the optimal burden level of the corporate income tax will reduce a significant proportion of the economic losses that it can cause to the economy. The actual evidence shows, in most developed countries, revenue from this tax has accounted for a low proportion of total tax revenue and lower than the personal income tax, for example, for the first time in Canadian history, more than half of the federal government's revenue in 2014 will come from personal income taxes [25]. In contrast, in developing countries, revenue from the corporate income tax has accounted for a relatively high proportion of total tax revenue and higher than the personal income tax, for example, during the period of 2007 – 2011, 13,96% in China (ranked the 2nd after VAT), 30,73% in Vietnam (ranked the 1st). Thus, in most developed countries, the burden of corporate income tax is lower than the personal income tax, the opposite situation in the developing countries.

Due to the conditions of socio-economic development are different between countries, so the approach of governments on the reform and the specific reform contents of this tax law between countries is also different, at the same time approaching the research directions between the researchers on this tax is also different. In fact, many economists have studied corporate income tax with different contents, such as the burden and the burden distribution of the corporate income tax [2] [7] [13] [21] [22] [29]; the impact of the corporate income tax burden on economic growth, investment and business environment, output, wages, salaries, social justice and other issues [4] [5] [6] [8] [9] [12] [28]; the effect of tax rates and tax rate cuts of the corporate income tax on socio-economic issues [2] [10] [25]; the viewpoints for reforming the corporate income tax [1] [40]; the determinants of corporate income tax revenues [41].

However, so far the studies are the scale and quality about the determinants of corporate income tax revenues in Vietnam is still considered as a scarcity. In Vietnam, the researchers mainly use the descriptive statistics method to analyze burden of corporate income tax and compare its burden rate between Vietnam and other countries in the area. The research results of this tax are mainly the articles about reform, revenue management, solutions to enhance the corporate income tax revenues, restructuring of organizational apparatus and other issues. This is still a question that needs a serious research attention of scientists. The purpose of this article is to answer some questions: How many factors affect the burden of corporate income tax? What factors can increase or decrease the burden of corporate income tax? What factors are most important? To answer these questions, the author will analyze and evaluate an overview of the determinants of corporate income tax burden in Vietnam during the period of 1999 - 2012. Furthermore, to enhance the persuasion, the author will use the empirical method to find out the specific figures about the determinants of corporate income tax burden in Vietnam to demonstrate for the qualitative conclusions.

2 Theoretical Framework

2.1 Definition, Characteristics and Role

According to the Investopedia's definition: "A tax that governments impose on financial income generated by all entities within their jurisdiction. By law, businesses and individuals must file an income tax return every year to determine whether they owe any taxes or are eligible for a tax refund. Income tax is a key source of funds that the government uses to fund its activities and serve the public" [23]. According to the Business Dictionary's definition: "An assessment levied by a government on the profits of a company. The rate of corporate income tax paid by a business varies between countries, although since corporations are legal entities distinct from their owners and operators, they are typically taxed as if they were people" [31]. Another definition is that "a tax that must be paid by a corporation based on the amount of profit generated. The amount of tax, and how it is calculated, varies depending upon the region where the company is located" [32]. Thus, the corporate income tax is a tax that is collected on income of production and business establishments to encourage a part of their income to the state budget. In addition, the state can also use this tax to regulate the macro economy through encouraging equitable among different types of ownership, and through tax incentives to encourage investment of businesses in order to promote the development of production and business.

For characteristics, due to the corporate income tax is a direct tax, so it is collected so much easier than indirect taxes. If we make a comparison between direct taxes, the revenue management for corporate income tax is no more difficult than the personal income tax, particularly more true for developing countries. Due to the tax management of the tax authorities for businesses can based on business registration dossiers, other hand the number of businesses is always less than the number of individuals in a country, so the corporate income tax will be managed more easily. Although it is a direct tax but sometimes the taxable objects of corporate income tax can shift the burden to other objects, for example, the burden of this tax can be shifted to shareholders, or consumers or workers. Stemming from the liberalization of international investment activities, the operation of businesses goes beyond the borders of a country, so the source of corporate income tax may be international law, assignment of the right to tax becomes necessary, the countries tend to cooperate with each other to delimit the right to tax and reduce tax evasion.

For its roles, the corporate income tax is an important tool used by the State to regulate income of production and business entities, from there ensuring the contribution of these entities to the state budget to be equitable and effective. In addition, the loss-making enterprises in production and/or business do not have to pay corporate income tax and losses can be transferred to the next years in order to have a chance of recovery and avoid bankruptcy of enterprises. The corporate income tax is an important revenue source of the state budget, especially revenue from this tax in developing countries is more than the personal income tax, and vice versa in developed countries. Another role of the corporate income tax is to encourage entities and business production to invest in sectors or regions through its incentives in each certain period.

