

Doctoral Dissertation

# Public Debt Sustainability for Development in Vietnam

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Doctoral Program in International Relations  
Graduate School of International Relations  
Ritsumeikan University

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Public Debt Sustainability for Development in Vietnam  
(ベトナム開発における公的債務の持続可能性)

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国際関係学専攻博士課程後期課程

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Abstract of Doctoral Dissertation

**Public Debt Sustainability for Development in Vietnam**

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Public debt and its impact on economic growth have been taken into consideration, not only by advanced countries but also by developing countries, especially after the Global Financial Crisis in 2008 and the European sovereign debt crisis in 2011. Although Vietnam has not faced public debt liquidity and solvency risks for the past two decades, the public debt-to-GDP ratio, which has been at its highest compared to other ASEAN countries recently, and persistent fiscal deficits over the years have risen great concerns about the long-term sustainability of the current public debt and fiscal position.

Empirical analyses on the public debt issues of Vietnam remain relatively limited. This research serves as a first attempt to comprehensively examine the effect of public debt on the economic growth of Vietnam throughout the periods of 1995-2018 and 2005-2018, while also simulating the public debt-to-GDP ratio for the next 10 years (2019-2028) in order to provide policy recommendations for Vietnam to achieve sustainable growth in the medium to long-term. Based on the Panel Generalized Method of Moments (GMM) estimation, which samples five ASEAN countries including Vietnam, the research results show that public debt has had a significant and positive effect on GDP growth over the past 23 years. This finding reflects the fact that accumulated debt is not oversized and government borrowing to finance increasing demands for public spending has a beneficial impact on the productivity growth of Vietnam. In addition, based on numerical simulations for tax revenue and government expenditure, the results suggest that the estimated public debt will be in the range of 55-63% of GDP by 2028, indicating that public debt in Vietnam will remain sustainable over the next decade.

It follows from this study that the Vietnamese government should undertake reforms with a focus on debt management to achieve sustainable development objectives. Specifically,

the current priorities of the government are: (i) to keep the share of government bonds and short-term bonds owned by domestic financial institutions at a high level compared to that of foreign investors in order to reduce the risks of external borrowing, and (ii) to design a long-term plan to maintain fiscal stability, which helps the economy avoid negative fiscal shocks in the future. To this end, this study proposes two main recommendations as follows. First, avoiding the risk of a capital account crisis requires maintaining capital management and controls. Second, tax systems should be reformed to realize more progressive tax regimes in accordance with reducing heavy reliance on FDI, while increasing corporate income tax rate on domestic enterprises and raising personal income tax rate on wealthy individuals in order to redistribute income and enhance long-term economic growth.

# 博士論文要旨

## ベトナム開発における公的債務の持続可能性

立命館大学大学院国際関係研究科

国際関係学専攻博士課程後期課程

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PHAM THI PHUONG THAO

公的債務とその経済成長への影響は、先進国だけでなく、特に 2008 年の世界金融危機および最近の 2011 年の欧州のソブリン債務危機以降、開発途上国においても深刻な影響が指摘されている。現在ベトナムは公的債務問題が表面化しているわけではないが、過去 20 年間の流動性リスクとソルベンシーリスクに関し他の ASEAN 諸国と比較して最も高い公的債務比率となっており、長年にわたる財政赤字の長期的な持続可能性について大きな懸念を引き起こしている。

ベトナムの公的債務問題に関する実証分析は非常に少数かつ限定的である。本論文は、1995 年から 2018 年および 2005 年から 2018 年迄の期間におけるベトナムの公的債務の分析し、今後の公的債務比率に関してシミュレーションを実施した結果を基に中長期的に持続可能な成長のためのいくつかの政策提言を提供する。

公的債務のシミュレーションに先立ち、ベトナムを含む ASEAN 5 各国を対象としたパネル GMM の推定に基づく分析を実施し、公的債務は過去 23 年間においては GDP 成長にむしろプラスの影響を与えたことを示している。この分析結果は、ASEAN においては公的債務が過大ではなく、政府の借入が国内の生産性向上に有益な影響を与えているという事実を反映している。さらに、ベトナム国内の税収と政府支出に関して 2019-2028 年の期間を対象とした 3 通りのシミュレーションに基づいた結果では、公的債務は 55-63% の範囲にとどまり、比較的安定することが見込まれることを示している。

長期的には、ベトナム政府は持続可能な開発の観点から債務管理を改革する必要がある。ベトナム政府の優先事項は (i) 外部借入のリスクを低減するために、国内

金融機関が保有する国債と短期債のシェアを外国投資家と比較して高い水準に保つこと、(ii) 経済が将来のマイナスの財政ショックを回避するために、長期の安定した財政計画の早期準備をすることが必要である。

本論文では、前記目標を達成するために、次の二つの主要な推奨事項を提案している。第一に、公的債務が外資の流出入による対外債務リスクを回避するために資本規制と為替取引の管理を維持する必要がある。これはアジア危機をはじめこれまでの様々な危機にみられたような外国投資家の急速な資本引上げに伴う資本収支危機を回避するためである。第二に、国の財政赤字を長期的に維持可能なものとするために、現在のような FDI に伴う外国法人からの税収への依存度を下げ、国内企業ベースの企業所得を増やし、富を再分配し、長期的な経済成長を促進することが必要である。

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## ABBREVIATIONS

ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
CFMs	Capital Flows Measures
CIT	Corporate Income Tax
CPI	Consumer Price Index
ECB	European Central Bank
FDI	Foreign Direct Investment
FPI	Foreign Portfolio Investment
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
GSO	General Statistics Office
IMF	International Monetary Fund
ILO	International Labor Organization
LACs	Latin American Countries
MMT	Modern Monetary Theory
MoF	Ministry of Finance
MOLISA	Ministry of Labor, Invalids, and Social Affair
ODA	Official Development Assistance
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Squares
PIT	Personal Income Tax
SMEs	Small and Medium Enterprises
SOEs	State-owned Enterprises
VAT	Value-added Tax
VND	Vietnamese Dong
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
USD	United States Dollar
WB	World Bank
WTO	World Trade Organization
SBV	State Bank of Vietnam

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## INTRODUCTION

A better understanding of determinants of public debt sustainability is a critical issue when it comes to analyzing the fiscal policies of any nation. Especially after the Global Financial Crisis in 2008 and the Euro Crisis in 2011, public debt management in advanced economies has been a topic of ongoing debate among academics and policymakers. Vietnam typically faces huge and growing demands for funding for its investments in infrastructure systems. For this reason, the country has relied on external sources, such as foreign direct investment (FDI) and official development assistance (ODA) to finance infrastructure projects. Nevertheless, public debt issues of Vietnam, mainly induced by investments in infrastructure or social programs, have not been well examined in previous studies. Recently, the aftermath of the public debt crisis in Europe motivates fruitful discussions on public debt sustainability of Vietnam in both academic and public spheres. Furthermore, this is a particularly important topic because the ratio of public debt in the total GDP of Vietnam keeps increasing over the years.

Vietnam has experienced high levels of public debt in the post-Global Financial Crisis era, which is a key problem of fiscal sustainability. Particularly, the proportion of fiscal balance in total GDP decreased significantly from 0.6% to -4.2% from 2008 to 2009, and from -0.5% in 2011 to -5% in 2013. Although fiscal balance increased to -3.5% of GDP in 2018, budget deficit has been increasing since 2011. According to the Ministry of Finance (MoF) of Vietnam, tax revenue has increased significantly from 363,020 billion VND in 2008 to 928,818 billion VND in 2017. Tax revenue accounted for 22.4% of total GDP over the period from 2016 to 2019. Otherwise, recurrent expenditure has grown faster than the growth of total revenue (World Bank, 2017). As a percentage of GDP, recurrent expenditure increased from 42.7% in 2008 to 68.2% in 2018. In addition, according to the NEU (2019), the structure of state budget is unconsolidated.<sup>1</sup> More specifically, the ratio of corporate income tax revenue in total government revenue decreased significantly from 25% over the period of 2006-2010 to 16.8% in 2018. The ratio of tax revenues collected from customs duties has also decreased rapidly since 2012, accounting for more than 15% of the budget revenue annually in the past five years (below 13% in 2018).

Moreover, the share of development investment expenditure on total government expenditure decreased significantly over 25% in 2009 to just over 11% in 2016. By contrast, recurrent expenditure keeps increasing along with levels of economic growth. This might be because substantial infrastructure investments have peaked, resulting in a decrease in the share of development investment expenditures. The annual growth rate of expenditures has decreased

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<sup>1</sup>National Economics University, “Vietnamese economy in 2018 and prospects in 2019: Toward Fiscal Policy to Secure the Financial Sustainability and Support the Economic Growth”, *Annual Conference 2019*.

remarkably over the past five years from 20% in 2014 to 8.2% in 2018, but public spending remains quite high. Further, although there has been a rise of public expenditure in recent years from increasing demands for public infrastructure investments at early stages of development, the effectiveness of public investments is still relatively low.<sup>2</sup>

Consequently, the proportion of public debt in total GDP increased dramatically from 39.9% in 2001 to 63.7% in 2016, which is close to the ceiling level of 65% set by the National Assembly of Vietnam. This ratio is also among the highest levels in ASEAN. The government external debt rose remarkably from US\$ 32 billion in 2011 to US\$ 46.9 billion in 2018. Moreover, total public debt was double the amount of total government revenue over the period of 2010-2017. This may put high pressure on debt repayments in the future, especially after the outbreak of the coronavirus (COVID-19) pandemic that has had negative effects on economic growth and deteriorated fiscal deficit.

Reducing recurrent expenditure in the coming years appears to be challenging, which may have a significant impact on budget deficit and public debt in the medium and long term. This impact would arise because the government needs to raise increasing revenues to cover regular spending instead of using for development investment projects. In addition, Vietnam has attracted substantial foreign capital inflows, including ODA and FDI, over the past decades. However, the country's plan is to achieve an upper-middle income status by 2035. As such, it may experience higher borrowing costs in the future, making it difficult to access foreign sources of funding. In fact, according to the MoF of Vietnam, the interest rate of concessional loans increased from 0.7-0.8% over the period of 2005-2010 to an average of more than 2% over the period of 2011-2015. Vietnamese state budget is expected to pay back US\$ 1 billion per year on average for ODA loans. Furthermore, Vietnam no longer received capital resources from the World Bank's International Development Association (IDA) starting from 2017. An increase in the lending interest rate may put higher pressure on the repayment obligations of the government.

The current situation of public debt in Vietnam is relatively safe because government bonds are mostly owned by domestic institutions. Therefore, the government may rely on this category of public debt to finance its fiscal deficit for the time being. Furthermore, in the context of difficulties in reducing the government's recurrent expenditures at the current stage of development in Vietnam, tax reform should be taken into consideration to improve tax revenue in order to compensate higher public spending and achieve sustainable economic growth.

Importantly, an empirical analysis on the public debt - growth nexus and the public debt sustainability of Vietnam seems to be rare. Most of previous studies focus on exploring these

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<sup>2</sup>The average value of the Incremental Capital - Output Ratio (ICOR) for the period of 2000-2017 was 5.6, quite high compared to the world average of 3 (Le, 2018).

issues in advanced and emerging countries, and they largely ignore Asian countries. In order to fill the gap in the current literature, this study aims to answer the following research questions:

- (1) What are the impacts of public debt on economic growth in Vietnam over the periods of 1995-2018 and 2005-2018?
- (2) Does Vietnam achieve sustainable public debt in the medium to long-term?

The main objective of this research is to identify the sustainable level of public debt and fiscal balance for long-term economic growth of Vietnam. This study contributes to the existing literature in several aspects as follows.

First, this is the first study investigating the public debt sustainability in Vietnam by applying a tax revenue approach. The existing literature mainly relied on indicators capturing how far fiscal policies depart from sustainability in industrial countries (Buiter, 1985 and Blanchard, 1990). Some of the IMF's working papers (2000 and 2003) focused on the link between fiscal and debt sustainability via the evolution of age related to the spending on sustainability and budget constraints. It employs indicators that tests for uncertainty in both advanced and emerging countries. In this regard, this study differs from prior studies by using data on tax collection and their relationship with GDP of Vietnam to simulate total government revenues, primary budget deficit, and the ratio of public debt to GDP in the medium to long-term.

Second, studies investigating the increase in government revenues through tax collection remain scarce and limited. Due to the lack of available fiscal balance data covering the past several decades, recent studies have presented major risks and policy implications for Vietnam based on the growing fiscal deficit. Within these studies, some use qualitative analyses (Le, 2016), while others include several countries into panel data econometrics for testing the budget deficit-growth nexus (Van & Sudhipongpracha, 2015). As such, this appears to be one of the first comprehensive studies that provide empirical evidence on the relationship between total tax revenue and three main categories of taxes (corporate income tax, personal income tax, and value-added tax) as well as economic growth of Vietnam, using a different methodology with latest data.

The remainder of this dissertation is structured as follows.

Chapter 1 provides an overview of the current situation of macroeconomic performance, fiscal position, tax system reforms, and public debt, of Vietnam. Specifically, following Manasse and Roubini (2005), this study provides an analysis of public debt issues of Vietnam in two different aspects: (i) *solvency* (public debt and public external debt as a percentage of GDP) and (ii) *liquidity* (short-term public debt and debt service as a percentage of foreign reserves).

Chapter 2 discusses theoretical and empirical frameworks on public debt and fiscal sustainability, and analyzes the experience of several countries facing sovereign debt and

financial crises. Most of research on public debt sustainability in the 1980s and 1990s emphasized developed OECD countries or the U.S. and found that since developed countries have independence and most currencies in the domestic market are financed by central banks, these countries had weak or no risk to public debt sustainability. Meanwhile, as Latin American countries had pure independence and low central bank credibility, these countries faced serious problems of external debt repayment. Experiences of emerging or developing countries during the Asian Financial Crisis (1997/98) and advanced or developed countries during the Global Financial Crisis (2008) proved that capital flow control is one of the most important measures for reducing financial fragility and preventing the contagion of crises.

Chapter 3 examines the impact of public debt on economic growth in Vietnam during periods of 1995-2018 and 2005-2018. The objective is to explore the potential changes in the impact of public debt on economic growth after the Global Financial Crisis in 2008. Because the period covered in this study is relatively short, four other ASEAN countries, including Indonesia, Malaysia, the Philippines, and Thailand, are included in the sample to increase the robustness of the regression. Regression analyses based on General Method of Moments (GMM) estimation reveals a significant and positive impact of public debt upon the real GDP per capita growth rate. However, the adverse impact of higher indebtedness has not been found from the empirical analysis on Vietnam. This result is contrary to the general discussion on the negative effects of public debt and economic growth. It shows that public debt is utilized to finance effective public investment in Vietnam and other ASEAN countries at the current stage of development and thereby has promoted economic growth in the long-term. Separately, FDI and gross fixed capital formation are two key factors contributing to the development of ASEAN economies.

Chapter 4 projects the ratio of public debt in total GDP over the next 10 years from 2019 to 2028, based on numerical simulations for tax revenues and government expenditures. Particularly, this study focuses on changes in the fiscal revenues based on three main categories, including corporate income, personal income, and value-added taxes, and their impacts on total revenues and public debt. The OLS regression is applied to investigate the impact of each category of tax on total tax revenue during the period 1997-2017. The empirical results show that corporate income tax and VAT revenue have positive and significant impacts on total tax revenue over the past two decades. In addition, this study uses the five-year moving average method to calculate the elasticity of each category of tax on GDP, the elasticity of each category of government expenditure on GDP for the next decade. Finally, based on above projected elasticity, the absolute value of government's total revenue and expenditure, as well as public debt-to-GDP ratio will be simulated. The estimation result shows that Vietnam's public debt is



expected to be sustainable in the range of around 60% of GDP in the medium to long-term and fiscal deficit would not constrain economic growth.

Chapter 5 discusses current regimes of capital flow controls and tax reforms to provide some policy recommendations for Vietnam to achieve sustainable external and public debt in the future. The current situation of public debt in Vietnam now is not so serious because government bond has mostly owned by domestic institutions. However, it is necessary to manage capital inflows – outflows in order to avoid risk of capital account crisis which may easily happen under liberalized regimes of capital and financial account.

Finally, the conclusion summarizes the main results of this research and discusses several limitations and suggestions for future studies.

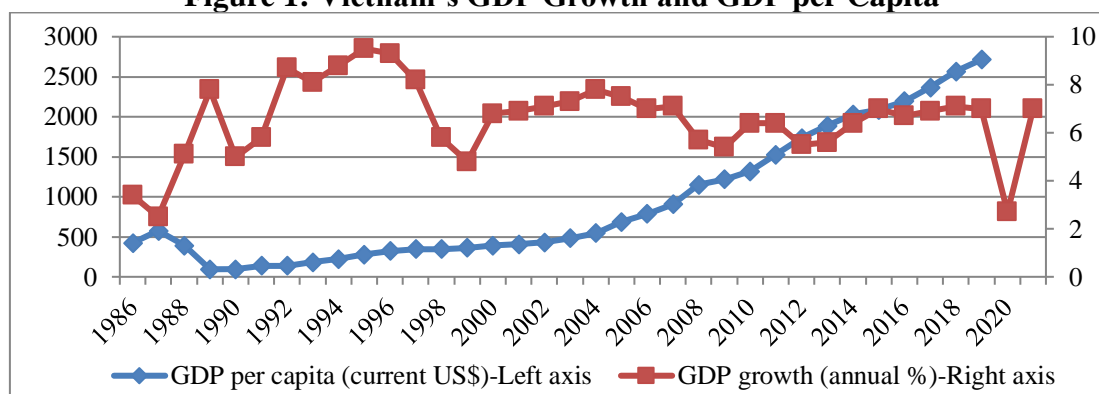
# Chapter 1: Overview of the Current Situation of Macroeconomic Performance, Fiscal Balance, Tax Reforms, and Public Debt in Vietnam

## 1.1. Macroeconomic Performance

The implementation of economic reforms in 1986, known as “Doi Moi”, has transformed Vietnam from a centrally-planned economy, characterized by widespread poverty, to a lower middle-income country with a socialist-oriented market economy. A key feature of this process lies in Vietnam’s strong integration into the global economy, evidenced by significant increases in trade flows and foreign investment. Furthermore, the development of the private sector has been a crucial policy concern of the Vietnamese government. Consequently, economic growth more than doubled from 2.8% in 1986 to 6.0% in 1988 before reaching its highest level of 9.5% in 1995. However, the rate of economic growth declined by nearly half from 9.5% in 1995 to 4.8% in 1999, which is mainly attributable to the negative impact of the 1997 Asian Financial Crisis. Subsequently, investment was enhanced by the enactment of the Enterprise Law in 1999 and the Investment Law in 2005.