2.2 Evidence from Previous Studies

In fact, there are many different research results on the distribution of the tax burden among related subjects. About the distribution of the tax burden between capital income and labor income, a study result shows that capital income bears 82% of the corporate income tax burden, and 18% is distributed to labor income [7]. Another study based on data from the 2011 fiscal year in India, find out that taxpayers paid 9.5 percent of their incomes in state and local taxes with a per-capita burden of $3,385 on a per-capita income of USD 35,592 [24]. Many economists stress that the tax burden can be distributed only for individuals and not entities [13]. One study found a correlation between households and corporate income tax burden. This study shows that, for a variety of reasons, a certain portion of the corporate income tax is distributed to households [13]. A question is given that: Does labor bear the burden of the corporate income tax? Based on the empirical results suggest that labor must bear a significant portion of the corporate income tax burden [2]. In an open economy, an economist has identified that labor bears most of the corporate tax burden over 80 percent [21]. In addition, one study has calculated that labor bears 70 percent of the corporate tax burden in an open economy [22]. According to modern economic opinion, the incidence of the corporate income tax is divided, but few economists today believe that its burden falls entirely on the owners of capital [30]. Other studies have found labor to bear a high share of the corporate tax burden [39].

For the effect of the corporate income tax burden, recently, many researchers have begun to exploit cross-country variation to calculate the impact of corporate taxes on wages [3] [4] [5]. As Auerbach (2006) points out, a tax in an industry with restricted output due to imperfect competition will be more distortionary than one in a competitive industry since it will worsen the original distortion to output [6]. Taxation generally and corporate income tax in particular can adjust investment structure or alter the scale of investment capital. Allowing for the carryback of losses decreases the distorting impacts of taxation on investment and, in turn, an increase of economic efficiency [9]. On the relationship between corporate tax rates and investment capital, if there are the changes of the corporate tax rates would alter the relative value of existing to new capital [8]. Conversely, there are some viewpoints that high tax rate for corporations may be accordance with the prosperity countries that these countries can have high AETRs, attract better managers and/or create better business opportunities [12]. Regarding the relationship between salaries and tax burden, many research results show that the relationship between them is a negative sign, for example, labor bears a significant share of the corporate tax burden in an open economy [26], for every 1 percent increase in corporate tax rates, wages decrease 1 percent [27], $1 in additional corporate tax reduces wages by 92 cents in the long run [28], a 1 percent increase in the marginal corporate tax rate would decrease wages by 0.7 percent [29].

About the reform of corporate income tax, previously, its reforms were taken care of by some U.S. politicians. Such as, during an interview, Paul O'Neill said that, "So, it's not just the direct amount of the [corporate income] tax, but the administrative cost of running the tax process through the businesses and corporations that we could effectively eliminate"[40]. Politically, reform, reduction, or elimination of the corporate income tax will be very difficult [1]. Because corporate profits are not stable, it can be increased in the high growth of the economy and reduced in the economic downturn, and as a result, corporate income tax revenue of the government also takes to follow this trend [1].

For tax rates and tax cuts, statutory corporate tax rates do not change often within a country [2]. In Canada, the federal corporate tax rate has been nearly cut in half since 2000, from 28 per cent at the turn of the century to 15 per cent in 2012 [25]. Therefore, in 2012, the corporate tax accounted for 9.9% of federal tax revenue, whereas the individual and payroll taxes generated 46.2% and 34.5%, respectively, of federal revenue [10]. For the significance of tax cuts, there are several factors that help explain the declining significance of the corporate tax [10]. Two of the reasons are the average effective corporate tax rate and corporate-sector profitability has decreased over time.

3 The Vietnamese Corporate Income Tax: A Overview

3.1 Reform Process

Law on the CIT was passed on 05/10/1997 by the National Assembly of Vietnam to replace the Law on profit tax, and it was formally applied on 01/01/1999 [16]. Based on the contents of this tax law, the general tax rate was applied for domestic business establishments by 32%; 32% for foreign organizations and individuals (not under the Law on Foreign Investment in Vietnam), 25% for foreign invested enterprises (under the Law on Foreign Investment in Vietnam). In addition, foreign and domestic organizations and individuals conduct search and exploration and exploitation of gas oil by 50%, mining other precious resources from 32% to 50% in accordance with each project or each business establishment. After 5 years of implementation, this tax law had ensured its role in encouraging investment and business and an increase of the state budget revenues. All types of income were covered and regulated by this tax law. Through tax reduction and exemption policies, foreign investors and domestic investors could accumulate capital to expand production and business. Due to the differences of tax polices between foreign investors and domestic investors were removed step by step, so equitable competition between foreign businesses and domestic businesses or between the types of ownership has gradually been ensured by this tax law. However, with the rapid development of the economy and international economic integration of Vietnam, many articles of this tax law were no longer appropriate, for example, there was still a discrimination of the tax rate between domestic businesses and foreign businesses. The existence of this inequality has become one of the causes reducing the incentive significance of the tax law. To further enhance the role of the corporate income tax in attracting investment of businesses, it has been modified and added a number of articles to suit the developmental practices of the economy.

In 2003, the corporate income tax law of Vietnam has officially been amended and formally applied from 01/01/2004 [17]. Based on the amended contents, adjusted uniform between foreign investors and domestic investors, for example, a general tax rate by 28% for all types of businesses, from 28% to 50% for search and exploration and exploitation of gas oil and other precious resources. Moreover, Vietnam continued to apply the incentives in the direction of more favorable in order to create an attractive investment environment and more equitable, at the same time promoted the reform of administrative procedures.

Later 5 years from 2004 to 2008, the tax law has achieved the objectives of amending and marked a turning point in improving investment environment, encouraging production and business, creating the favorable conditions for businesses in order to increase capital accumulation to expand investment in the economy, from that promoting economic growth and an increase of state budget revenues. According to the statistical data, GDP growth rates and the growth of the state budget revenues were respectively 7.85% and 22.51% per year in the period of 2004 - 2008. During this period, many new businesses were established and many businesses invested width and depth, from that the competitive capacity of businesses has been enhanced. The investment capital of the non-state sector accounted for about 37.5% of total whole society investment capital and contributed approximately 44.82% of GDP in the period of 2004 - 2008. Although the general tax rate for foreign-invested sector have been increased from 25% to 28%, but foreign businesses did not have to pay tax on transfer of profits abroad, at the same time they have been treated very equally in an attractive business investment environment, so foreign capital flows have constantly increased during this period, for example, total foreign implementation capital have been increased from USD 2,852.5 million in 2004 to USD 11,500 million in 2008, an annual average by USD 5,958.28 million. However, this tax law has still had some disadvantages that need to be further improved to meet the requirements and tasks of the socio-economic development in the new situation. Because of this reason, the next step continued to reform the corporate income tax law in 2008.

Due to the impacts of the world economic crisis since 2008, Vietnam's economy was incurred many new nuances, so the corporate income tax was placed in a status of change and it has been really continued to modify some articles and came into effect on 01/01/2009. The crux of this amendment that tax rate was reduced the general tax rate from 28% to 25% for all types of businesses, from 32% to 50% for search and exploration and exploitation of gas oil in accordance with each project or each business establishment [18]. Just like the previous amendments, this time continued to reduce the tax burden for domestic and foreign businesses to create a fair competitive environment in order to help businesses escaping the impacts of the economic crisis. In addition, the provisions of the tax calculation bases were defined more clear and transparent than the previous time, created favorable conditions for businesses to voluntarily declare fully and clearly.

However, due to the economic crisis in domestic and international was prolonged for many years and it affected the survival of businesses, for example, the bankruptcy of many businesses, the existence of many businesses in a vulnerable status. Faced with these difficulties, in 2013, Vietnam continued to amend and supplement some articles of the corporate income tax law and came into effect on 01/01/2014 (except for some regulations came into effect from 07/01/2013) [19]. Based on these amended contents, a general tax rate was reduced from 25% to 22%, some cases will be applied a 20% tax rate from 01/01/2016. Each year, businesses have the total revenues of not more than VND 20 billion will be applied a 20% tax rate. For search and exploration and exploitation of gas oil and other precious resources, tax rate is from 32% to 50% in accordance with each project or each business establishment.

Through analyzing the tax reform evolution, reducing the tax rate of corporate income tax is a clear advantage of Vietnam, for example, in 2009, Vietnam's corporate income tax rate was 25%, lower than the Asian average (25.73%) and the world average (25.38%); in 2013, although the average corporate income tax rate of the whole Asia was reduced to 22.49% as well as 24.08% of the world [20], but also in this year Vietnam's tax rate was reduced to 22%. Thus, based on the reform evolution of this tax, Vietnam has had certain advantages compared with other countries in the region in creating an equitable investment environment, supporting and encouraging domestic and foreign enterprises to expand production and business investment, thereby contributing to economic growth and an increase of the state budget revenues. The reduction of tax rate and the increase of tax incentives, the burden of Vietnam's corporate income tax is whether in accordance with the economic and social development conditions? But to have an accurate answer, we need to further analyze the contents below.

3.2 Tax Burdens

In theory and practice have demonstrated that the relationship between economic growth and inflation is a positive sign in constant conditions of other factors. This means that the countries want to have high economic growth but must accept high inflation. The case of Vietnam is also not an exception, for example, an annual average in the period of 2002 - 2011, GDP growth rate by 7.16% [33], inflation index by 9.84% [34]. Besides annually bears a high inflation rate, protection policy and tax overlap are making every citizen of Vietnam must bear a proportion of the burden of taxes and fees higher than many other countries in the area, for example, the macro tax burden rate of Vietnam and China was respectively 20.74% and 18.17% per year in the period from 2002 to 2011 [34]. Another study has also confirmed that the burden rates of taxes and fees are increasing in Vietnam [35]. Based on the results of this study, the total state budget revenues were relatively stable during the period of 2007 - 2011 and about 29% of GDP, revenue from taxes and fees by 26.3% of GDP, meanwhile in other countries in the area were lower, such as China (17.3%), Thailand and Malaysia (approximately 15.5%), Philippines (13%), Indonesia (12.1%) and India (only 7.8%). According to the original investigation, "Key Indicators for Asia and the Pacific 2011" by the Asian Development Bank, has presented data comparing the tax revenue to GDP in 48 countries around the world [36]. Whereby, in 2011, the tax revenue to GDP of 4/48 countries was about 25%; 5/48 countries from 20% to 24%; 9/48 countries from 15% to approximately 20%; 30/48 countries under 15%, Vietnam’s ratio was about 23.1%.