After the crisis, the annual GDP growth rate remained at a stable level (7-8%) in 2000-2004, but it was interrupted by the Global Financial Crisis in 2007. It fell significantly to 5.2%, which was the lowest level in 2012. Since 2012, the Vietnamese economy has recovered quickly with GDP growth averaging more than 5% per year. Economic growth slowed down to 6.2% in 2016 from 6.7% in 2015, reflecting the effect of a drought and land salinization on agriculture and lower oil production (IMF, 2017). In 2019, GDP growth was higher at 7.0%. However, the economic growth is expected to slow down to 2.7% in 2020 because of the effects of the COVID-19 pandemic (IMF, 2020). Overall, Vietnam has made remarkable progress in social and economic performance and the GDP per capita has increased sharply by 6.5 times from US\$ 390 in 2000 to US \$2,715 in 2019.

**Figure 1: Vietnam’s GDP Growth and GDP per Capita**



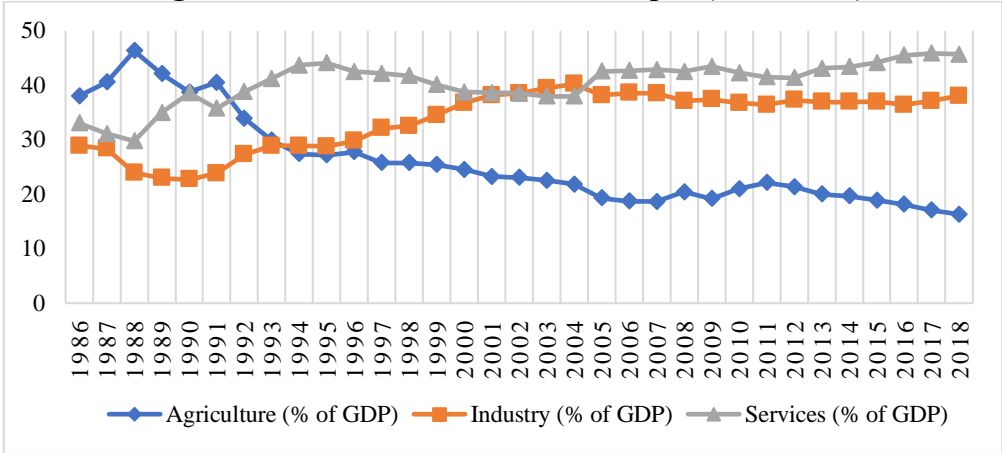
Note: Figures for GDP growth in 2020 and 2021 are projected by the IMF

Sources: *World Economic Outlook 2020 (IMF)* and *World Development Indicator 2019 (World Bank)*

Although Vietnam has achieved robust economic growth over the past decades, its GDP per capita remained relatively low in absolute terms. In particular, income per capita was US\$ 2,567 in 2018, much lower than the average for ASEAN countries (US\$ 4,601), as well as other countries such as Malaysia (US\$ 10,041), Thailand (US\$ 6,737), and Indonesia (US\$ 3,871).<sup>3</sup> A possible explanation for this holds that the Vietnamese economy has relied mainly on exporting natural resources and agricultural products, with decreasing returns. According to a report on labor and employment in 2018 by the General Statistics Office of Vietnam (GSO), the number of people employed in agricultural, forestry, fishing, and mining industries as a proportion of employment, on average, accounted for approximately 50% over the period from 2000 to 2018.

Along with a surge in FDI in Vietnam since 2000, the level in which each economic sector contributes to GDP overall has changed remarkably. In particular, the agricultural sector’s contribution to national GDP maintained a downward trend over the last decades, falling from 24.5% in 2000 to 16.3% in 2018. By contrast, the industrial and service sectors accounted for an increasing proportion of GDP. The industry sector, which covers manufacturing, electricity, construction and mining, was necessary for the early stage of development in Vietnam with the increase from 22.7% of GDP in 1990 to 36.7% of GDP in 2000. However, there was a slight decrease in GDP generated by the industrial sector after the Global Financial Crisis in 2008, whereas the service sector became more prominent as Vietnam grew more deeply involved in the global economy. The share of the service sector increased from 38.7% in 2000 to 45.7% in 2018, contributing to GDP through many channels, such as trade liberalization in services and in financial development.<sup>4</sup>

**Figure 2: Vietnam’s Structure of Output (% of GDP)**



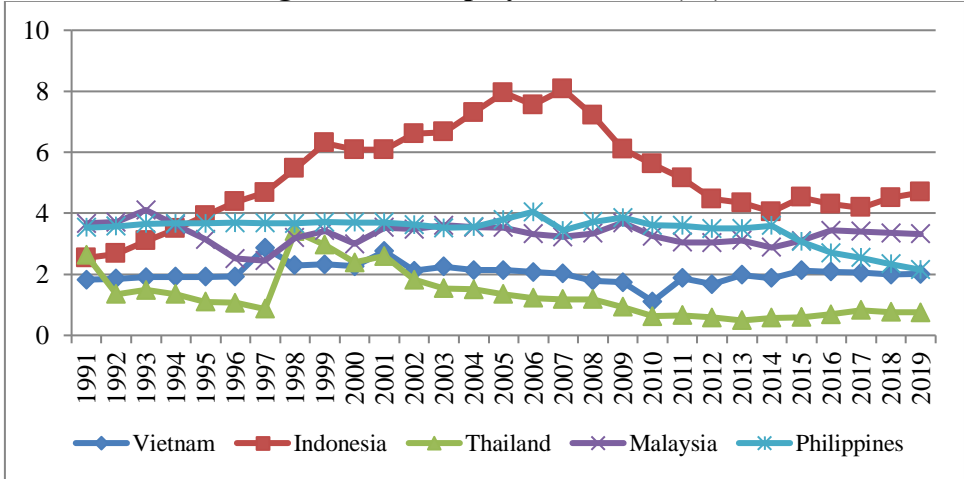
Source: Key Indicators for Asia and the Pacific, 2019 (ADB)

<sup>3</sup>Data are taken from the ASEAN (2019).

<sup>4</sup>From the establishment of the stock market in 2000 with only 2 listed companies and total capitalization of 986 billion VND, up to the end of 2015, Vietnam’s stock market has 686 listed companies. The total capitalization also increased by 1,300 times, reaching 1.36 quadrillion VND, which equals 34.5% of GDP (Nguyen et al., 2016).

The unemployment rate of Vietnam is still lower than other ASEAN countries (Figure 3). As the end of 2019, Vietnam’s unemployment rate was 2.01%, which is lower than Indonesia (4.69%) and Malaysia (3.32%). Nevertheless, the structural changes in the labor market are not consistent with the structural transformation of the Vietnamese economy (Figure 4). Specifically, the employment rate in the agriculture sector declined sharply from 65.3% in 1997 to 38.6% in 2018; however, it remains the largest sector of total employment of Vietnam. Meanwhile, in comparison with the large composition of industry and service sectors on total output, labor in two sectors has increased at lower rates than the declining rate of labor in the agriculture sector. By the end of 2018, the industrial and service sectors accounted for 26.8% and 34.6% of employment, respectively.

**Figure 3: Unemployment Rate (%)**

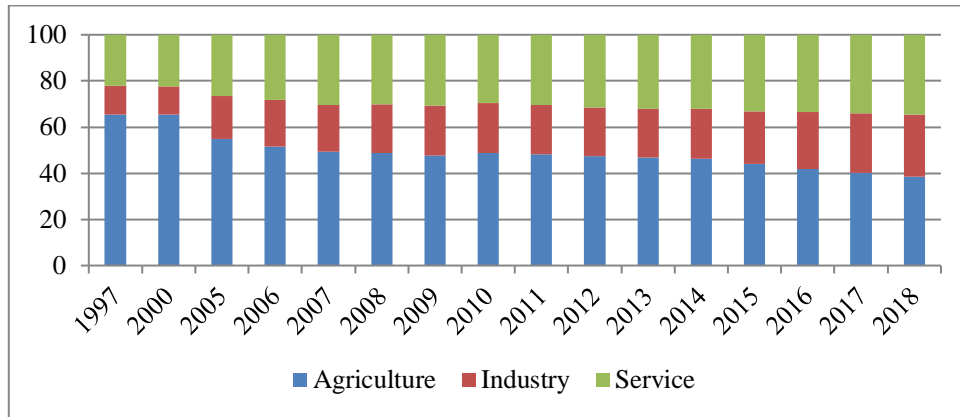


Source: World Development Indicator 2020 (World Bank)

In addition, although labor productivity in Vietnam has improved in recent years,<sup>5</sup> the quality of the labor force remains comparatively low with a high proportion of labor employed in agriculture, forestry, and fishery. This is because most industries in Vietnam are still based on labor-intensive manufacturing, with workers in the industrial sector engaged in low-productivity activities (e.g., assembling or manufacturing) that require relatively low skills. According to the GSO’s labor and employment survey, the number of workers in Vietnam holding academic or specialized qualifications accounted for only 22% of the labor force by the end of 2018. More specifically, workers with university degrees accounted for 9.7%. Furthermore, the figures for workers with college, middle-level vocational school, and primary vocational school degrees are 3.2%, 3.8%, and 5.5%, respectively. This may lead to a widening gap between workers’ qualifications and demands of the labor market.

<sup>5</sup>According to ILO (2018), labor productivity in Vietnam has increased by PPP US\$ 1,650 (based on Purchasing Power Parities) between 2012 and 2016, while labor productivity increased from PPP US\$ 2,500 to nearly PPP US\$ 5,000 in other countries of the region during the same period.

**Figure 4: Distribution of Employment by Economic Sector (%)**

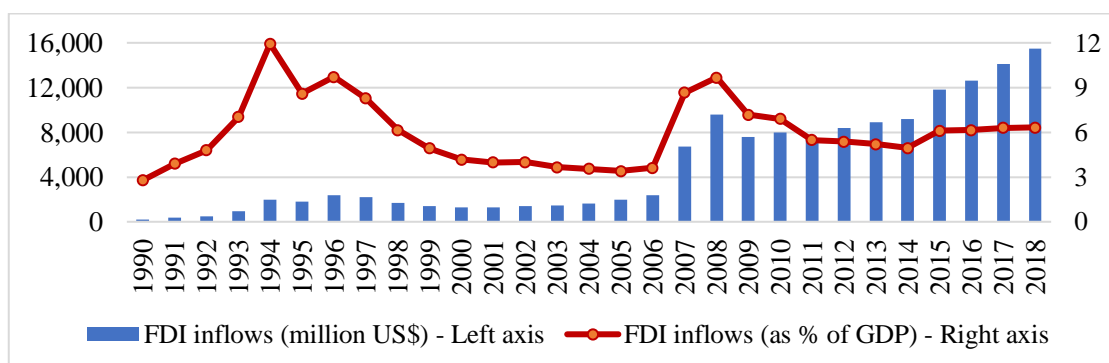


Source: MOLISA Labor and Employment Survey, ILO Statistics 2019

Foreign direct investment has been a major factor contributing to the economic growth of Vietnam. Figure 5 shows the upward trend of FDI in Vietnam since the 1990s, which peaked at 12% of its GDP in 1994. However, a lack of laws and regulations related to foreign investment in Vietnam hindered FDI in Vietnam in the early 2000s. The proportion of FDI in GDP, in particular, decreased from 12% in 1994 to 4.2% in 2000. It remained relatively stable at 3 to 4% over the period of 2000-2006 before increasing to 9.7% in 2008. Yet the figure dropped significantly to an annual average of 5% over the period following the Global Financial Crisis.

The net inflows of FDI in absolute values have increased significantly over the last decade because of increasing production costs in China. However, all sectors of economic performance have declined, resulting in less FDI contribution to GDP due to the Global Financial Crisis in 2008. Recently, FDI in the service sector has increased more rapidly compared with that in the manufacturing sector, partly because of the development of E-commerce and information technologies. Over the last four years, around US\$ 1 billion has been poured into Vietnam’s e-commerce sector, funded mainly by investors from Japan, Germany, the United States, South Korea, China, and Singapore.

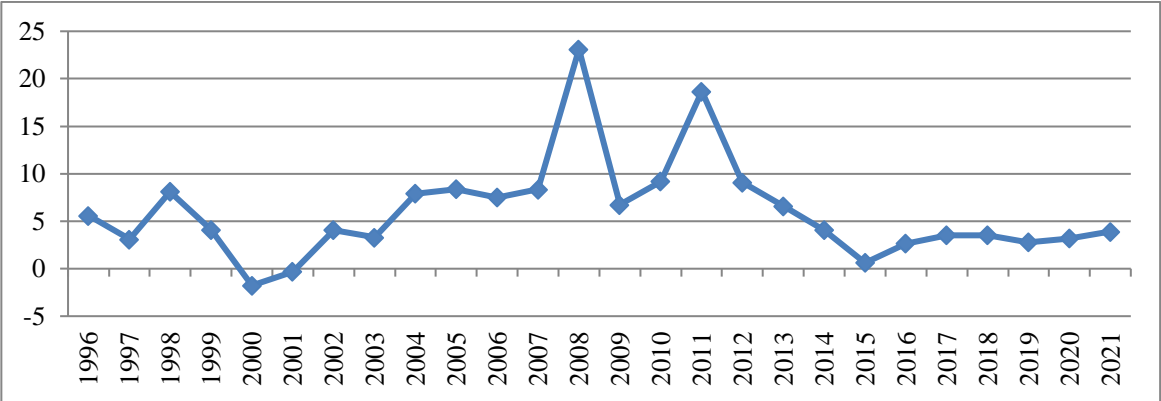
**Figure 5: Vietnam’s FDI Net Inflows (US\$ Millions) and FDI Inflows (% of GDP)**



Source: World Development Indicator 2020 (World Bank)

Figure 6 shows inflation rate or the Consumer Price Index (CPI) of Vietnam for the past two decades. Accordingly, consumer prices more than doubled between 1997 and 1998. CPI increased significantly from 4% in 2002 to a record high of 23.1% in 2008 and 18.6% in 2011 due to the negative effects of the Global Financial Crisis. Furthermore, inflation was also driven by expansionary fiscal policies that pushed up domestic food and fuel prices. The CPI index further decreased from 9.1% in 2012 to 0.6% in 2015, but started to increase again in 2016, largely as a result of adverse weather effects on agriculture and a drop in international oil prices (ADB Outlook, 2017). At the end of 2018, the inflation rate was at 3.54%, up 0.02% from the previous year. However, due to the tremendous impact of the COVID-19 shock, the inflation was estimated to increase from 2.8% in 2019 to 3.2% and 3.9% in 2020 and 2021, respectively (IMF, 2020).

**Figure 6: Vietnam's Inflation Rate Annual Change (%)**



Note: Figures for inflation rate in 2020 and 2021 are projected by the IMF

Source: World Economic Outlook 2020 (IMF)

**1.2. Fiscal Balance, Tax Reforms, and Public Debt in Vietnam**

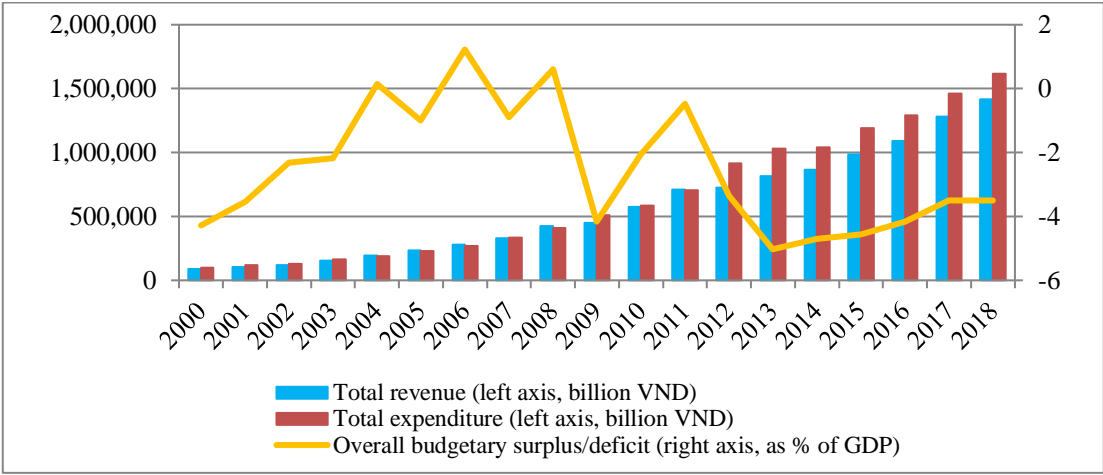
**1.2.1. Fiscal Balance**

Figure 7 shows fiscal balance, total government revenue, and expenditure in Vietnam from 2000 to 2018. The line chart illustrates that the budget deficit amounted to less than 5% during the period of 2000-2004. However, it fluctuated dramatically in the pre-global financial crisis period from 2004 to 2008. In particular, Vietnam had a budget surplus for the first time of 0.1% in 2004 before reaching a peak of 1.2% in 2006. After the crisis, the government launched a stimulus package to boost economic growth. For this reason, the fiscal balance deteriorated significantly, dropping to -5% in 2013. The figure was recorded at -3.5% in 2018.