In Vietnam, there are some important indirect taxes, includes value added tax, special consumption tax, export and import tax, environmental tax (be applied from 01/01/2012). Revenue from value-added tax always achieved at a high level, about VND 11,817 billion in 1999, increased to VND 33,130 billion in 2003 (2.8 times higher than 1999) and VND 215,796 billion in 2012 (18.26 times higher than 1999 and 6.5 times higher than 2003). Revenue from export - import tax and special consumption tax on imports achieved VND 22,374 billion in 2003 and increased to VND 74.005 billion in 2012 (3.3 times higher than 2003). Revenue from special consumption tax on domestic goods was VND 8,851 billion in 2003 and increased to about VND 44,833 billion in 2012 (5.1 times higher than 2003). Finally, Vietnam issued the Law on environmental tax and came into effect on 01/01/2012, revenue from this tax by VND 12,768 billion in 2012.

For direct taxes, they are gradually completed under the development trend of the economy. Total revenues from direct taxes are increasingly contributing to an increase of the state budget. Initially, direct taxes accounted for a small proportion of total tax revenues, but along with the development of the economy is an increase in corporate profits and personal income, so the role of these taxes has gradually been made clear and their revenue was equal to revenue from indirect taxes. Revenues from direct taxes has reached about VND 81,468 billion in 2003, accounted for approximately 55.87% of total revenues from taxes and fees; in 2012, based on the 1st estimated data has increased to about VND 349,738 billion, accounted for 50.17% of total revenues from taxes and fees, 4.3 times higher than 2003; the period of 2003 - 2012 has reached about VND 201,628 billion per year.

In Figure 2, the burden of corporate income tax was dropped from 2009 to 2012. What is the cause? From 2008 to present, due to the impacts of the economic crisis, so it has caused many implications for Vietnam's businesses, such as bankruptcy, prolonged loss, a decrease of profits and others. To help businesses get rid of these difficulties, Vietnam has made preferential tax policies for businesses, which included a reduction of tax rates. This is the important causes making the corporate income tax revenue was decreased in recent years. If we compare the burden rates between taxes, the burden of corporate income tax was still the highest in the period of 2003 - 2012, approximately 8.24% per year. The burden of other taxes is value-added tax (6.36%), import-export tax and special consumption tax on imports (3.37%), special consumption tax on domestic goods (1.67%), personal income tax (0.89%). Moreover, the burden of corporate income tax during the period of 2003 - 2008 (8.94%) was higher than the economic crisis period from 2009 to 2012 (7.23%). Thus, a decrease of the corporate income tax revenue and tax rates caused a decrease of its burdens.

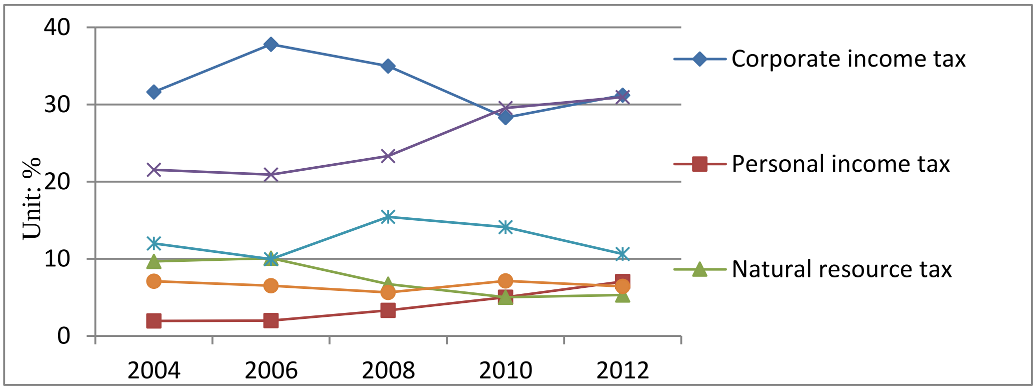

Figure 1: Some important taxes as a percentage of total tax revenue in Vietnam
Notes: Data of the year 2012 was estimated the first time
Source: The author's conculations based on the Ministry of Finance, Vietnam

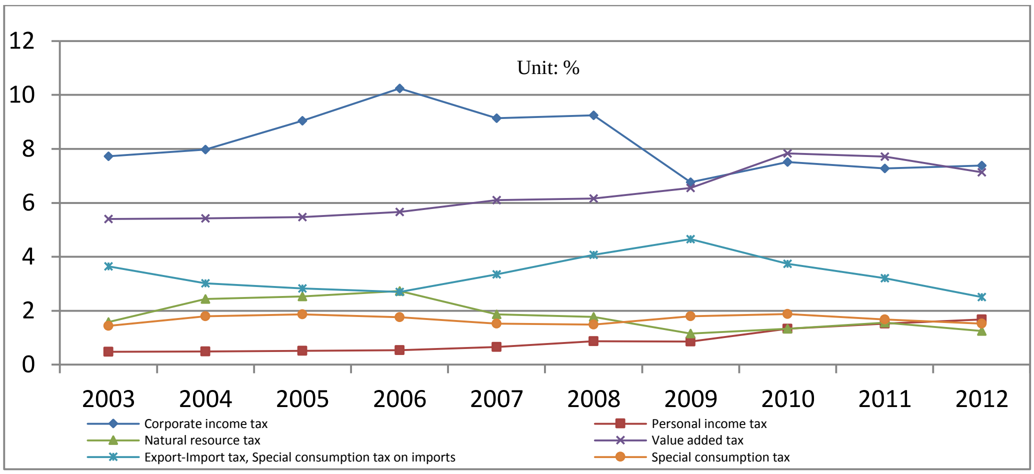

Figure 2: Some important taxes as a percentage of GDP in Vietnam
Notes: Data of the year 2012 was estimated the first time
Source: The author's calculations based on the Ministry of Finance and General Statistics Office, Vietnam