Vietnam’s budget deficit is caused by both cyclical and structural factors. Figure 7 demonstrates that government spending is typically higher than its revenue over the years. Despite steadily increasing revenue, the values of budget deficit have been widening since 2009.

Public expenditure has witnessed an increasing trend partly because of increased recurrent expenditure, which includes, but not limited to, rising public spending on general public administration and infrastructure investment.

**Figure 7: Vietnam’s Total Government Revenue, Expenditure (Billion VND), and Fiscal Balance (% of GDP)**



Source: *Key Indicators for Asia and the Pacific, 2019 (ADB)*

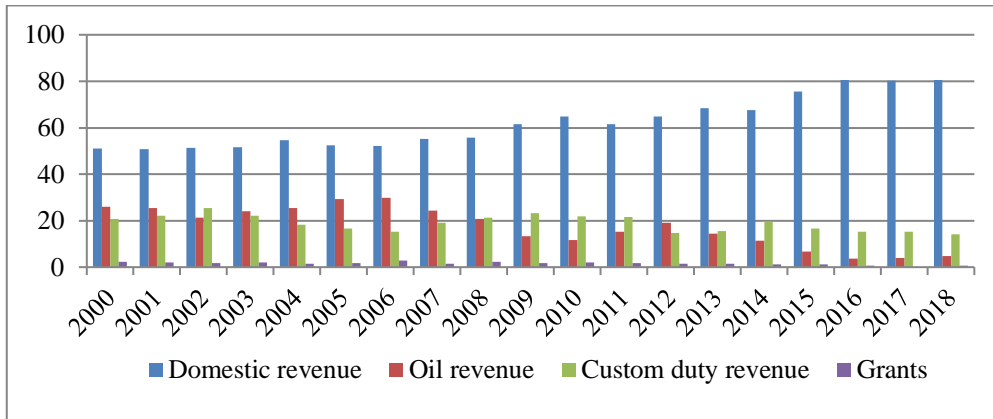
Regarding government revenue, Figure 8 shows that the structure of revenue has improved, with an increasing contribution of domestic revenue from 50.9% in 2000 to 80.6% in 2018.<sup>6</sup> Meanwhile, the share of oil revenue decreased more than 5 times from 25.3% in 2001 to 4.64% in 2018 essentially because of a sharp fall in the global oil price. Customs duty revenue increased gradually between 2001 and 2011, and decreased slightly in 2012 and 2013 because of a decline in tax revenue from imported goods.<sup>7</sup> Despite the growth of customs-duty revenue since 2014, it is predicted that the share of revenue from import-export activities for GDP will be smaller in the long run, which is consistent with Vietnam’s commitments to reduce import tariffs after joining a number of free trade agreements.<sup>8</sup>

<sup>6</sup>Domestic revenue includes revenue from SOE sector, revenues from foreign invested enterprises (excluding oil revenues), revenues from production, business, and service activities of the non-state sector, and revenues from taxes, fees, and charges.

<sup>7</sup>Customs duty revenue include import and export taxes, special consumption tax on imports, budget balanced revenues from value-added tax on imports.

<sup>8</sup>High integration agreements include Trans-Pacific Partnership (TPP), Vietnam-Korea Free Trade Agreement (VKFTA), or agreements with the European Union (EU) and the ASEAN Economic Community (AEC).

**Figure 8: Vietnam’s State Budget Revenue by Major Items (% of GDP)**

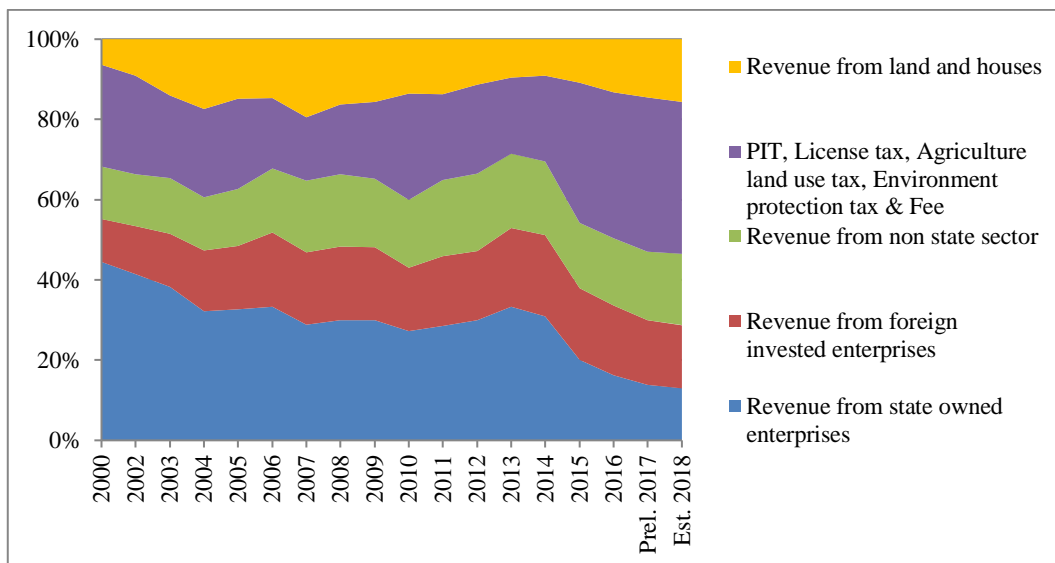


Note: Data for 2017 are preliminary, while data for 2018 are estimated.

Source: General Statistics Office (GSO) of Vietnam

The structure of domestic revenue has changed dramatically over the past two decades (Figure 9). Accordingly, the share of revenue from state-owned enterprises in domestic revenue decreased by more than 3 times from 42.6% in 2000 to 13.3% in 2018. Meanwhile, the share of foreign invested enterprises and non-state sectors has increased significantly, amounting to 34.5% in 2018. This can be explained by increased FDI inflows, and the growing contribution of the private sector to economic growth, partly driven by economic reforms in Vietnam. Besides, revenue stemming from categories of taxes and fees became one of the most important sources of domestic revenue. It accounted for the largest share of domestic revenue in 2018.

**Figure 9: Vietnam’s Domestic Revenue by Major Items (% of GDP)**

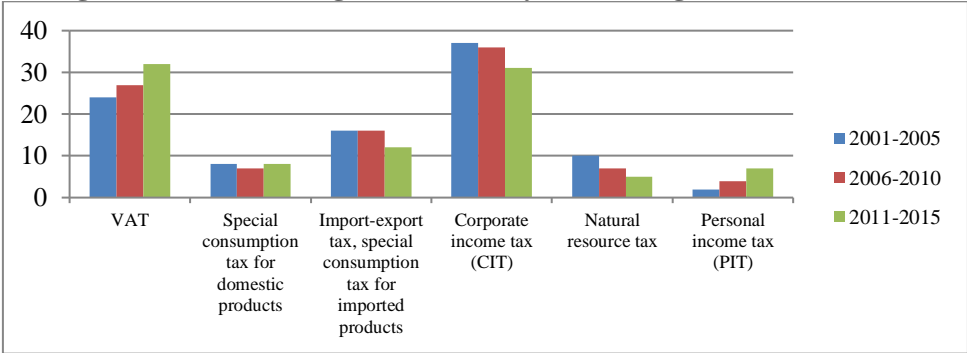


Source: General Statistics Office of Vietnam



Moreover, Figure 10 illustrates that there has been significant transformation in the structure of state budget of Vietnam, categorized by different taxes. Indirect taxes (such as value-added tax and special consumption tax) have exhibited an upward trend and accounted for an increasingly significant proportion of total revenue from 46% over the period 2001-2005 to 54% over the period 2011-2015. Between 2001 and 2015, revenue from several important tax categories grew at a high rate. For example, revenue from VAT and personal income taxes increased by 1.3 times and 3.5 times, respectively.

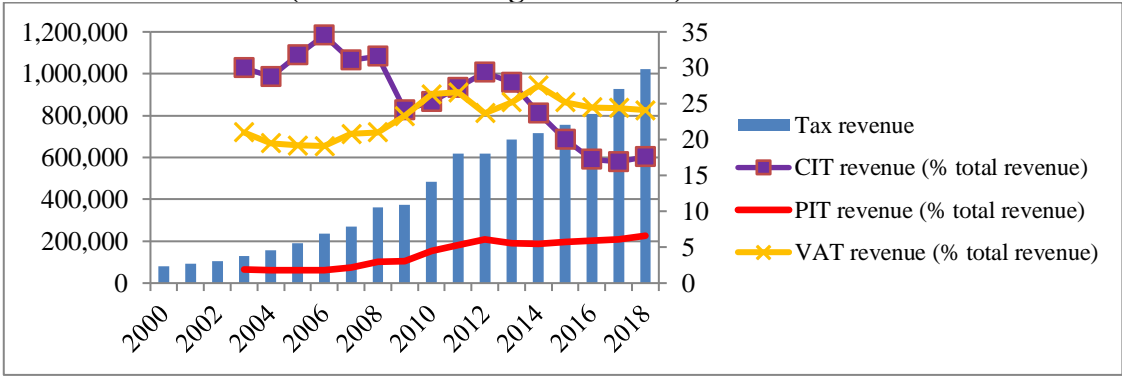
**Figure 10: State Budget Revenue by Tax Categories (% of GDP)**



Source: Ministry of Finance in Vietnam, State Budget Report 2016

Detailed information on each category of taxes is presented in Figure 11. The share of personal income taxes in state budget revenue increased significantly from 1.9% in 2003 to 6.6% in 2018. However, the share of PIT is still small, as compared with the VAT and CIT. The contribution of value-added tax in total revenue increased from 21% in 2008 to 24.1% in 2018. By contrast, the share of corporate income taxes in total revenue has decreased since 2008. This is in part because of reduction of corporate tax rate in 2009 and deterioration in investment following the global financial crisis. Furthermore, Figure 11 reveals that the total government revenue collected from various types of taxes increased by more than 18 times from 55,534 billion VND in 1997 to estimated 1,022,861 billion VND in 2018.

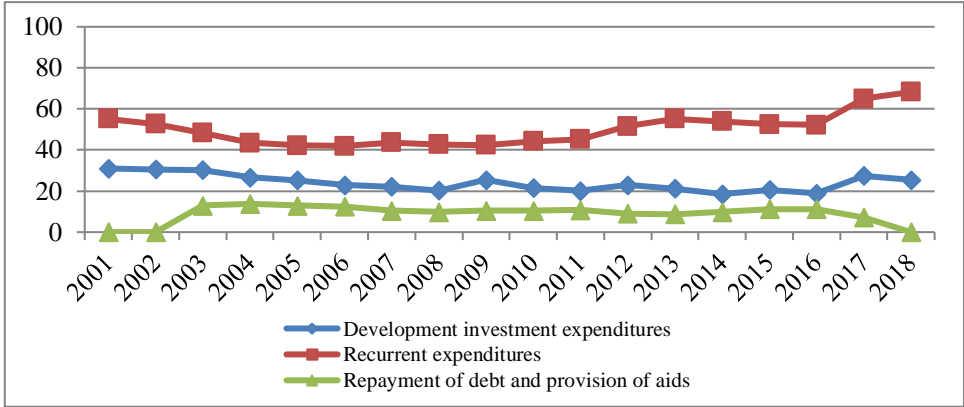
**Figure 11: Tax Revenue (Billion VND) and Three Main Tax Categories (% of State Budget Revenue) in Vietnam**



Note: Data on shares of three tax categories is available since 2002. Data for tax revenue in 2018 is estimated.  
Sources: Asian Development Bank (ADB) and Ministry of Finance in Vietnam (MoF)

Regarding the expenditure side, recurrent expenditure has accounted for around 60% of total government spending (Figure 12).<sup>9</sup> Recurrent expenditure has increased rapidly since 2007 because of a larger portion of budget revenue being spent on general public administration, salary reform, and streamlining staff. Meanwhile, the share of development investment expenditure has decreased in recent years, especially after the Global Finance Crisis.<sup>10</sup> These results are consistent with a decreased FDI to Vietnam due to the global economic downturn.

**Figure 12: Vietnam’s State Budget Expenditure by Major Items (% of GDP)**

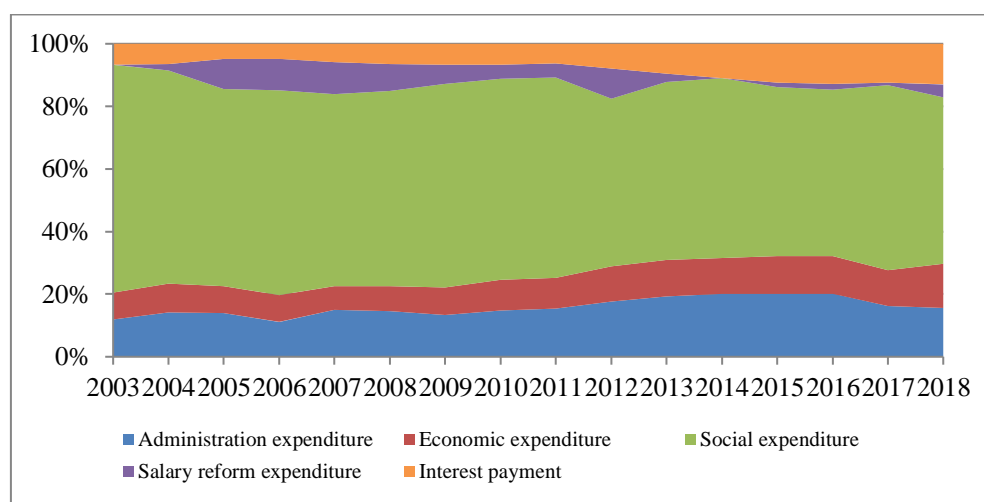


Note: Since 2007 recurrent expenditure includes expenditure for salary reform and staffs streamline  
 Figures in 2018 are 2<sup>nd</sup> estimation.  
 Source: Ministry of Finance in Vietnam

Furthermore, expenditure on socio-economic development projects accounted for the largest share of the government’s recurrent expenditures overall. However, it exhibited a decreasing trend from 75% in 2003 to 53.6% in 2018. Meanwhile, expenditures for general administration increased from 10.3% in 2006 to 12.5% in 2018. Interest payments as a proportion of recurrent expenditure more than doubled from 4.4% in 2006 to 10.3% in 2018. This increase reflects the fact that recent government revenue was spent on the general public administration and interest payments of public debt, instead of socio-economic development projects. In fact, the total debt service payments accounted for more than 16% of budget revenue, on average during the period 2010-2018.

<sup>9</sup>Recurrent expenditure includes government spending on general public administration, economic and social activities (education and training, healthcare, pension and social relief, science, technology and environment, culture and information, broadcasting and television, sports), and salary reform and staff streamline.  
<sup>10</sup> Development investment expenditure includes government spending for infrastructure, interest subsidies for state-credit loans, expenditure for promotion of trade, investment, tourism and credits to social policy beneficiaries, supplements to the National Reserves.

**Figure 13: Recurrent Expenditure by Major Items (% of GDP)**



Note: Figure in 2018 is preliminary data.

Source: Ministry of Finance of Vietnam

In short, total state budget revenue, on average, has been rising over the years. Nevertheless, several sub-categories of revenues, such as those collected from custom duties and oil exports, have experienced a downward trend. In particular, the share of non-grant revenue in the national GDP decreased from over 26% in the period 2006-2008 to around 22-23% in the period 2012-2015. The basic explanation for this holds that oil revenue as a fraction of total non-grant revenue declined drastically from 30% in 2005 to just 6.8% in 2015. Additionally, there was a sharp decrease in the share of revenue collected from customs duties from 23.6% in 2009 to 14.2% and 17.2% in 2012 and 2015, respectively.<sup>11</sup> The decline in revenue from customs duties is consistent with Vietnam's increased integration into the global economy, typically associated with tariff reductions.<sup>12</sup> Meanwhile, state budget expenditure has continued to increase, and even recurrent spending has exceeded the amount of government revenue collected from taxes and fees. Consequently, the budget deficit has become one of the most serious impediments to Vietnam achieving sustainable economic growth in recent years.

Moreover, the decomposition of government expenditure reveals that the share of expenditure on development projects (e.g., infrastructure) in total budget spending has been decreasing substantially, with an average of 21% over the last five years. This indicates that public expenditure has played a lesser role in achieving robust economic growth in Vietnam. In other words, budget expenditure has not been directed toward the objective of boosting economic growth in Vietnam, but has rather focused largely on recurrent expenditures. Moreover, public investment relies heavily on domestic borrowing, especially through commercial banks and insurance companies that hold most of government bonds. As the maturity of government bond

<sup>11</sup>This is based on a report on sustainable development of Vietnam, prepared by UNDP in 2018.

<sup>12</sup>Viet Nam has been actively engaging further in bilateral and regional free trade agreements such as the AFTA and TPP.

owned by domestic institutions is mostly in short- and medium-term, this may lead to reduce domestic private investment in the long run term, which is known as “crowding-out” effect. Therefore, key challenges which the Vietnamese government faces are to increase budget revenue sustainably and to improve the efficiency of public expenditure (UNDP, 2018).

### ***1.2.2. Tax reforms***

#### ***A. An Overview of the Four Phases of Tax Reform***

As a part of the implementation of the economic reforms initiated in 1986, tax reforms in Vietnam have been adopted through four fundamental phases as presented below.