3.3 Determinants

3.3.1 Corporate income tax revenue

The precursor of the corporate income tax is the benefit tax. The profit tax law was issued on 06/30/1990 by the National Assembly of Vietnam. It was applied uniformly to all organizations and individuals in production and business activities of all economic sectors with the tax rates such as 30% (for electricity, mining, metallurgy, mechanical engineering, basic chemicals, fertilizers, pesticides, building materials, exploitation and processing of forest and fishery, construction, transportation), 40% (for light industries, food industry and other production sectors) and 50% (for commerce sector, meals, all kinds of other services) [37] [38]. This tax law was replaced by the corporate income tax law in 1997.

In Vietnam, the corporate income tax not only contributes to regulate equitable income, but also is an important revenue source of the state budget. From 1999 to 2012, although there has had some adjustments for reducing tax rates and increasing tax incentives, but revenue from this tax was still ensured a part of government's spending needs, for example, increased from VND 14,532 billion in 1999 to VND 217,751 billion in 2012 (see Figure 3), the growth rate during this period by about 26.52% per year. If we compare the growth rates between three times of reforming the corporate income tax, the period of 1999 - 2003 was approximately 39.00% per year and higher than the two remaining periods, 24.18% for the period of 2004 - 2008 and 14.10% for the period of 2009 - 2012. Why? Due to the impact of the economic crisis in some recent years, Vietnam's economy has been affected, so the growth rates of total tax revenues in general and corporate income tax in particular was reduced, especially the growth rate was a negative sign in 2009.
In theory, in constant conditions of other factors, the relationship between the burden rate and revenue of the corporate income tax is a positive sign. This means that revenue from the corporate income tax increases, its burden also increases up, and vice versa. The practical conditions in Vietnam, the author expects that the relationship between them is a positive significance in the period of 1999 - 2012.

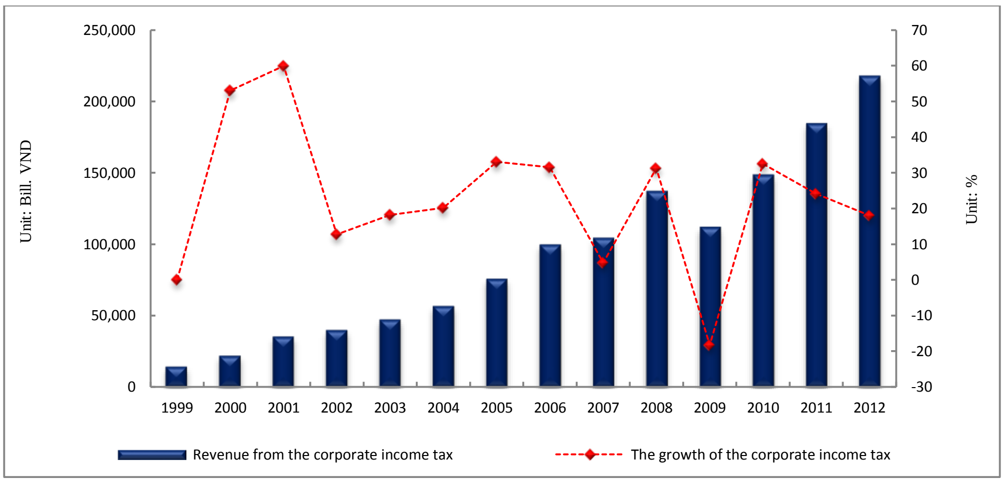

Figure 3: Data of the corporate income tax revenue in Vietnam
Notes: Data of the year 2012 was estimated the first time
Source: Vietnam Ministry of Finance

3.3.2 Gross domestic product

GDP is closely related to the tax burden in general and the corporate income tax burden in particular. Revenue from the corporate income tax as a percentage of GDP, in constant conditions of other factors, the relationship between GDP and the burden of corporate income tax is a negative sign. This means that the GDP value increases, the corporate income tax burden will decrease, and vice versa. Why? We have also known that the economic growth of a country is mainly due to the dedication of businesses [38]. If tax revenue is not constant over time, while the economic growth rate increases over the years, businesses will have high profits and will gradually increase capital accumulation and encourage businesses to invest width and depth. Based on this logic, the width and depth investment of businesses will continue to encourage economic growth, and as such, the tax burden will decrease over time. This is true for all types of taxes, includes corporate income tax.