##### ***(i) Phase 1 (1990-1995)***

The first phase of tax reforms was initiated in the early 1990s with the enactment of a single tax system applied uniformly across different economic sectors. Specifically, Vietnam transformed itself into a socialist-oriented market economy, and revised the law on foreign investment in 1990 and 1992 to create a favorable condition for doing business. Accordingly, a key objective of tax reforms during this phase was to reduce discrimination between foreign and domestic investors in Vietnam through the enactment of nine important taxation laws.<sup>13</sup> Among these laws, the turnover tax, profit tax, and import-export tax laws played critical roles in driving high rates of economic growth at early stages of economic development. The Profit Tax Law came into effect in 1993, comprising three tax rates: 25% for industrial materials, 35% for consumption products and processed industries, and 45% for trade services.

Meanwhile, the Turnover Tax Law was adopted in October 1990, including 11 tax rates ranging from 0.5% to 40%. The precursor of the Personal Income Tax was the 1994 Ordinance on Income Tax for High Income Earners, which applied to earners with a tax rate ranging from 0% to 60% depending on personal monthly incomes. Originally, the tax system was progressive, but it has become more flat tax later, which shows the trend of regressive nature. Apart from the implementation of tax reforms, the General Department of Taxation was established on August 7, 1990. The aim of this department was to advise and assist the Minister of Finance in managing domestic revenue, including but not limited to taxes, charges and fees. Another objective of the department was to implement tax policies in accordance with existing taxation laws.

##### ***(ii) Phase 2 (1997-2005)***

The second phase of the tax reforms focused on removing the discriminatory nature of the

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<sup>13</sup> They include import-export duty law; turnover tax law; special consumption tax law; profit tax law; agricultural land use tax law; tax law on transferring land use rights; ordinance on natural resource tax; income tax ordinance for high-income earners; ordinance on housing and land tax.

tax system between different economic sectors (World Bank, 2011). In this reform stage, corporate income and value-added taxes were launched in line with a structural shift toward a market-oriented economy. Indeed, the aim of issuing a corporate income tax was to create an equal business environment for all types of enterprises across various economic sectors. The Corporate Income Tax (CIT) was initially introduced in 1997 to replace the Profit Tax, taking effect in 1999 with tax rates ranging from 32% to 50%. The CIT law was amended to reduce the overall rate in 2003 and it came into effect in 2004 with the standard tax rate at 28%. Meanwhile, the Ordinance on Income Tax on High Income Earners was changed to reduce the burden of the wealthy people in 2001 and 2004 with tax rates ranging from 0% to 50% and 0% to 40%, respectively.

The Value-Added Tax (VAT) was first issued in 1997 to replace the Turnover Tax, which is doubly taxed, with a wide range of tax rate (0.5%-40%) that differed from product to product. The VAT was levied to goods and services used for production, trade and consumption. Initially, the VAT had four separate tax rates at 0%, 5%, 10%, and 20%, but was revised in 2003 to have three rates at 0%, 5%, and 10%. In addition, the Law on Import-Export Duties was introduced in 1998 and came into effect in 1999. The specific tax rates depend on country of origin. Goods from countries in the most favored nation (MFN) category and countries with existing trade agreements enjoyed preferential tariff rates, while goods from countries without any trade agreements were levied at a different rate.

### ***(iii) Phase 3 (2006-2010)***

The primary motivation for tax reforms during this period was tax reduction for every field in order to promote the integration of Vietnam into the world economy (World Bank, 2011). According to Decision No. 201/2004/QĐ-TTg, the objective of the third phase of the tax reforms was to simplify the tax system and modernize the tax administration to ensure an adequate level of revenue collection for the state budget and to contribute to economic growth, as well as to take initiative in international economic integration.

To achieve the above targets, the Vietnamese government carried out significant reforms to the tax system, especially after Vietnam became a member of the World Trade Organization (WTO) in 2007. For instance, the Personal Income Tax Law, which was introduced in 2007 and came into effect in 2009, was levied on the income of all Vietnamese citizens, whether earning incomes domestically or abroad, and on non-residents earning taxable incomes in Vietnam. The Personal Income Tax Law helped eliminate discrimination in the tax system as follows. First, it applied the personal income tax rate, instead of the corporate income tax rate, on individuals doing business that now enjoyed the same tax rate as those with incomes from wages and salaries.

Second, equal tax rates were applied to both Vietnamese citizens and foreign residents. Third, reduction in family members and contributions to charity were considered when determining one's personal income tax. Fourth, income from investment capital, transferring capital, and security transactions were subject to taxation, of which tax rates on real estate transactions were reduced when compared with the tax rate on the transfer of land use rights.

**Table 1: Structure of Current and Previous Personal Income Tax**

Coverage	The Ordinance on Income Tax on High Income Earners (2004)		The Law on Personal Income Tax (2009)	
	Wages, salaries, bonuses, housing allowances		Wages, salaries, bonuses, housing allowances, business income, interest, dividends, capital gains, prizes	
Rates and Base	For Vietnamese		For Vietnamese and foreigners (residents)	
	Income per year, million VND	Tax rate, %	Taxable income per year, million VND	Tax rate, %
	0-60	0	0-60	5
	60-180	10	60-120	10
	180-300	20	120-216	15
	300-480	30	216-384	20
	>480	40	384-624	25
	For Foreigners		624-960	30
			>960	35
	0-96	0	The flat tax rate for foreigners (non-residents): 20% Personal deduction: 48 million VND/year Deduction for each dependent of taxpayer: 1.6 million/month	
	96-240	10		
	240-600	20		
	600-960	30		
>960	40			

Source: Law of Personal Income Tax (2009)

Moreover, reforms to taxation laws during this period made various changes to corporate income, value-added and special consumption taxes. Furthermore, the issuance of the law on natural resources tax, the law on non-agricultural land-use tax, and the environmental protection tax helped to improve the tax system during this period. In particular, the Corporate Income Tax Law of 2008 was amended to narrow the scope of tax exemptions and reductions and to lower the standard tax rate to 25%. Within 5 years from 2003 to 2008, the Vietnamese government was continuing to reduce the maximum tax rate for CIT. Meanwhile, the Value-added Tax Law was revised to cover an expanded range of taxable objects, to narrow the classification of objects levied at a tax rate of 5% from 21 to 12 commodity groups, and to adjust calculation methods (tax credit method or tax based directly on added value method). The scope of the 10% tax rate was widened, whereas that of the 5% tax rate was narrowed.

The Natural Resources Tax Law was established in 2009 to ensure social equality and the efficient use of natural resources throughout the country (World Bank, 2011). The introduction of

the Non-agricultural Land Tax Law and the Environmental Protection Tax Law in 2010 also helped to improve the existing tax system. Overall, tax policies in Vietnam were reformed to align with international practices and to facilitate the regulatory tax compliance of the country's rapidly growing private sector (Bhattarai et al., 2019).

*(iv) Phase 4 (2011-2020)*

The fourth phase of tax reforms was implemented in the period 2011-2020. According to Decision 732/QĐ-TTg, tax reform policies carried out over this period aimed to establish a comprehensive, equitable, and effective tax system, which is consistent with transitioning toward the so-called socialist-oriented market economy. The reforms also sought to create an institutional framework with transparent tax policies, simple and efficient tax administrative procedures, which align with international practices. Furthermore, the Vietnamese government proposed to establish a well-functioning tax system that utilizes up-to-date information technologies, which also serve to combat corrupt activities within the tax system by reducing intervention from tax officers. These targets are broadly in line with the government's five-year development plan of 2011-2015, which involved structural change in the Vietnamese tax system, as characterized by three main features: (i) reduced dependence on oil revenue and tariff revenue, (ii) a reduced share of the state sector and an increased share of the non-state sector in total revenue, and (iii) the increased importance of the VAT.

In particular, some categories of taxes have been adjusted in accordance with international practices, which forms part of Vietnam's commitments to several bilateral and multilateral free trade agreements. For instance, the government reduced the standard corporate tax rate from 25% in 2008 to 22% in 2014, and down again to 20% in 2016. This helped promote FDI and provide some support to local enterprises. In addition, a key revision of the law on value-added tax postulates that goods and services of business households or individuals with an annual turnover of 100 million VND or less are tax-exempt. Public services for sanitation and water drainage in streets and residential areas had been subject to a tax rate of 5% since 2014. The revised law also identified a threshold of turnover in calculating VAT, in which all businesses with annual revenue of 1 billion VND or more were able to pay taxes through a credit method. Furthermore, under the revised Personal Income Tax Law in 2012, the reduction for the taxpayer was made to be 108 million VND per year and, for each dependent, 3.6 million VND per month. Incomes earned from transfers of real estate in any form were made subject to paying a personal income tax. Moreover, organizations and individuals were now required to prepare tax declarations, withhold and remit taxes into the state budget, and make tax finalizations for all kinds of taxable income paid to taxpayers.

More recently, the Ministry of Finance of Vietnam announced proposals to further amend and supplement the current multiple taxation laws. Accordingly, the CIT rate was proposed to decrease to 15% for micro-sized enterprises with annual revenue below 3 billion VND, and to 17% for small and medium-sized enterprises with 200 or less employees, that participate in the Social Insurance Scheme, and have annual revenue between 3 to 50 billion VND. The VAT rate was proposed to rise from 10% to 12% in 2019. The government also planned to revise methods of calculating current personal income tax in which a taxable monthly income of up to 10 million VND enjoys a tax rate of 5%.

### ***B. Summary of tax reforms***

After the four phases of tax reform were implemented, the tax system of Vietnam improved significantly. However, there are still some problems related to tax administration in Vietnam that continue to persist.

First, lower burden of corporate income tax, especially reduction for foreign companies, while heavy burden on VAT may hit the lower income population in the country. In addition, as reduction of personal income tax, especially for wealthy people, tax reform has followed the trend of regressive system, rather than progressive system. It would deter the economic growth by reducing the consumption demand (Ohta, 2017).

Second, the existence of a large number of informal enterprises and limitations of the financial system are associated with the reduced ability to obtain reliable statistical data.<sup>14</sup> The reliability and availability of data are arguably crucial in assessing the potential economic impact of any changes to the tax system. As a result, marginal changes are often implemented even though major structural changes are clearly more beneficial, which arguably perpetuates inefficient tax structures.

Third, a lack of stringent regulations may lead to tax loss from foreign invested enterprises in Vietnam driven by transfer pricing practices. In particular, Vietnam provides tax incentives to attract multinational corporations and enterprises that typically rely on the high input prices of imported goods from holding companies located in their home countries in order to evade taxes in Vietnam, which is a form of transfer pricing.

Finally, workers in Vietnam are typically employed in the agricultural sector, characterized by a number of small and informal enterprises. Because the earnings of these informal enterprises fluctuate significantly without any fixed rate, identifying a base for which to calculate income taxes becomes difficult. In addition, these workers typically rely on home production in providing goods and services. For this reason, it is far from straightforward to keep

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<sup>14</sup> Informal sector accounted for 15-27% of GDP from 1995 to 2015 (Nguyen, 2017).



records of sales and inventories. Consequently, increasing government revenue based on income and consumption taxes from this sector of the economy may be hard to achieve under the current circumstances.

The summary of tax reform in three main categories of tax (CIT, PIT, and VAT) is presented in the following table.

**Table 2: Summary of Tax Reforms of Three Categories of Taxes (CIT, PIT, and VAT)**

<b>Phase</b>	<b>Objective</b>	<b>Policy Measures</b>	<b>Limitation on Tax Policy</b>
Phase 1 (1990-1995)	Tax laws and ordinances were initially created and uniformly applied to all economic sectors.	Profit taxes (came into effect from 1993) were premised for corporate income tax of Vietnam with 3 tax rates: 30% for production of industrial materials, 40% for production of consumption products and processed industry, and 50% for trade services; in 1993, these rates were reduced to respective levels: 25%, 35%, and 45%.	The profit tax had broad coverage with few exemptions.
		The precursor of personal income tax is the Ordinance on Income Tax on High Income Earners (1994). The ordinance applies to earners with the range of tax rate from 0%-60%, depending on personal income per month.	The Ordinance covered a narrow tax base at high tax rates. The high exemption level virtually excluded the majority of Vietnamese from the tax base (World Bank, 2011). <sup>15</sup>
		Prior to the introduction of the Value-Added Tax (VAT), turnover tax has been adopted in October 1990 with 11 tax rates (from 0.5% to 40% out of turnover).	The turnover tax had a broad range of tax rates and complicated calculations.
Phase 2 (1997-2005)	Vietnamese government strives to implement reform direction, which reflected the economy's shift to market orientation.	Corporate Income Tax (CIT) was introduced in 1997 (came into effect in 1999), with the range of tax rate from 32% to 50%. The law of CIT was amended in 2003 (came into effect in 2004) with the standard tax rate at 28%.	Discrimination present between domestic and foreign invested enterprises in some industries, and fields or areas where with a need for encouragement of investments with preferential rates.
		The Ordinance on Income Tax on High Income Earners was revised in 2001 and 2004 with the range of tax rate from 0%-50% and 0%-40%, respectively.	Discrimination present between Vietnamese and foreigners.
		VAT was firstly adopted in 1997 (came into effect in 1999) with the range of tax rate from 0% to 20% depending on various goods and services. The revision was in 2003 (came into effect on January 1, 2004) with the abolition of the tax rate at 20% and expansion of tax objectives into goods and services applying the special consumption tax.	VAT calculation methods with two different approaches (tax deduction and direct calculation) and large domain of non-taxable goods.

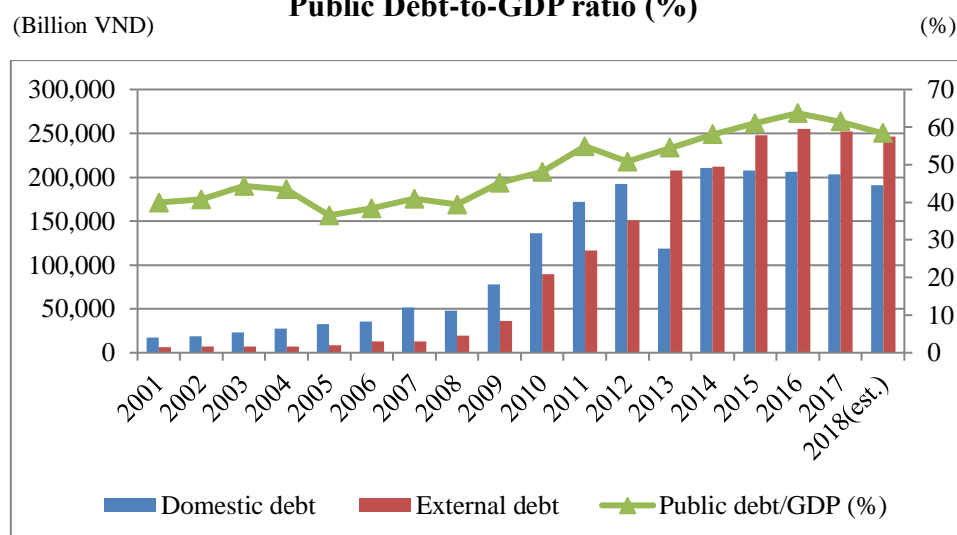
<sup>15</sup>The exemption threshold is set at 5 million VND per month for Vietnamese citizens and 8 million dong for foreign residents, or about US\$ 314 and US\$ 503 at the current exchange rate of 15,900 VND/USD, respectively.

Phase 3 (2006-2010)	In line with the process of global economic integration, the government attempts to implement changes in tax laws with lower burden for corporate sector and less progressive tax system for PIT.	The new law of corporate income tax was issued in 2008 to replace the law in 1997 and 2003 with the standard tax rate at 25%.	The criteria for tax incentives were still complex. The provision of allowing accelerated depreciation up to twice the normal rate for “high economic efficiency” establishments is arbitrary and open to subjective interpretation (WB, 2011).
		The Personal Income Tax (PIT) law was introduced first in 2007 (came into effect in 2009) with the range of tax rate at 5%-35%, applying for both Vietnamese and foreigners.	The number of tax brackets was still too large. The highest tax bracket of 35% is higher than other ASEAN countries, such as the Philippines (25%) and Malaysia (28%).
		VAT legislation was amended in 2008 (tax rate at 5-10% and using the banking system to collect tax).	Complicated tax rate with three VAT rates while most countries have a single VAT rate in addition to a zero rate, except China. The current practice of having a zero threshold of exempting small traders does not follow international best practice (WB, 2011).
Phase 4 (2011-2020)	The objectives of tax reform in this period are lower burden for corporate sector and increase the share of the burden by VAT.	Corporate income tax was amended in 2014 and 2016 with the standard tax rate at 22% and 20%, respectively.	Lowering corporate income tax rates and the existence of many tax incentives that are in place for foreign investors may reduce CIT revenue and total tax revenue.
		The personal income tax law was amended in 2012 (came into effect in 2013). Under this revision, reduction for the taxpayer is 108 million VND per year and, for each dependent of the taxpayer, 3.6 million VND per month. Incomes earned from transfer of real estate under any form must pay PIT. Income-paying organizations and individuals shall make tax declarations, withhold and remit tax into the state budget, and make tax finalizations for all kinds of taxable income paid to taxpayers.	The tax base is still large and the gap between tax brackets is broad, compared to other developing countries. In addition, the lowest tax rate (5%) and highest tax rate (35%) is too high compared to other ASEAN countries, and does not correspond with the current individual income in Vietnam and the standard rate of CIT (20%). To account for inflation, the threshold, tax brackets, and tax deductions should be adjusted periodically.
		The revision of VAT law was introduced in 2013 (came into effect in 2014). Under this revision, goods and services of business households or individuals with annual turnover of 100 million VND or less will not be taxed, whereas public services on sanitation and water drainage in streets and residential areas have been subject to the tax rate of 5% since 2014.	VAT based on direct calculation method may not reflect the nature of VAT, which is indirect tax.

### 1.2.3. Public Debt

Public debt is often regarded as an essential tool for governments in developing countries to finance investment that helps improve labor productivity and economic growth, and Vietnam is no exception. Over the past three decades, public debt has increased significantly along with rising FDI to Vietnam since 2000 (Figure 14). In particular, public debt as a percentage of the GDP increased by 20 percentage points from 39.9% in 2001 to 54.9% in 2011. This is in part induced by high demands for investment in infrastructure at early stages of economic development. However, after the 2008 Global Financial Crisis, this ratio climbed sharply, reaching its highest level at 63.7% in 2016, which is closed to the public debt ceiling of 65% set by the National Assembly.<sup>16</sup> This ratio is also the highest one among ASEAN countries. Vietnam’s total public debt, in absolute terms, was 2,767 trillion VND in 2018 (approximately US\$ 122 billion).

**Figure 14: Vietnam’s Government Debt Structure (Billion VND) and Public Debt-to-GDP ratio (%)**



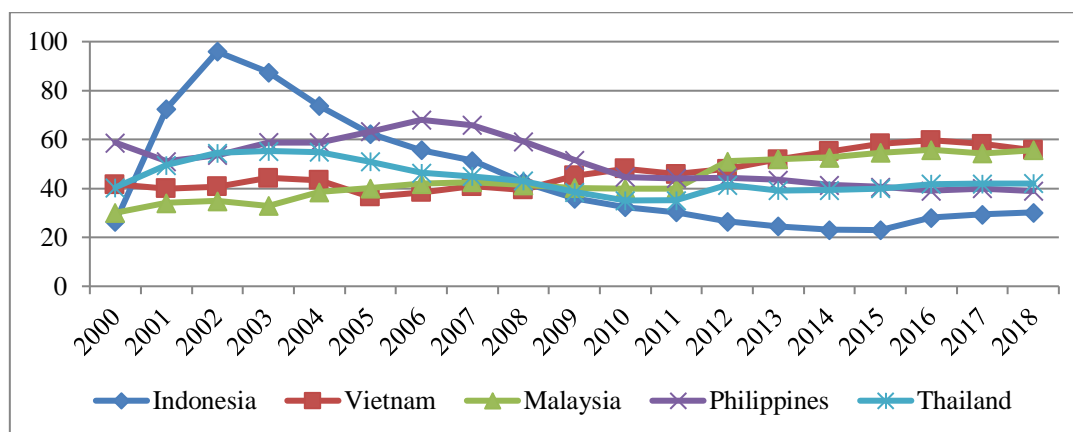
Sources: Ministry of Finance of Vietnam & IMF

Regarding the structure of government debt, Figure 14 presents the variations between the domestic and external public debt of Vietnam over the period of 2001-2018. Domestic debt was mainly used to finance budget deficit of the Vietnamese government until 2012. In particular, more than 70% of the total debt was derived from domestic resources in the period 2001-2008. The external debt increased sharply following the Global Financial Crisis and accounted for 60% of total debt, on average over the period of 2013-2018.

<sup>16</sup>According to Resolution No. 25/2016/QH14 of the National Assembly, dated 11<sup>th</sup> November 2016, annual public debt, government debt, and external debt shall not be permitted to exceed 65%, 54%, and 50% of GDP, respectively.

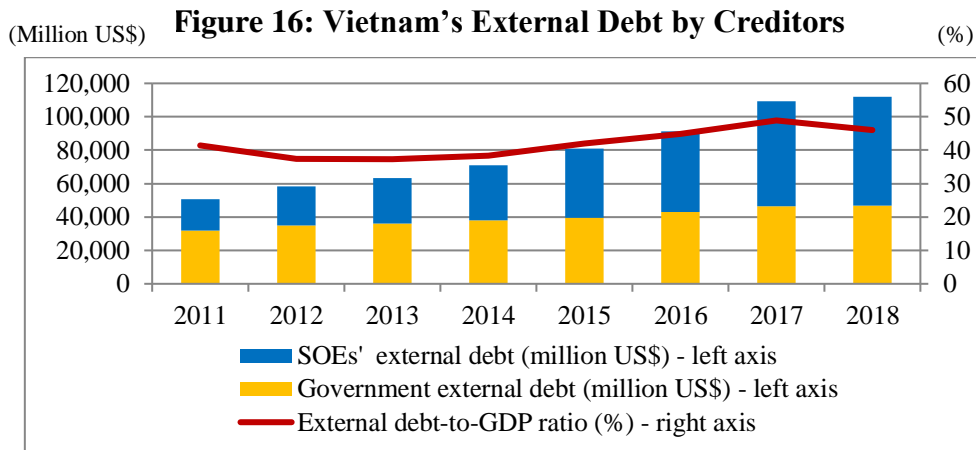
In comparison with other developing countries in the ASEAN region, public debt-to-GDP ratio in Vietnam remained relatively low over the period of 2000-2005 (Figure 15). However, this ratio has increased significantly since 2008 and Vietnam experienced the highest level of public debt amongst ASEAN countries over the period of 2014-2017.

**Figure 15: Public Debt-to-GDP Ratio (%) of Vietnam and Selected ASEAN Countries**



Source: IMF, Historical Public Debt Database 2019

Figure 16 shows that the government external debt increased slightly in absolute terms, but has gradually reduced its share of total external debt. Meanwhile, the SOEs' external debt has increased sharply by more than 3.5 times over the last eight years. It is noted that the borrowing of Vietnam's SOEs is not included as a part of public debt under the public debt management law. In fact, according to the report No. 499 BC/CP of the MoF (2019), at the end of 2018, Vietnam has 505 enterprises (100% state ownership) with total assets worth around 3,000 trillion VND, which increased by 2% compared to that of 2017. However, debts of these SOEs surged to 1,455 trillion VND, amounting to 54% of total capital of economic groups and general corporations. The debt on equity ratio average in 2018 is 1.13, but this ratio in 17 SOEs even higher than 3. To finance the debt, the SOEs have borrowed money from not only domestic but also foreign finance institutions. The external debt of big general corporations accounted for 41.2% of total debt of the SOEs. The risks of severe debt of this sector may threaten debt sustainability in Vietnam in the long-term because of its negative impact on public investment, especially for strategic projects.



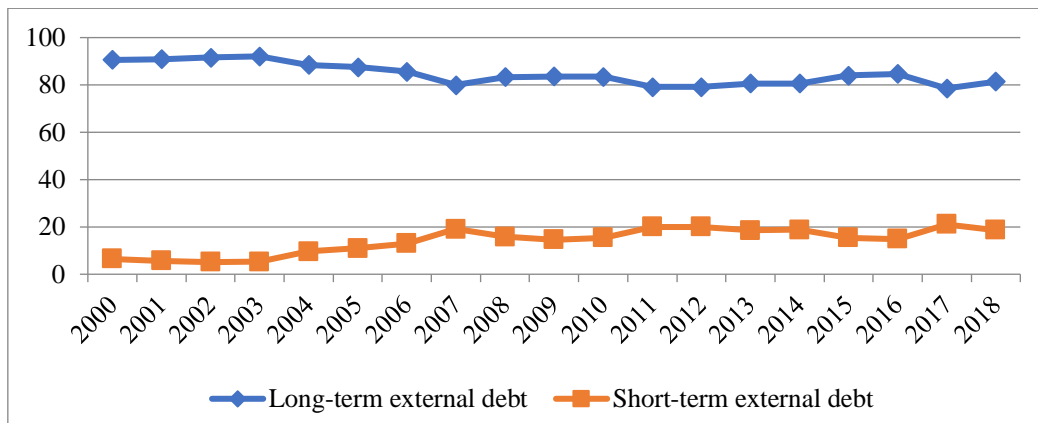
Source: Ministry of Finance of Vietnam (2019), Public Debt Bulletin No. 8

Moreover, due to the 2008 Global Financial Crisis and a widening in the trade deficit that, in turn, contributed to a loss of confidence in the Vietnamese Dong, large private capital outflows that came as domestic residents switched their VND-denominated assets into foreign currency denominated assets or gold led to a severe loss in international reserves and eventual depreciations of the exchange rate.<sup>17</sup> As a result, Vietnam's external debt increased by more than 7.5 times from 19,668 billion VND in 2008 to 150,582 billion VND in 2012. Foreign loans had already been 1.75 times higher than domestic ones in 2013. The proportion of external debt in GDP also experienced an upward trend from 37.4% in 2012 to 46% in 2018.

Regarding external debt by maturity, long-term debt accounted for, on average, around 90% of total foreign borrowing between 2000 and 2006, and the remaining proportion was short-term debt (Figure 17). The long-term debt to short-term ratio decreased drastically from 80% to 20% since 2007. This is mainly attributed to the negative impacts from the Global Financial Crisis and the default on the internationally syndicated debt of a big state-owned Vietnamese enterprise in 2010, namely Vinashin.

<sup>17</sup> See, the 2010 Article IV Consultation on debt sustainability analysis for Vietnam, prepared by the IMF for further detail.

**Figure 17: Vietnam's External Debt by Maturity (% of GDP)**



Source: *Key Indicators for Asia and the Pacific, 2019 (ADB) and World Bank, 2020*

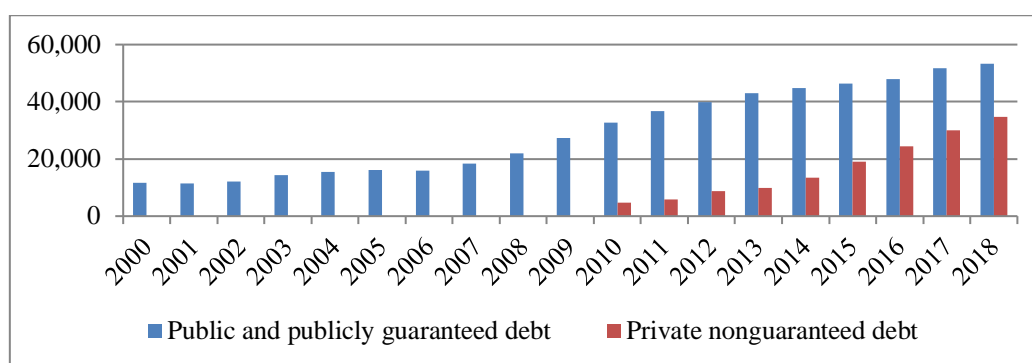
In the 2000s, the share of public and publicly guaranteed debt in total long-term external debt was significantly higher than privately non-guaranteed debt (Figure 18). This may be because of the absence of a legal framework for external debt and public debt management before 2009. To the author's knowledge, there existed only two legal documents related to external debt before the enactment of the law on public debt management in 2009. One of them was the Decree No. 134/2005/ND-CP, which was promulgated to regulate foreign loans and repayments. The other legal document was the Decree No. 131/2006/ND-CP, which dictated regulations on the management and utilization of Official Development Assistance (ODA).<sup>18</sup>

However, following the shift in the financial liberalization and restructuring of SOEs by the Vietnamese government due to the level of debt accumulated by this sector, non-guaranteed external debts owed by the private sector were encouraged to increase from 2010. In particular, the government issued several regulations on enterprises' borrowing through foreign loans during this period.<sup>19</sup> As a result, private non-guaranteed external debts climbed sharply by more than 7 times from US\$ 4,680 million in 2010 to US\$ 34,752 million in 2018. Because of a significant increase in the stock of debt for the private sector, the gap between external debt owed by this sector and the public sector has been narrow, and may create a higher risk of repayment debt services. In fact, the ratio of private-to-public external debt increased from 12.3% in 2010 to 65.1% in 2018.

<sup>18</sup> This is based on the Policy Discussion Paper "Evaluation of the Law on Public Debt Management of Vietnam and some Policy Implications", prepared by the Vietnam Institute for Economic and Policy Research (VEPR) in 2017

<sup>19</sup> The Decree No. 219/2013/ND-CP on management of enterprises' borrowing of foreign loans and payment of foreign debts without government guarantee in 2013, the Circular No. 12/2014/TT-NHNN on requirements for taking foreign loans applied to companies and not guaranteed by the government in 2014.

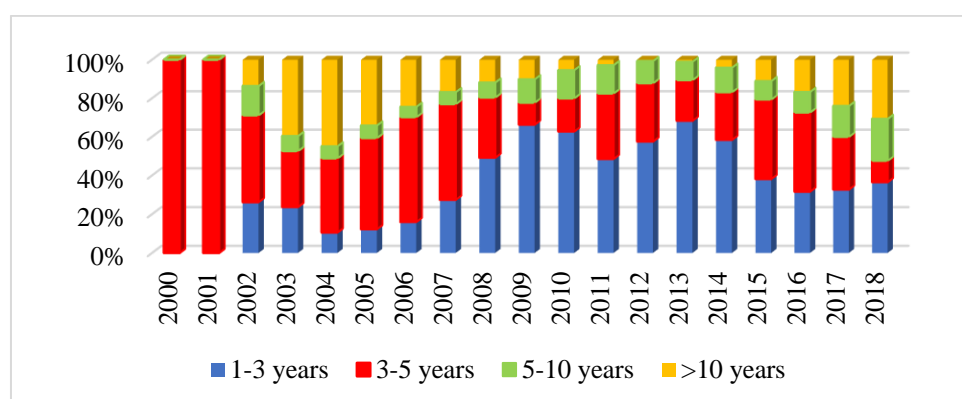
**Figure 18: Long-Term External Debt by Sectors (Unit: US\$ Million)**



Source: Key Indicators for Asia and the Pacific, 2019 (ADB) and World Bank, 2020

Turning to domestic debt, government bonds were primarily issued in short tenors of less than five years, essentially because of Vietnam’s macroeconomic instability and underdeveloped financial markets. Newly issued bonds in particular had an average tenor of 2.97 years in 2012. The National Assembly issued Resolution No. 78/2014/QH13 to limit government bonds with less than 5-year maturities in 2015. Accordingly, long-term bonds were promoted to be issued more. However, short-term bonds still accounted for 47.6% of total government bonds, while medium and long-term bonds made up 21.8% and 30.6% in 2018, respectively (Figure 19). The rate of government bonds issuance was lower than the target rate set by Vietnam’s Ministry of Finance to increase the average maturity to up to 12.04 years in 2018 (Table 3).

**Figure 19: Government Bonds by Maturity (% of Total Outstanding)**



Source: ADB Bonds (2019)

**Table 3: Selected Indicators of Government Bond Issuance**

	2012	2013	2014	2015	2016	2017	2018
Volume (trillion VND)	144	182	330	256	281	244	197
Average interest rate	9.8%	7.79%	6.54%	6.26%	6.49%	5.98%	4.71%
Average maturity (year)	2.97	3.21	4.58	7.12	8.77	12.52	12.04

Source: Ministry of Finance of Vietnam



The amount of principal payment on debt increased more than two-fold from 62.6 trillion VND in 2010 to 137.1 trillion VND in 2018 (Table 4). The volume of rollover was estimated to be 250.4 trillion VND in 2018. The maturity dates of short-term bonds have been starting since 2011; therefore, total principal payment increased rapidly until 2015. An increase in several kinds of short-term bills, issued in tenors of three to six months, also enlarged the amount of principal payments (VEPR, 2015). However, after the public debt-to-GDP ratio in 2016 reached its highest level at 63.7%, the government has attempted to restructure debt maturity by increasing the share of long-term bonds and lowering interest rates from 6.49% in 2016 to 4.71% in 2018.

Despite a decrease in the value of debt service in absolute terms since 2015, interest payments accounted for a significant proportion of budget expenditure. Compared to the total government expenditure, interest payments increased rapidly from 3.2% in 2010 to 7.6% in 2017. The volume of interest payments more than tripled between 2011 and 2015. While these payments were lower than expenditures for education (17.3%), pension and social securities (10.8%), and public administration (9.7%), they were nonetheless larger than any other recurrent expenditure sub-category at the time.<sup>20</sup> Expenditure on interest payments was relatively high, and stood at 7% in 2018. Conventional wisdom postulates that expenditure on interest payments typically increases at early stages of development because of high demands for financing long-term economic development projects. However, it is of importance to control these payments to reduce high pressure on debt repayments over the coming years.

**Table 4: Public Debt Payment Using Budgetary Expenditure during 2010-2018**

		2010	2011	2012	2013	2014	2015	2016	2017	2018*
Debt service payment (billion VND)	Principle	62,602	78,450	110,548	125,818	187,917	203,443	160,592	153,304	137,157
	Interest	24,503	32,184	43,837	59,996	72,886	85,259	90,371	103,074	113,304
	Total	87,105	110,634	154,385	185,814	260,803	288,702	250,963	256,378	250,461
Payment obligations	Direct payments/ Budget revenue (%)	17.6	15.6	14.6	15.2	13.5	14.9	20.5	18.3	17.1
Interest payments/Budget revenue (%)		4.3	4.1	5.4	6.5	8.3	8.5	8.9	8	7.9
Interest payments/ Budget expenditure (%)		3.2	4.2	5.1	5.2	6.6	6.8	7.1	7.6	7

Note: \* Figures in 2018 are estimated data.

Sources: *Bulletin of Public Debt No. 8* and author's calculations based on data from the MoF of Vietnam

<sup>20</sup> Data are taken from the Policy Discussion Paper "Characteristics of Vietnamese public debt", prepared by the Vietnam Institute for Economic and Policy Research (VEPR) in 2015.

*In summary*, based on the data collected from the Ministry of Finance and author's calculation, the debt measurement is shown in table 5. In particular, following Manasse & Roubini (2005), this study focuses on two different aspects of public debt issues of Vietnam as follows.

***(i) Measures of Solvency***

Although the share of external public debt in GDP was below the threshold of 49.7%, it has been increasing since 2012. In particular, it increased by 11.5 percentage points over the period of 2012-2017. The total public debt-to-GDP ratio also increased considerably from 50.8% in 2012 to 63.7% in 2016. The upward trend clearly raised concerns about the fiscal consolidation of Vietnam. In addition, the total public debt was double the amount of government revenue and the ratio of public debt to government revenue increased by 1.4 times from 2010 to 2017. Meanwhile, Vietnam experienced a large deficit of around 4-5% between 2013 and 2016. Importantly, fiscal deficit may not improve in the coming years given the global downturn driven by the coronavirus pandemic in late 2019.