Practice in Vietnam and other countries, the tax burden increases or decreases depending on a combination of different factors, including GDP. During the period of 1999 - 2012, Vietnam was a country with high economic growth rates and higher than many countries in the area, at the same time Vietnam was also ranked among the countries of high economic growth rates in the world [38]. Indeed, the GDP growth rate was 6.79% per year during the period of 1999 - 2012, in which the period of 1999 - 2007 was highest around 7.63% per year. But this situation was gradually decreased in recent years, for example, 5.86% per year during the period of 2008 - 2012. What is the cause? Firstly, due to the impact of the economic crisis from 2008 to present, Vietnam's economy has been affected relatively severe, such as many socio-economic indicators did not achieved, losses or bankruptcy of businesses, unemployment. Secondly, Vietnam's economic growth model could be obsolete [33]. Thus, although GDP growth in the period of 1999 - 2007 was higher than the economic crisis period from 2008 to 2012, but the burden of corporate income tax in the economic stability period was lower than the economic crisis period, for example, 7.64% per year during the period of 2008 – 2012 and 7.52% per year during the period of 1999 – 2007. Through this analysis, the author expects that the relationship between the tax burden and GDP at current prices was a negative significance during the period of 1999 - 2012.

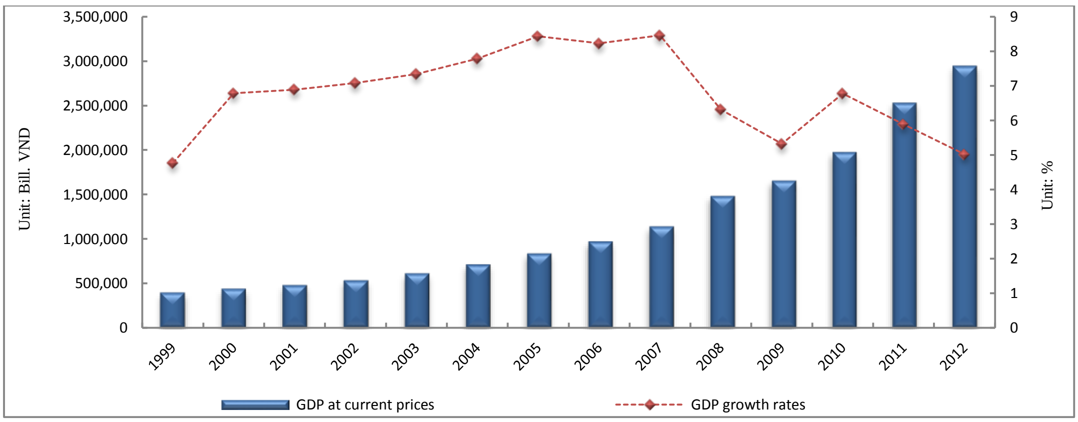

Figure 4: GDP growth rates and GDP at current prices of Vietnam

Source: Vietnam General Statistics Office

3.3.3 Tax rates

As we know, the role of businesses in the economy is very important. On the one hand, the macro-economic indicators are mainly contributed by businesses, on the other hand businesses contribute to create jobs, raises incomes for workers, enhances residential life. Derived from the important role of businesses on the economy, to create favorable conditions for businesses and create a healthy competitive environment, the countries always have policies to support businesses, including the tax policy. The recent trend of the countries is decreasing the general tax rate of corporate income tax to create the appeal and competitiveness for businesses, in order to stimulate expansion investment of businesses. Evidence from some countries, Malaysia reduced corporate income tax rate from 28% in 2005 to 26% in 2008, and 25% from 2009 to the present; Thailand decreased from 30% to 23% in 2012. In addition, the regulations of many countries that small and medium businesses are applied lower tax rates, such as China by 20% (while the general tax rate is 25%), Thailand by 15% (while the general tax rate is 23%), Malaysia by 20%. In Vietnam, the general tax rate is reduced to 23%, and 20% tax rate for small and medium businesses to improve competitiveness of businesses. These changes will not cause a sudden drop impact of revenue from corporate income tax and does not create a pressure to the state budget balance, and will not tamper much to the incentive tax policy system.

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4 Empirical Analysis

4.1 Method

As analyzed above, the burden of corporate income tax is affected by many different factors. The influence of each factor on the burden of this tax can be a positive or negative sign. To have a comparison the role between factors, the authors will use empirical analysis method to perform a regression analysis about the impact of quantitative independent variables (corporate income tax revenue, GDP at current prices and tax rate) and a qualitative independent variable (time trend) on dependent variable (the burden of corporate income tax - Y).

Implementation method will undergo four steps. Step 1, we will conduct a regression analysis on the relationship between dependent variable (the burden of corporate income tax) and an independent variables (corporate income tax revenue). The regression results of this step are not statistical significance. Because the value of the block coefficient C is a positive sign, not consistent with economic rules, at the same time, the values of R2 and Durbin-Watson test are too small and p_ value is too big, the regression model is not appropriate. We can conclude that the model may have been omitted variables. Step 2, the regression analysis on the relationship between the dependent variable (the burden of corporate income tax) and two independent variables (corporate income tax revenue, GDP at current prices). The results of this step show that tests of t-statistic and p_value are statistically significant, the values of R2 and Durbin-Watson test are relatively large. However, the sign of the block coefficient C is not consistent with economic rules, and this model is autocorrelation phenomena step 1. Step 3, the author adds an independent variable (tax rate), but most regression results of this step are not statistically significant. Step 4, the author adds a qualitative independent variable (time trend), most regression results are not statistically significant, but only one Durbin-Watson test suggests that the regression model is autocorrelation phenomena step 1. To remedy this violation, the author will use the general differential equation to implement the regression process. The regression results are statistical significance. Based on the results of R2 and Durbin-Watson test suggests that the regression model is appropriate. The model of a dependent variable and four independent variables is suitable more than other models.

4.2 Data

The data source of GDP at current prices is from the General Statistics Office of Vietnam, but only in 2012 is estimated data. The data source of corporate income tax revenue is from the Ministry of Finance of Vietnam, but only in 2012 was estimated the first time. The data source of tax rate is from corporate income tax law in 1997, corporate income tax law in 2003 and corporate income tax law in 2008, and the tax laws were issued by the National Assembly of Vietnam. The data source of corporate income tax burden is calculated by the author based on GDP at current prices and corporate income tax revenue. The time period that the author will use by 14 years (from 1999 to 2012).

4.3 Model

In the method, the author has introduced four steps to determine the most appropriate model, and corresponding four steps are the following four models.

$$\text{Model 1: } Y_t = \hat{\beta}_0 + \hat{\beta}_1 X_{1t} + \mu_t \tag{1}$$

$$\text{Model 2: } Y_t = \hat{\beta}_0 + \hat{\beta}_1 X_{1t} + \hat{\beta}_2 X_{2t} + \mu_t \tag{2}$$

$$\text{Model 3: } Y_t = \hat{\beta}_0 + \hat{\beta}_1 X_{1t} + \hat{\beta}_2 X_{2t} + \hat{\beta}_3 X_{3t} + \mu_t \tag{3}$$

$$\text{Model 4: } Y_t = \hat{\beta}_0 + \hat{\beta}_1 X_{1t} + \hat{\beta}_2 X_{2t} + \hat{\beta}_3 X_{3t} + \hat{\beta}_4 T_t + \mu_t \tag{4}$$

In which, t is time period from 1999 to 2012, Y is corporate income tax burden (%), X_1 is corporate income tax revenue (billion VND), X_2 is GDP at current prices (billion VND), X_3 is tax rate (%), T is time trend (year).

After performing the regression on all four models, the results show the model 4 is most suitable compared with the remaining three models, but the value of Durbin-Watson test shows that this model has an autocorrelation phenomena grade 1. The author will use the general differential equation to remedy this violation.

$$\begin{aligned}(Y_t - \hat{\rho} Y_{t-1}) &= \hat{\beta}_0 (1 - \hat{\rho}) + \hat{\beta}_1 (X_{1t} - \hat{\rho} X_{1(t-1)}) \\ &\quad + \hat{\beta}_2 (X_{2t} - \hat{\rho} X_{2(t-1)}) + \hat{\beta}_3 (X_{3t} - \hat{\rho} X_{3(t-1)}) \\ &\quad + \hat{\beta}_4 (T_t - \hat{\rho} T_{t-1}) + (\mu_t - \hat{\rho} \mu_{t-1})\end{aligned} \tag{5}$$

To test the autocorrelation phenomena grade 1, the author will use the two following auxiliary regressions:

The model has not the block coefficient: $\varepsilon_t = \alpha_1\varepsilon_{t-1} + \upsilon_t$ (6)

The model has the block coefficient: $\varepsilon_t = \alpha_0 + \alpha_1\varepsilon_{t-1} + \upsilon_t$ (7)

After performing the regression model (6) and (7), the correlation coefficient estimation grade 1 $\hat{\rho} \cong 0.22$, to substitute into the equation (5):

$$\begin{aligned}(Y_t - 0.22Y_{t-1}) = \hat{\beta}_0(1-0.22) + \hat{\beta}_1(X_{1t} - 0.22X_{1(t-1)}) \\ + \hat{\beta}_2(X_{2t} - 0.22X_{2(t-1)}) + \hat{\beta}_3(X_{3t} - 0.22X_{3(t-1)}) \\ + \hat{\beta}_4(T_t - 0.22T_{t-1}) + (\mu_t - 0.22\mu_{t-1})\end{aligned} \tag{8}$$

4.4 Estimation Results

In this content, the author will perform four regressions on the relationship between the burden of corporate income tax and one independent variable (corporate income tax revenue), two independent variables (corporate income tax revenue, GDP at current prices), three independent variables (corporate income tax revenue, GDP at current prices, tax rate), four independent variables (corporate income tax revenue, GDP at current prices, tax rate, time trend). After performing the operations, the regression results are in the data tables below:

Table 1: The regression results of the model (1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.066467	0.008101	8.205102	0.0000
X_1	9.85E-08	7.34E-08	1.342226	0.2044
R-squared:	0.130534	Durbin-Watson stat:		0.471389
Adjusted R-squared:	0.058078	F-statistic:		1.801572

Table 2: The regression results of the model (2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.067256	0.003590	18.73399	0.0000
X_1	1.14E-06	1.51E-07	7.568837	0.0000
X_2	-8.14E-08	1.15E-08	-7.082101	0.0000
R-squared:	0.843611	Durbin-Watson stat:		1.203611
Adjusted R-squared:	0.815177	F-statistic:		29.66880