**Table 5: Selected Indicators of Public Debt in Vietnam during 2010-2018**  
**(% of GDP)**

	2010	2011	2012	2013	2014	2015	2016	2017	2018*	Threshold
External public debt/GDP	42.2	41.5	37.4	37.3	38.3	42.0	44.8	48.9	46.0	49.7
Total public debt/GDP	56.3	54.9	50.8	54.4	58	61	63.7	61.4	58.4	-
External public debt/ Revenue	90.1	92.3	99.0	92.1	92.3	86.9	85.6	80.4	74.9	215
Total public debt/Revenue	151.1	151.4	174.1	184.5	208.1	206.8	214.3	200.0	194.2	
Short-term external debt/ Foreign reserves	55.6	79.6	48.3	47.0	39.8	42.4	34.8	44.6	35.3	130
External public debt service/ Foreign reserve	8.7	9.2	5.4	7.1	7.1	5.4	5.7	4.0	-	-

Note: Figures in 2018 are estimated data by the MoF of Vietnam.

Sources: Author's calculations from the MoF of Vietnam, World Bank, and ADB

***(ii) Measures of Liquidity***

The share of short-term external debt in foreign reserves was below the threshold level of 130% and the proportion of external public debt service in foreign reserves was also lower than 10%. For this reason, Vietnam has not faced any public debt liquidity risks up until now. According to the Asia Development Bank, 43.87% of government bonds were held by

commercial banks in 2019, which play a key role in mobilization of resources via deposits. In addition, more than 74% of the bonds issued were issued in tenors of three years or less with high mobilization costs. A high share of short-term debt may exert a negative influence on the Vietnamese economy through fluctuating interest rates, limited capital flows for the private sector, and high pressure on inflation.

## **Chapter 2: Public Debt Sustainability and Literature Review on the Impact of Public Debt on Economic Growth**

### **2.1. Public Debt Sustainability**

#### **2.1.1. Concept of Public Debt Sustainability**

Although public debt and its effect on economic activity have been analyzed in many countries in the past, the definition of public debt has long been debated around the globe. Generally, public debt is the accumulation of fiscal deficit over the years. In the other words, governments must borrow when revenue cannot cover expenditure. According to the World Bank (2019), in the narrowest sense, public debt is defined as only the liability of the central government. However, in the broadest and most comprehensive measure, it is the debt liability of the entire public sector. The public sector comprises several components, specifically: (1) central government: ministries of state and all government-controlled, tax-funded agencies responsible for carrying out policy; (2) general government: the central government plus subnational entities, such as state and local governments and municipalities; (3) non-financial public sector: the general government plus all government owned non-financial corporations; and (4) overall public sector: the non-financial public sector plus government owned financial corporations and the central bank.<sup>21</sup>

The standard definition of public debt is presented by the International Monetary Fund (IMF) in “Public Sector Debt Statistics: Guide for Compilers and Users,”<sup>22</sup> however, the legal framework of public debt varies from country to country, depending on each country’s differing circumstances, such as financial developments and political systems. Particularly, the IMF (2011) defines gross public debt as follows: “Total gross debt—often referred to as total debt or total debt liabilities—consists of all liabilities that are debt instruments. A debt instrument is defined as a financial claim that requires payment(s) of interest and/or principal by the debtor to the creditor at a date, or dates, in the future.” (p. 3). The instruments of debt (in a broad sense) include Special Drawing Rights (SDRs), currency and deposits, debt securities, loans, insurance, pension, standardized guarantee schemes, and other accounts payable.

Besides, public debt can be classified by institutional coverage as follows: Total public sector debt covers the domestic and external debt of the general government, public

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<sup>21</sup> This is based on the 2019 Debt Bulletin, prepared by the World Bank.

<sup>22</sup> Bank for International Settlements, Commonwealth Secretariat, Eurostat, International Monetary Fund, Organization for Economic Co-operation and Development, Paris Club Secretariat, United Nations Conference on Trade and Development, and World Bank (2011). Public Sector Debt Statistics: Guide for Compilers and Users.

nonfinancial corporations, and public financial corporations. In other words, the term “public debt” refers to the debt of the public sector as a whole,<sup>23</sup> which includes financial and nonfinancial public enterprises as well as the central bank.<sup>24</sup> Moreover, the principal accounting for public debt depends on other factors, such as maturity (short-term and long-term debt), currency of denomination (domestic currency and foreign currency denominated), type of interest rate (fixed-rate instruments and variable-rate instruments), residence of the creditor (domestic and external creditors), and memorandum items (publicly guaranteed debt and arrears).<sup>25</sup> Furthermore, under the Debt Management and Financial Analysis provided by the UNCTAD, coverage of public debt extends to contingent liabilities, State-Owned Enterprise (SOEs) debt, and Public Private Partnerships (PPPs).

The definition of public debt in Vietnam was first introduced in the law on public debt management in 2009. Under this law, public debts involve government debts, government-guaranteed debts, and the debts of local administrations. In detail, government debt means a debt arising from a domestic or foreign loan, which is signed or issued in the name of the State or the Government, or a loan signed or issued by or under the authorization of the Ministry of Finance under law. Meanwhile, debts issued by the State Bank of Vietnam to implement monetary policies in each period are not included in government debts. Government-guaranteed debt comprises a domestic or foreign loan borrowed by an enterprise, financial corporation, or credit institution under the Government’s guarantee. The debt of local administrations consists of a debt signed or issued by or under the authorization of the People’s Committee of a province or centrally run city, such as the provincial-level People’s Committee. Differing from the scope of public debt under the IMF’s framework, the debts of State-Owned Enterprises’ (SOEs) extra-budgetary accounts and social security funds, such as the Vietnam Bank for Social Policies and the Vietnam Development Bank are not included in public debt in Vietnam.<sup>26</sup> Hence, the actual debt of total public debt, including public enterprises or SOEs cannot be shown.

The definition of “sustainability” is used in many fields. In a broad sense, it is the stable development of economic, social, and environmental factors. In a narrow sense, the simple meaning of “fiscal deficit sustainability” is that government can cover its expenditure out of its own revenue without depending on transfers or borrowing. Within the scope of this

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<sup>23</sup>The general government sector plus government-controlled entities, known as public corporations, whose primary activity is to engage in commercial activities.

<sup>24</sup>See, IMF (2014), “Fiscal Monitor - Public Expenditure Reform: Making Difficult Choices”, pp. 89-90 for further detail.

<sup>25</sup>See, IMF (2011), “Public Sector Debt Statistics: Guide for Compilers and Users” for further detail.

<sup>26</sup>Nguyen, H.Y, “Public debt and improvement laws on public debt management in Vietnam”, *The European Conference on Politics, Economics & Law*, 2016

research, fiscal deficit is only a flow issue, but more important is public debt, which is stock in nature and may affect long-term sustainable development.

According to the IMF (2011), debt sustainability is defined as a situation in which a borrower is expected to be able to continue servicing debts without an unrealistically large future correction to the balance of income and expenditure. In detail, debt sustainability reflects a country's solvency, liquidity, and adjustment capacity as follows.

- ✓ A government is **solvent** if the present value (PV) of its current and future primary expenditure (net of interest) is no greater than the PV of its current and future stream of income receipts.
- ✓ A government is **liquid** if it can rollover its maturing debt obligations in an orderly manner.
- ✓ Debt sustainability also captures the notion that there are social and political **limits to adjustments** in spending and revenue that determine a country's willingness (as opposed to its economic ability) to pay (IMF, 2011, p. 147).

It is noted that the IMF has undertaken its programs of austerity in many countries, but the results were failures in several countries in the past. The reasons for these failures are: (i) lower growth rate caused by austerity has decelerated the revenue from taxes, and as a result, fiscal deficit increased, (ii) austerity programs have directly affected the people's welfare and hit the people's living standard. For example, Latin American countries are not purely independent and central banks' credibility is in question with problems of public debt. On the other hand, several countries like Japan are independent and most of the currencies in the domestic market are financed by the central banks that may manage public debt at certain levels. Thus, the adoption of the IMF's argument in practice should be reconsidered, depending on the actual situation of public debt and fiscal position in each country.

### ***2.1.2. Theoretical Studies***

As an increase of public debt stems from fiscal deficit, studies on public debt sustainability are closely related to other concepts of fiscal sustainability like government solvency and the stability of budgetary deficit-to-GDP ratio (Pradhan, 2015). Therefore, this sector summarizes theoretical analyses on both fiscal and public debt sustainability perspectives. One of the most common ways to assess public debt sustainability is the government's intertemporal budget constraint, which is the ability of the general government

to meet the costs of servicing its debt through future revenues, measured at present value. The intertemporal budget constraint is presented by the IMF (2011) as follows.

$$D_{t_0} - \sum_{t=t_0+1}^{\infty} \frac{PB_t}{(1+r)^{t-t_0}} = 0$$

Where:

$D_{t_0}$  is gross debt as a share of GDP in the year before long-term projections

$PB_t$  is the structural primary balance (revenue minus expenditure excluding net interest expense) as a share of GDP at time  $t$

$r$  is the differential between the nominal interest rate and the nominal GDP growth rate.

If the government runs a primary deficit, the gross debt will grow at a rate exceeding the interest rate; however, if the government runs a primary surplus, the gross debt will grow more slowly than the interest rate. The government's intertemporal budget constraint requires that the present value of current and future taxes must be enough to cover the present value of current and future government spending plus the initial stock of government debt. In other words, the intertemporal budget constraint reflects the fact that borrowing and lending current spending need not be restricted by current wealth.

Initially, analyses of the sustainability of fiscal deficit and public debt were conducted by classical authors like Hume, Smith, and Ricardo. Specifically, the Ricardian equivalence has become an important theory of new classical macroeconomics. The main assumptions of this theory are intergenerational linkages,<sup>27</sup> perfect capital market,<sup>28</sup> non-distortionary taxes,<sup>29</sup> and consumer rationality.<sup>30</sup> Ricardo argued that under rational behavior, debt and taxes would be regarded as equivalent (Barro, 1996). In other words, "for a given path of expenditures, it is economically equivalent to maintain a balanced budget or to run a debt-financed deficit since the substitution of debt for taxes does not affect private sector wealth and consumption" (IMF, 1988, p. 2).

Differing from Ricardo, Barro (1974) based some assumptions on finite lives, imperfect private capital market, government monopolies in the production of bond "liquidity services," and uncertainty about future tax obligations to find the effects of these above conditions on bond value and tax capitalization. The results showed that "if the marginal net-

<sup>27</sup>Individuals would save the additional disposable income and bequeath it to their children in order to cover the future tax liability of the current debt (Seater, 1993).

<sup>28</sup>The Ricardian Equivalence Model initially assumes "no elements of capital market imperfections" (Barro 1974, p.1097).

<sup>29</sup>Taxes are lump sum and non-distortionary.

<sup>30</sup>Individuals are rational and take any economic decision through optimization of their objective function subject to budget constraints (Pradhan, 2019).

wealth effects of a government bond is close to zero, (1) the Metzler-type argument for non-neutrality of change in the stock of government debt would not be valid, (2) a change in the stock of government debt would have no effect on capital formation, and (3) fiscal effects involving changes in the relative amounts of tax and debt finance for a given amount of public expenditure would have no effect on aggregate demand, interest rates, and capital formation” (Barro, 1974, p. 1116).

Separately, Domar (1944), which first focused on “burden” of public debt, stated that “...continuous government borrowing results in an ever rising public debt, the servicing of which requires higher and higher taxes; and that the latter will eventually destroy our economy or result in outright repudiation of the debt” (p. 148). The result of this analysis showed that a constant overall deficit to GDP ratio ensures convergence of both the debt to GDP ratio and the interest to GDP ratio to finite values. Consequently, taxes also need to service interest payments to converge to a finite value as a share of GDP.

Meanwhile, Blanchard (1990) proposed a set of indicators of sustainability of fiscal policy in which government can maintain current tax and spending programs without continuing to increase public debt, as follows: (1) the index of discretionary change, which should estimate what part is caused by changes in the economic environment and what part is caused by changes in policy; (2) the three indicators of sustainability: the primary gap, the medium-term tax gap, and the long-run tax gap; and (3) the three indicators of fiscal impact: the inflation adjusted deficit, the level of government spending (including real interest payments on the debt minus the average of the tax rate over the current and the next two years), and an index that should capture the effects of retirement programs.<sup>31</sup>

The Modern Money Theory (MMT), which is proposed by Wray (2014), argued that government deficit financing is possible as long as the public debt (in the form of bonds, etc.) could be financed by the domestic financial resources, mainly debt primarily financed by the issuance of money from central banks. The idea of this theory is synthesized from several theories, such as the State Theory of Money from Knapp (1924),<sup>32</sup> the Credit Theory of Money from Innes (1914), A Treatise on Money from Keynes (1930), and the functional finance proposals from Minsky (1986)’s views on the banking system. According to Knapp (1924), money is a “creation of law,” and debts are expressed in a unit of value by the State and discharged with means of payment. Meanwhile, Innes (1914) stated that government

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<sup>31</sup>Curtașu (2011), “How to assess public debt sustainability: Empirical evidence for the advanced European countries”, *Romanian Journal of Fiscal Policy*, 2(2).

<sup>32</sup>The book “The State Theory of Money” was first published in German in 1905, and then it was translated to English in 1924.



money is redeemable by the mechanism of taxation and, today, only the sovereign government can impose liabilities on others via tax payment. Minsky (1986) emphasized the “endogeneity” of money and claimed that bank money has (nominal) value precisely because it can be used to retire debts to banks.<sup>33</sup> In addition, taxes give value to the money issued by the government in an economy where government debt is a major asset on the books of the deposit-issuing bank.<sup>34</sup>

Despite decades of research, fiscal deficit and public debt issue continue to be debated among researchers. Therefore, the IMF (2011) presented the standard framework for debt management, which is known as Debt Sustainability Analysis (DSA), including two complementary assessments of the sustainability of total public sector debt and total external (public and private) debt. Some indicators of debt are used in the DSA to measure repayment capacity, such as public and external debt as a share of GDP, and export or fiscal revenue. More specifically, the IMF (2018) showed the thresholds of debt for low-income countries where, beyond such thresholds, debt (or debt service) is viewed as unsustainable (Table 7). Although this framework is proposed by the IMF, the debt situation is different from country to country; thus, governments must consider the actual characteristics of the fiscal position of the nation to build an appropriate strategy for public and external debt management.

**Table 6: Thresholds in the IMF’s Debt Sustainability Framework for Low-Income Countries**

	PV of External Debt as Percentage of		PPG of External Debt Service as Percentage of		PV of Total Public Debt as Percentage of
	GDP	Export	GDP	Export	GDP
Weak	30	140	10	14	35
Medium	40	180	15	18	55
Strong	55	240	21	23	70

Note: Debt carrying capacity is country-specific and determined by a country’s score on a composite indicator, combining the quality of institutions, its growth rate, remittances, reserve levels, and world growth. PV = present value. PPG = public and publicly guaranteed.

Source: IMF (2018)

Regarding the tests for the concept of public debt and fiscal sustainability, a large number of studies have been conducted by applying various methods. The essential methods

<sup>33</sup>The view that money is created during the normal, and important, processes of a capitalist economy.

<sup>34</sup>Wray (2014), “From the State Theory of Money to Modern Money Theory: An Alternative to Economic Orthodoxy”, *Levy Economics Institute, Working Paper No. 792, pp. 21.*

of previous studies can be divided into three categories: (1) stationary tests (unit root tests), (2) cointegration tests, and (3) fiscal reaction function tests.

The stationary or unit root test, by definition, is the unconditional distribution of a stationary time series that does not change over time. In concrete terms, a stationary variable does not exhibit any trend in its mean (IMF, 2018).<sup>35</sup> This methodology was used by many researchers in the past, like Hamilton & Flavin (1986), Trehan & Walsh (1988, 1991), and Wilcox (1989), Buiter & Patel (1990). For instance, Hamilton and Flavin (1986) applied this test to the United States over the period of 1962-1984 and found that if the solvency condition holds, stationary in the primary balance series implies that public debt is also stationary. Similarly, Trehan & Walsh (1988) also proved that government's debt is consistent with intertemporal budget balance by using a different time period (1890-1986).

One of the first papers that used the cointegration test to study fiscal sustainability was Hakkio & Rush (1991). The main purpose of using the co-integration framework is that government expenditure, inclusive of interest payments, and total revenue should not diverge from each other in the long run (Galvao et al., 2011). By applying this test to the U.S during the period of 1950Q2 to 1988Q4, Hakkio & Rush (1991) found that debt was not sustainable and government spending must be reduced and/or tax revenues must be increased to reduce the recent budget deficit. On the contrary, other scholars (Liu & Tanner, 1995; Quintos, 1995) showed that the fiscal deficit in the U.S. is still sustainable.

Fiscal reaction function tests, first developed by Bohn (1998, 2007), are used to investigate how government reacts to debt burden and what can be done. According to Burger et al. (2011), "Fiscal reaction functions usually specify, for annual data, the reaction of the primary balance/GDP ratio to changes in the one-period lagged public debt/GDP ratio, controlling for other influences" (p. 6). Applied to the U.S. economy in the period of 1916-1995, Bohn (1998) showed that the U.S. has sustainable fiscal policy during the whole period and various sub-periods because the government has responded to increases in public debt by raising primary surplus. In addition, Bohn (2007) proved that if either the debt series or the revenue and with-interest spending series are integrated in arbitrarily high order, i.e., stationary after differencing arbitrarily often, then the intertemporal budget constraint is satisfied.

Besides, the IMF working papers developed the above approaches and summarized various methods to assess public debt and fiscal sustainability. For example, the IMF (2000)

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<sup>35</sup>A stationary series has neither a deterministic trend nor a "unit root" (that would imply the absence of mean reversion).

introduced the present value budget constraint, tests of sustainability, and sustainability and uncertainty. Accordingly, the present value budget constraint is a necessary condition for sustainability, requiring that today's government debt be matched by an excess of future primary surpluses over primary deficits in present value terms. Tests of sustainability include sustainability indicators, such as Buiter (1985), primary gap, and tax-gap indicators (Blanchard, 1990).<sup>36</sup> Finally, to assess sustainability and uncertainty, the IMF proposed some methods, such as stochastic<sup>37</sup> and recursive simulation.

### ***2.1.3. Empirical Studies***

#### ***A. Empirical analyses for advanced countries***

Developing the framework of analysis proposed by Hamilton & Flavin (1986), Corsetti & Roubini (1991), and Uctum & Wickens (1996), different empirical tests were applied for government solvency of the U.S. and EU countries from the 1970s to the early 1990s, and found that many countries do not have a sustainable fiscal policy.

Separately, Stoian (2008) investigated the correlation between budgetary revenues and expenditures in Romania over the period of 1991Q1-2005Q4. By using the Johansen cointegration test and Granger causality test, the results revealed that the dynamic of budgetary expenditures is caused by budgetary revenues and this country will not face fiscal imbalance in the long-term.

Meanwhile, some studies combined two approaches of stationary and co-integration tests in the analysis of public debt and fiscal sustainability, such as Afonso & Rault (2007), Westerlund & Prohl (2010), Afonso & Jalles (2012), and Krajewski et al. (2016). For instance, Afonso & Rault (2007) argued that "fiscal sustainability being an issue in some countries, fiscal policy was sustainable both for the EU15 panel set and within sub-periods (1970-1991 and 1992-2006)" (p. 4). Westerlund & Prohl (2010) found sustainable fiscal balance in eight OECD countries over the period of 1977Q1-2005Q4, whereas Afonso & Jalles (2012) showed that fiscal policy has been less sustainable for several countries in OECD during the period of 1970-2010.

Further, using the fiscal reaction functions, Mendoza & Ostry (2007) and Mendoza et al. (2011) proved the non-linear relationship between debt and primary balances. Specifically,

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<sup>36</sup> Buiter (1985) argued that sustainable fiscal policy should maintain the ratio of public sector net worth to output at its current level. Meanwhile, primary gap indicator is based on the permanent primary deficit necessary to stabilize the debt ratio and tax-gap indicator is based on the permanent tax necessary to stabilize the debt ratio (IMF, 2000, p. 8-9).

<sup>37</sup> Stochastic simulation methods are used to examine how the factors interact to influence the amount of uncertainty surrounding external and public debt over the medium term (Hostland & Karam, 2005, p. 4).

Mendoza & Ostry (2007) found strong empirical evidence of a robust, positive conditional correlation between primary surpluses and public debt for 34 emerging markets and 21 industrial countries over the period of 1990-2005. Meanwhile, Mendoza et al. (2011) found the “fiscal space,” defined as the difference between current debt level and a (country-specific) debt limit, for 23 advanced economies during the period of 1970-2007. The marginal response of primary balance to lagged debt starts to decline when debt reaches around 90-100% of GDP.

Croce & Juan-Ramón (2003) calculated the quarterly value of the indicators throughout the 1990s for 12 countries (4 in the Western Hemisphere, 5 in Europe, 3 in Asia) by using a recursive model. The results showed that “unsustainable countries experienced larger increases in certain categories of public spending as a percentage of GDP (wages, subsidies, and other current transfers) than countries classified as sustainable” (p. 5).

### ***B. Empirical analyses for developing countries***

The unit root test is adopted in some empirical studies for developing countries, such as in Lau & Baharumshah (2005) and Cuestas & Regis (2018). For example, Lau & Baharumshah (2005) used this test for ten Asian countries during the period of 1970-2003, and showed the evidence of violation of the governments’ intertemporal budget constraint in many countries, except South Korea, Malaysia, Singapore, and Thailand. Similarly, Cuestas & Regis (2018) pointed out that there was a trend in 2014 toward an unsustainable path in the public-debt-to GDP ratio in China.

Meanwhile, using Panel cointegration techniques, Kalyoncu (2005) examined the sustainability of fiscal stances in five countries during the period of 1970Q1-2003Q4, and found weak fiscal sustainability for Turkey and South Korea while there were unsustainable fiscal stances for Mexico, the Philippines, and South Africa. Similarly, Adedeji & Thornton (2010) conducted an analysis on five Asian countries (India, Pakistan, the Philippines, Sri Lanka, and Thailand) over the period of 1974–2001. The results showed weak fiscal sustainability in these countries. Campo-Robledo & Melo-Velandia (2011) found empirical evidence of sustainability of the primary deficit for eight Latin American countries, but only in a weak sense for the period of 1960-2009. More recently, applying a unit root test and cointegration test, Syed et al. (2014) and Sharstri et al. (2017) also showed weak or unsustainable fiscal stances for some selected Asian countries.

Furthermore, the fiscal reaction functions on public debt sustainability are estimated in the analyses of some authors, such as de Mello (2005) and Ekanayake (2012). Particularly,

based on monthly data covering the period of 1995-2004, de Mello (2005) suggested that in Brazil “all levels of government react strongly to changes in indebtedness by adjusting their primary budget surplus targets” (p. 2). Meanwhile, using SVAR regression, Ekanayake (2012) assessed the government debt sustainability in Sri Lanka for the period of 1997Q1-2010Q4 and pointed out that given other macroeconomic variables remaining favorable, if the GDP growth rate increases by 8%, public debt-to-GDP ratio would reach a level of around 65% in the medium term.

Besides, Barnhill & Kopits (2003) applied a stochastic approach to the case of Ecuador and found that the volatility of the sovereign spread is a major source of fiscal vulnerability and is more important than terms of trade shocks. More recently, Belhocine & Dell’Erba (2013) introduced a panel smooth transition regression model to measure debt sustainability of 26 emerging market economies. The main results were that debt sustainability is a major determinant of spreads, and financial market’s concern about debt sustainability become even larger as debt levels increase beyond 45% of GDP. Cruz-Rodriguez (2014) assesses the fiscal policy sustainability of 18 countries, mainly developing countries, using the recursive algorithm method. The study found out that most of the countries were fiscally unsustainable because of primary deficits and having a dollarized economy did not improve the country’s fiscal sustainability.

### ***C. Empirical analyses for Vietnam***

In the case of Vietnam, there is a paucity of literature on the issue of public debt and fiscal sustainability. For instance, Bui et al. (2015) used a stationary test for the variable of public debt/GDP over the period of 1990–2013 and a cointegration test for the budget revenue–expenditure nexus over the period of 1985–2013 to investigate the issue of Vietnam’s public debt and fiscal sustainability. The empirical results revealed an increasing tendency toward public debt while no co-integration exists between budget revenue and expenditure.

Van & Sudhipongpracha (2015) assessed the effects of government budget deficit on economic growth in Vietnam during the period of 1989-2011. The findings showed that government deficits had no direct effects on the country’s economic productivity. In addition, FDI contributed to the development of the economy while real interest rates adversely affected growth. Recently, Nguyen (2018) found that fiscal policy in eight selected ASEAN countries, including Vietnam, was not sustainable in a strong sense covering the period of 1989-2017, by using the Panel co-integration test.

*In summary*, most of the past studies emphasized in advanced OECD countries and the United States or heavily indebted poor countries in Latin America and Africa while few studies were conducted on emerging countries in Asia. The studies on developed countries during the 1980s and early 1990s are different from the current years since financial debt has increased significantly and several countries have accumulated a safety hedge to avoid debt crises (especially Asian countries). Moreover, a large number of previous studies followed the IMF approach; however, the IMF projections for assessing debt sustainability have been repeatedly biased, which may have contributed to the distortion of the timing of sovereign debt restructurings and the consequent processes of renegotiation (Guzman & Daniel, 2015).

Eventually, some studies on developing countries were introduced, though these panel data-based studies may not explain the dynamic nature of Asian development patterns. One of the main reasons is that in the case of Southeast Asian countries like Vietnam, external borrowing and FDI capital are utilized for development purposes, and they are used quite effectively compared to other countries in Africa or Latin America.

Thus, to fill the gap of literature in the available research on the issue of public debt in Vietnam, Chapter 4 of this research will apply a new simulation approach on tax revenue to predict the public debt-to-GDP ratio and budget deficit for the next 10 years, and determine whether the level of public debt was low enough to sustain economic growth in Vietnam for the long-term.

**Table 7: Summary of Empirical Studies on Fiscal Deficit and Public Debt Sustainability**

<b>Group 1: Advanced Countries in OECD, Europe, and the U.S.</b>				
<b>Authors</b>	<b>Sample</b>	<b>Period</b>	<b>Methodology</b>	<b>Findings</b>
Hamilton & Flavin (1986)	U.S	Annual data from 1962 to 1984	Unit root test	Postwar U.S. deficits are largely consistent with the proposition that the government budget must be balanced in present-value terms.
Trehan & Walsh (1988)	U.S	Annual data from 1890 to 1986	Unit root test	Government's debt is consistent with intertemporal budget balance.
Trehan & Walsh (1991)	U.S	Annual data from 1960 to 1984	Tests of intertemporal budget balance and present value	The federal budget process is consistent with intertemporal budget balance, but the process for the current account may not be.
Wilcox (1989)	U.S	Annual data from 1960 to 1984	Unit root test	Fiscal policy in the United States has not been sustainable.
Hakkio & Rush (1991)	U.S	Quarterly data from 1950Q2 to 1988Q4	Cointegration tests	Government spending must be reduced and/or tax revenues must be increased to reduce the recent budget deficit.

Corsetti & Roubini (1991)	18 OECD Countries	Annual data from 1960 to 1989	Unit root test	Public debt seems to be a serious issue in Italy, while it does not appear to be a problem in the cases of Germany and Japan. Mixed evidence for the U.S. Belgium, Ireland, the Netherlands, and Greece also have problems of sustainability for current fiscal policies.
Liu & Tanner (1995)	U.S	Annual data from 1950 to 1989	Maximum likelihood cointegration test	The solvency condition for the U.S. government is satisfied only if a break is included in the process.
Quintos (1995)	U.S	Quarterly data from 1947Q2 to 1992Q3	Cointegration tests	The deficit is sustainable despite the failure of co-integration in the 1980s.
Uctum & Wickens (1997)	U.S and EU	Annual data from 1965 to 1994	Government debt unit root test	Many countries do not have a sustainable fiscal policy.
Bohn (1998)	U.S	Annual data from 1916 to 1995	Fiscal reaction function tests	The government reacts systematically to increases in government debt by adjusting the primary balance (reducing the deficit or increasing the surplus net of interest payments).
Croce & Juan-Ramón (2003)	12 advanced and emerging countries <sup>38</sup>	Quarterly data in the 1990s	Recursive model, Granger causality test	Unsustainable countries experienced larger increases in certain categories of public spending as a percentage of GDP than countries classified as sustainable.
Afonso & Rault (2007)	15 EU Countries	Annual data from 1970-2006	Panel unit root and cointegration test	Fiscal policy was sustainable for both the EU15 panel sets.
Mendoza & Ostry (2007)	21 industrial countries & 34 emerging market	Annual data from 1990 to 2005	Fiscal reaction function tests	Positive conditional relationship between primary surpluses and public debt has been found for both emerging market and advanced economies
Stoian (2008)	Romani	Quarterly data from 1991 to 2005	Cointegration and Granger causality tests	There is a correction mechanism that forces budgetary expenditures and revenues to be on equilibrium in the long term and not cause large fiscal imbalances.
Budina & Wijnbergen (2009)	Turkey	Quarterly data from 1990Q1 to 2004Q4	Stochastic simulation	If the current fiscal adjustment persists, with primary surpluses of about 6% of GDP, there will be a rapid decline in public debt over the projection period.
Westerlund & Prohl (2010)	8 OECD Countries	Quarterly data from 1977Q1 to 2005Q4	Panel stationary and cointegration test	For these countries, the sequence of primary surpluses has been sufficient to cover the marked value of public debt.
Mendoza et al. (2011)	23 advanced economies	Annual data from 1970 to 2007	Fiscal reaction functions	The non-linear relationship between current debt level and a debt limit that exhibits the fiscal fatigue characteristic
Afonso & Jalles (2012)	18 OECD Countries	Annual data from 1970 to 2010	Panel unit root and cointegration test	Fiscal policy has been less sustainable for several countries <sup>39</sup> (except for Austria, Canada, France, Germany, Japan, Netherlands, Sweden, and the UK).

<sup>38</sup>Argentina, Brazil, Mexico, the United States, Belgium, Ireland, Italy, Sweden, Turkey, Indonesia, Korea, and Thailand.

<sup>39</sup>Belgium, Denmark, Finland, Greece, Ireland, Italy, Portugal, Spain, Australia, and the U.S.

Krajewski et al. (2016)	10 Central & Eastern European Countries	Annual data from 1990 to 2012 <sup>40</sup>	Panel unit root and cointegration tests	The public finances in CEE countries are sustainable in a weak sense.
<b>Group 2: Developing/Emerging Countries</b>				
Authors	Sample	Period	Methodology	Findings
Buiter & Patel (1990)	India	Annual data from 1970 to 1987	Public debt stationary test	The non-stationary of the discounted public debt suggests that indefinite continuation of the pattern of behavior reflected in the historical time-series process is inconsistent with the maintenance of solvency.
Barnhill & Kopits (2003)	Ecuador	Quarterly data from 1995 to 1999	Stochastic simulation (Value-at-Risk approach)	The volatility of the sovereign spread is a major source of fiscal vulnerability in Ecuador.
de Mello (2005)	Brazil	Monthly data from 1995 to 2004	Fiscal reaction functions	All levels of government react strongly to changes in indebtedness by adjusting their primary budget surplus targets
Lau & Baharumshah (2005)	10 Asian Countries <sup>41</sup>	Annual data from 1970 to 2003	Panel unit root test	Fiscal deficits in most Asian countries are in violation of their intertemporal budget constraint (except for Korea, Malaysia, Singapore and Thailand) and the deficits are too large.
Kalyoncu (2005)	5 Selected Countries <sup>42</sup>	Quarterly data from 1970 to 2003	Cointegration test	Fiscal stance is not sustainable in the case of Mexico, the Philippines, and South Africa while it satisfies the weak sustainability condition in Turkey and South Korea.
Adedeji & Thornton (2010)	5 Asian Countries <sup>43</sup>	Annual data from 1974 to 2001	Panel cointegration	“Weak” fiscal sustainability is found in the sample of 5 countries.
Campo-Robledo & Melo-Velandia (2011)	8 Latin American Countries <sup>44</sup>	Annual data from 1960 to 2009	Panel cointegration	Empirical evidence showed sustainability of the primary deficit for these Latin American countries, but only in a weak sense.
Ekanayake (2012)	Sri Lanka	Quarterly data from 1997Q1 to 2010 Q4	Structural Vector Autoregressive (SVAR)	Given other macroeconomic variables remaining favorable, if the GDP growth rate increases by 8%, public debt-to-GDP ratio would reach a level of around 65% in the medium term.
Belhocine & Dell’Erba (2013)	26 Emerging market economies	Semi-annual basis for the period 1994-2011	Panel Smooth Transition Regression	The sensitivity of spreads to debt sustainability doubles as public debt increases above 45% of GDP.
Cruz-Rodriguez (2014)	18 developing countries <sup>45</sup>	Quarterly data from 1990Q1 to 2004 Q4	Recursive algorithm method	Most of the countries were fiscally unsustainable.

<sup>40</sup>With full sample period (1990-2012) and pre-crisis sub-sample (1990-2008).

<sup>41</sup>India, Indonesia, Korea, Malaysia, Nepal, Pakistan, the Philippines, Singapore, Sri Lanka, and Thailand.

<sup>42</sup>South Korea, Mexico, the Philippines, South Africa, and Turkey.

<sup>43</sup>India, Pakistan, the Philippines, Sri Lanka, and Thailand.

<sup>44</sup>Argentina, Chile, Colombia, Ecuador, Panamá, Perú, Paraguay, and Uruguay.

<sup>45</sup>Argentina, Brazil, Chile, Colombia, Costa Rica, Czech Republic, the Dominican Republic, El Salvador, Honduras, Hungary, Indonesia, Malaysia, Mexico, Panama, Peru, the Philippines, Thailand, and Turkey.



Syed et al. (2014)	10 Asian Countries <sup>46</sup>	Annual data from 1990 to 2010	Panel unit root and cointegration test	Fiscal policy for low-income countries is sustainable whereas it may not be sustainable for high-income countries. Moreover, fiscal policy can be sustainable (non-sustainable) even for the debt above (below) 60% of the GDP.
Mupunga & Roux (2015)	Zimbabwe	Annual data from 1980 to 2012	Dynamic stochastic debt simulation	Zimbabwe's public debt would not deviate much from the desired regional indicative target of 60% in the medium to long-term.
Bui et al. (2015)	Vietnam	Annual data, 1990-2013 for debt; 1985-2013 for revenue and expenditure	Cointegration tests	No sustainability, as well as potential risk, is reflected by Vietnam's public debt and fiscal policy.
Van & Sudhipongpracha (2015)	Vietnam	Annual data from 1989 to 2011	Panel fixed effect	Government deficits had no direct effects on the country's economic productivity
Cuestas & Regis (2018)	China	Quarterly data from 1992Q1 to 2016Q1	Unit root test	There was a clear trend in 2014 toward an unsustainable path in the public debt-to-GDP ratio.
Sharstri et al. (2017)	5 South Asian Countries <sup>47</sup>	Annual data from 1985 to ourcce2014	Panel unit root and cointegration test	Budget deficits in the countries, except for Bangladesh, exhibit weak sustainability.
Nguyen (2018)	8 ASEAN Countries <sup>48</sup>	Annual data from 1989 to 2017	Panel unit root and cointegration tests	Weak sustainability in the selected ASEAN countries has been found.