Table 3: The regression results of the model (3)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.023228	0.083966	0.276631	0.7877
X_1	1.14E-06	1.56E-07	7.310365	0.0000
X_2	-7.86E-08	1.30E-08	-6.046094	0.0001
X_3	0.001505	0.002867	0.524877	0.6111
R-squared:	0.847804	Durbin-Watson stat:		1.158569
Adjusted R-squared:	0.802146	F-statistic:		18.56829

Table 4: The regression results of the model (4)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.067643	0.066665	-1.014663	0.3368
X_1	7.41E-07	1.67E-07	4.429228	0.0016
X_2	-6.85E-08	9.87E-09	-6.938149	0.0001
X_3	0.004350	0.002243	1.938947	0.0845
T	0.005146	0.001600	3.215470	0.0106
R-squared:	0.929172	Durbin-Watson stat:		1.287945
Adjusted R-squared:	0.897693	F-statistic:		29.51707

Table 5: The regression results of the model (8)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.024634	0.034208	-0.720113	0.4920
X_1-0.22X_1(-1)	5.32E-07	9.85E-08	5.399346	0.0006
X_2-0.22X_2(-1)	-5.37E-08	6.72E-09	-7.994016	0.0000
X_3-0.22X_3(-1)	0.003108	0.001463	2.124456	0.0664
T-0.22T(-1)	0.004634	0.001206	3.842213	0.0049
R-squared:	0.913759	Durbin-Watson stat:		2.184553
Adjusted R-squared:	0.870639	F-statistic:		21.19088

Based on the regression results in Table 5, signs of $\hat{\beta}_0$, $\hat{\beta}_1$, $\hat{\beta}_2$ $\hat{\beta}_3$ và $\hat{\beta}_4$ are in accordance with economic rules. The value *d* of Durbin-Watson test by 2,184553, meanwhile the significance level α = 5% = 0.05, the sample numbers n = 14, number of independent variables in the model k' = 4, inferred d_L = 0,632 and d_U = 2,030. Due to $d > d_U$, so the results do not show that the model is autocorrelation phenomena. At the same time, due to *p_value* of X_1, X_2 and T is so small, so the impact of corporate income tax revenue, GDP at current prices and time trend on the corporate income tax burden is too strong, but the effect of reducing the tax rate is not strong. The table of the regression results also shows us, R^2 = 0.913759, which means the change of the independent variables (tax burden for foreign-invested sector, unit labor costs and inflation index) explained 91.3759% of the dependent variable's fluctuation. R^2 and F-statistic are large, the regression model is appropriate. After the change of variables, the block coefficient estimate of the differential model is -0.024634, therefore the block coefficient estimate of the model (4): $\hat{\beta}_0$ = [-0.024634/(1 – 0,22)] = -0,01921452. The slope estimate of the original model $\hat{\beta}_1$ = 5,32E-07, $\hat{\beta}_2$ = -5,37E-08, $\hat{\beta}_3$ = 0,003108 và $\hat{\beta}_4$ = 0,004634.

Thus, the author performs the regression on the relationship between the burden of corporate income tax and the independent variables through four regression models. The regression results show that the model (4) is more suitable than the three remaining models. Why? Firstly, due to the block coefficient in the model (1), (2), (3) is a positive sign, meanwhile sign of the block coefficient and slopes in the model (4) is consistent with economic rules. Secondly, R^2 and F-statistic in the model (1), (2), (3) are smaller than the model (4).

4.3 Discussion

The research results of this article are consistent with tax theory and practical evidence. This suggests a marvelous similarity. A comparison between tax theory and Vietnam's practice, the author points out two coincidences: The corporate income tax contributes equitable distribution of income and an increase in the state budget; the change of the corporate income tax burden is affected by the change of revenue from corporate income tax, GDP, tax rates and time. A comparison between the findings of other authors and Vietnam's practice, there are some coincidences or differences: Statutory corporate tax rates do not change often within a country [2], but it could change in the medium term about from 4 to 5 years for one change time in Vietnam; the state budget revenue depends on unstable profit of businesses, and the practical situation of Vietnam also took place in this direction; reducing corporate income tax rates has also been performed both in Vietnam and other countries to reduce the burden of this tax.

5 Conclusion

In this article, the author has found four factors that they affect the burden of corporate income tax, including three quantitative factors (corporate income tax revenue, GDP at current prices and tax rates) and one qualitative factor (time trend). But the findings also show that, based on p_value, the impact of reducing tax rate on the burden of corporate income tax is not greater than corporate income tax revenue and GDP at current prices. This means that taxable objects of Law on corporate income tax are fairly broad. Measures to this problem is to reduce taxable objects, for example, tax exemption for small and medium businesses has just been established for a longer period; tax exemption for businesses operating in the fields of education, health, scientific research, infrastructure; tax exemption in the first years for businesses operating in manufacturing industries; to increase investment capital during the current economic crisis period, needs to exempt income tax from interest on deposits. In the ineffective business context of many state-owned enterprises, equitization rapidly and eliminating the less effective state-owned enterprises will reduce the burden on the state budget, it also means that reducing tax burden for businesses and economy. These policies will stimulate the increase of the number of domestic private businesses and foreign businesses, capital accumulation, investment expansion, jobs, and thereby contribute to economic growth.

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