Source: Author's preparation

## 2.2. Literature Review on the Impact of Public Debt on Economic Growth

The relationship between public debt and economic growth has been widely considered after the debt crisis that hit many developing countries in Latin America since the early 1980s. In the 1990s, several studies focused on the impacts of public debt on economic growth in developed countries (Woodford, 1990; Greene & Villanueva, 1991; Savvides, 1992). Recently, the consequences of sovereign debt crisis in Europe have raised again the concern of policymakers and researchers with most studies concentrated on developed economies, for instance, Ferreire, 2009; Kumar & Woo, 2010; Checherita & Rother, 2010; Reinhart & Rogoff, 2010; Cecchetti et al., 2011; and Baun et al., 2013. In brief, although this issue has been mentioned largely in the existing literature, the results are different, depending on the groups of countries, the time framework, and the methodology of the analysis. Main

<sup>46</sup>Bangladesh, Bhutan, India, Indonesia, Malaysia, Maldives, Pakistan, Singapore, Sri Lanka, and Thailand.

<sup>47</sup>Bangladesh, India, Nepal, Pakistan, and Sri Lanka.

<sup>48</sup>Cambodia, Indonesia, Lao, Malaysia, Myanmar, the Philippines, Thailand, and Vietnam.

findings can be divided into 3 groups: negative, positive, and non-linear (inverted U-shape curve) effects.

### ***2.2.1. Studies on the Negative Effect of Public Debt on Economic Growth***

Regarding the negative effect of public debt on economic growth, Krugman (1988) identified the “debt overhang” problem when the expected present value of potential future resource transfers is less than debt. As the stock of public sector debt increases, the government’s debt service obligation will be financed by distorted measures (the inflation tax, for example), as in Agénor & Montiel (1996). Subsequently, Kumar & Woo (2010) provided empirical evidence of an inverse relationship between initial debt on growth for a panel of 38 advanced and emerging countries over the period of 1970-2007. Panizza & Presbitero (2012) examined the relationship between public debt and economic growth using the instrumental variable technique for OECD countries. The results showed a negative correlation between public debt and economic growth. Fincke & Greiner (2013) examined the impact of public debt on economic growth in seven developed countries for the period of 1970-2012, using pooled regression and random effects model. They found that there is a significant negative relationship between public debt and economic growth.

Other authors focused on the impacts of public debt to economic growth via the effect of crowding out private investment or altering the composition of public spending. Elmendorf & Mankiw (1999) argued that higher sovereign debt yields could lead to an increase in private interest rates and a decrease in private spending growth, both by households and firms. This may also induce an increased net flow of funds out of the private sector into the public sector. A significant number of recent studies, such as Ardagna et al. (2007), Barrios et al. (2009), and Laubach (2009) suggest that high debt and deficits may contribute to rising sovereign long-term interest rates and yield spreads. For example, Ardagna et al. (2007) used a panel of 16 OECD countries over the period of 1960-2002 to investigate the effects of government debts and deficits on long-term interest rates. The results indicated that a 1% point increase in the primary deficit-to-GDP ratio increases contemporaneous long-term interest rates by about 10 basis points. Barrios et al. (2009) provided an empirical analysis of the determinants of sovereign bond yield differentials in the European region<sup>49</sup> during the period of 2003-2009 (weekly and quarterly data). The results showed that countries with high

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<sup>49</sup>Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, and Spain.

debt and large current account deficits are found to experience the highest bond yield increases as consequences of deteriorated public finances.

### ***2.2.2. Studies on the Positive Effect of Public Debt on Economic Growth***

In terms of positive effects, one of the earliest studies on this topic is Domar's model (1944). He showed that the continuing budget deficit does not necessarily lead to default of the government when the economy grows. The budget deficit in this context is a conventional one (the gap between government expenditure including interest payments and tax revenue), not a primary deficit. If the growth rate of the economy is positive, irrelevant to relative magnitude between interest rate and economic growth rate, Domar's proposition always holds.

In the 1980s and 1990s, various theoretical models indicated that a reasonable level of current debt inflows is expected to have a positive effect on growth. For example, Woodford (1990) stated that a higher public debt, as it implies a higher proportion of liquid assets in private sector wealth, increases the flexibility of the private sector in responding to variations in both income and spending opportunities, and so can increase economic efficiency. Cohen (1993) proved that low levels of debt are still associated with higher growth than in financial autarkies. Fincke & Greiner (2014) found a significant positive correlation between public debt and the subsequent growth rate of per capita GDP in eight selected emerging market economies during the period of 1980-2012,<sup>50</sup> by using Panel Fixed and Random effect estimation.

### ***2.2.3. Studies on Non-Linear Effect of Public Debt on Economic Growth***

Recent empirical studies suggested that a non-linear relationship between public debt and economic growth should be described by an inverted U-shaped curve with a certain turning point beyond which increase in public debt has significant and negative impact on growth (Reinhart & Rogoff, 2010; Checherita & Rother, 2010; Cecchetti et al., 2011; Baum et al., 2013; Fincke & Greiner, 2014). Particularly, Reinhart & Rogoff (2010) showed evidence of threshold level of government debt in 20 developed countries over the period of 1946-2009 and 24 emerging market economies over the periods of 1946-2009 and 1900-2009. The main finding of the study is that across both advanced countries and emerging markets, high debt-to-GDP ratio levels (90% and above) led to lower growth outcomes.

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<sup>50</sup> Brazil, India, Indonesia, Malaysia, Mexico, South Africa, Thailand, and Turkey.

Focusing only on advanced economies in Europe, Checherita & Rother (2010) took on the period of 1970-2009 and found that government debt is a hurdle for economic growth, and it has a negative and non-linear relation in 12 European countries.<sup>51</sup> Empirical results found a non-linear impact of debt on growth with a turning point—beyond which the government debt-to-GDP ratio has a deleterious impact on long-term growth—at about 90-100% of GDP. Confidence intervals for the debt turning point suggested that the negative growth effect of high debt may start from levels of around 70-80% of GDP, which calls for even more prudent indebtedness policies. Subsequent studies attempt to provide robustness checks for their claim. For example, Cecchetti et al. (2011) obtained the result that there is a threshold effect of public debt around 85% of GDP for 18 OECD countries from 1980 to 2010, whereas Baum et al. (2013) obtained a similar result around a threshold level of 95% for the 12 Euro countries over the period of 1990-2010.

#### ***2.2.4. Studies on the Impact of Public Debt on Economic Growth in ASEAN countries***

Many developing countries in Asia, particularly ASEAN member-states, have different situation from countries in Africa and Latin America with regards to two aspects. First, Asian countries' productive investment has been a major characteristic of investment from imported capital. Second, emerging countries in Asia have achieved high growth rate by maintaining an "environment conducive to a high growth rate of savings and investment," as well as keeping their economies open to foreign technology and capital (Kim, 2015). Therefore, more and more studies on the public debt issue in Southeast Asia have been conducted recently.

Muhammad (2008) analyzed long-term and short-term relationships between public debt service and GDP in Indonesia by applying co-integration analysis of a time series model during the period of 1980-2005. The debt overhang problem has been found in the long run since increasing the public external debt service slows down economic growth whereas it has not been found during the short run. Similarly, Lee & Ng (2015) investigated whether public debt affected to the economic growth in Malaysia over the period of 1991-2013. The results indicated that public debt has a negative impact on GDP. In addition, it is found that the budget deficit, government consumption, and external debt service were a decreasing function of GDP. Kinnavong (2016) further illuminated the negative impacts of external debt and debt service on economic growth in Laos for the period of 1996-2015.

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<sup>51</sup>Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, and Spain.

Pham (2011) analyzed the risks and challenges of public debt for Vietnam using a combination of statistical description and numerical simulation. The research indicated that the public debt sustainability and liquidity are still below the conventional safety thresholds, while the macroeconomic conditions are quickly deteriorating because of the recent high-rising public debt in Vietnam. Meanwhile, Dao & Do (2017) found the existence of non-linear relationship between external debt and economic growth with the threshold level of 28% for Vietnam during the period of 2000Q1- 2012Q4.

Muhammad (2017) examined the relationship between public debt and economic growth in eight Southeast Asian countries, all members of ASEAN, using 10 years of data (2006-2015) and analytical tools, such as Vector Auto Regression (VAR). The main finding of this study is that public debt showed a positive and significant effect in increasing the GDP. More recently, Tran (2020) investigated the impact of external and domestic public debt on economic growth in ten ASEAN countries during the period of 1980-2016. The Panel data analysis showed that gross public debt and external public debt had a non-linear effect on the economic growth in the upper-middle-income group countries (Thailand and Malaysia), as well as in the sub-group of lower-middle-income countries (Vietnam, Laos, Cambodia, and Myanmar). Negative effect of external public debt on the GDP was found in the Philippines and Indonesia, while high-income countries (Singapore and Brunei) do not depend on public debt to promote economic growth.

To summarize, most recent studies on the correlation between public debt and economic growth in ASEAN countries have concentrated on single countries with limited databases or groups of countries over short time periods. Hence, in the next chapter, the analysis on impact of public debt on economic growth in Vietnam during more recent years (1995-2018) will be conducted. Public debt may not be negative for economic growth in certain stages of development and it is shown by the results of Chapter 3 in this thesis.

## **2.3. Public Debt and External Debt Crises in the Past**

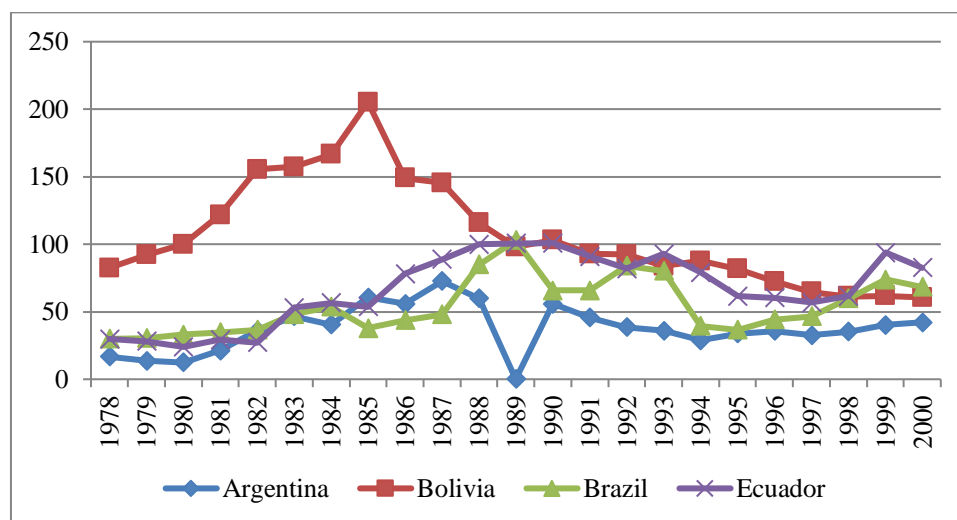
### ***2.3.1. Latin American Debt Crisis in the 1980s***

In the first half of the 1980s, a public debt crisis had already happened with the name of “lost decade” when many Latin American countries (LACs) became unable to service their foreign debt. In 1982, Mexico was the first country that declared default on its debts to the International Monetary Fund (IMF). In October 1983, 27 countries with a total amount of 240

billion USD in debt declared or were about to declare restructure of their debt.<sup>52</sup> The public-debt-to-GDP ratio rose quickly in some countries in the crisis period (Table 19).

The main reason of the crisis in Latin America is a massive external debt in short-term commercial loans which are quite different from the ASEAN cases. The recession of the global economy after the oil shocks created high inflation in developed countries as well as large deficits in the current account of the balance of payments in developing countries. However, the LACs already borrowed massive amount of money from U.S commercial banks and other creditors to invest in infrastructure projects since 1970 to the early 1980s.<sup>53</sup> In this context, the U.S. increased interest rates to restrain inflation and consequences, to the point where highly indebted countries in Latin American regions were unable to repay the debt as debt service payments rose sharply. In response to the crisis, instead of eliminating subsidies to state-owned enterprises, most LACs cut spending on socioeconomic programs and the result was stagnant growth, significant declines in per capita income, and high unemployment.

**Figure 20: Public debt-to-GDP ratio in some selected Latin American countries during the period of 1978-2000**



Source: IMF, *Historical Public Debt Database*.

Although the IMF and the U.S. proposed the Washington Consensus to impose debt relief reforms and financial support to LACs, most of the loans would not be repaid and banks began to establish loan loss provisions for their debt. A fundamental lesson to be derived from Latin America's sovereign debt crisis is that fiscal reform alone cannot resolve

<sup>52</sup> Data is taken from the FDIC (1997).

<sup>53</sup> According to the Federal Deposit Insurance Corporation (FDIC), total outstanding debt increased quickly from US\$ 29 billion in 1970 to US\$ 159 billion by the end of 1978, and reaching the highest level of US\$ 327 billion in 1982.

a debt crisis: austerity must constitute one component of a larger strategy – not the strategy itself.<sup>54</sup>

### ***2.3.2. Asian Financial Crisis 1997/98***

The financial crisis in East and Southeast Asia started in Thailand in July 1997 with the financial collapse of the Thai baht. The domino effect spread to South Korea, Indonesia, Malaysia, and the Philippines in the late 1990s. During the Asian crisis, government debt, driven by financial bailouts and deficit spending to jumpstart demand, had already risen to 35-50% of GDP in Malaysia and Thailand, and to 90-100% of GDP in Indonesia and the Philippines (World Bank, 2000). By the end of 2000, public debt-to-GDP ratio was over 60% in the Maastricht criterion for these four Southeast countries (Nick, 2003). In South Korea, in the period of 1993-1997, the external debt to GDP ratio rose from 20.1% to 34.9% (IMF, 1999).

The Asian Crisis (1997/98) is characterized by massive short-term capital outflows which resulted in significant depreciation of currencies (currency crisis) and increased financial debt (financial crisis) as well as deterioration of the economies (economic crisis). This new type of crisis has been named by Yoshitomi as “Capital Account Crisis”. In particular, massive capital inflows under pegged the exchange rate to the US dollar and excessive investment in real estate generated an asset-bubble phenomenon that fueled credit booms and foreign-exchange-denominated lending by the domestic banking system. Moreover, external short-term debt was used to finance domestically oriented investment projects. As a result, when a “sudden stop” of capital inflows and an acceleration of capital outflows occurred, significant depreciation of domestic currency led to the deterioration of their external debt position and banks’ balance sheets. Additionally, due to inappropriate policy responses followed by the IMF, currency and banking crises even caused the abrupt contraction of the economy in Asian countries.

Before 1997, the IMF made a mistake in praising countries like Indonesia and Thailand without any warning of the risk of a surge in capital inflows. Even the IMF had never introduced capital outflow control measures under the IMF programs, but provided inappropriate programs during the crisis period for Thailand, Indonesia, and South Korea, such as fiscal austerity, and restructuring of the banking sector. Consequently, those countries suffered further deterioration of the financial sector, which had great damage to the

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<sup>54</sup> See, World Bank (2017), “World Economic and Social Survey”, p. 71 for further detail

economies, declined fiscal revenue from economic stagnation, and significantly increased inflation rate and unemployment after the crisis.

Meanwhile, Malaysia, which has independent policy (not under the control of the U.S. and IMF programs), prevented the spread of the crisis with an introduction of capital controls.<sup>55</sup> The IMF finally accepted the importance of capital flow management, even though they strongly objected to it at the beginning of the crisis. Most of these countries like Thailand and South Korea have introduced capital management and controls after the Asian Crisis.

The main useful components learned from the Asian financial crisis were: (1) Capital controls and management (as in the case of Malaysia) as emergency measures; (2) An appropriately flexible foreign exchange regime through which undue overvaluations and undervaluation can be averted, while at the same time, avoiding volatility; (3) Prolonged external debt and “rollover” of the debt; (4) Substantial foreign reserves to be injected (through emergency lending) in the countries to stabilize the market situation (without substantial conditionality); and (5) Injection of capitals for banks and other financial institutions by the authority.

### ***2.3.3. Global Financial Crisis in 2008***

The Global Financial Crisis originated from the United States in 2008. Especially, after the collapse of Lehman Brothers in September 2008, the bank crisis spread out in the U.S. and had negative impacts first on the worldwide financial system because banks and investors around the world had placed money in U.S. mortgages. The IMF estimated that large U.S. and European banks lost more than US\$ 1 trillion on toxic assets and bad loans from January 2007 to September 2009. Although governments of many nations had to create stimulus packages to boost economies out of recession, but the consequences of this crisis have remained present for a decade later.<sup>56</sup>

The fundamental catalyst of the Global Financial Crisis was completely liberalized capital and financial accounts in the U.S and EU before the crisis. Since capital flows were not controlled, an increase in asset value and a bubble in the real estate sector occurred during the crisis. During the 2000s, America began to invest heavily in houses by borrowed money from banks with low interest rates. To meet the high level of demand, a large fraction of the

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<sup>55</sup>Strict capital outflow restriction measures were abolished after one year, but prudential management of the financial sector continued.

<sup>56</sup>China announced a stimulus package of \$US 586 billion in November 2008 while Germany and Australia passed a package of \$US 63 billion and \$US 27 billion in February 2009, respectively.



lending was for subprime mortgages and home equity lending.<sup>57</sup> The banks believed that housing prices would go up and they would recover their money, even if a creditor defaulted. However, the bubble collapsed by the end of 2007 and housing prices had dropped more than 15%. Since almost all the banks' money was invested in mortgages, debts became severe.

After the Global Financial Crisis, both the US and EU had put some regulatory frameworks on macro and micro prudential controls. For instance, the Financial Stability Board (FSB) and the Basel Committee on Banking Supervision (BCBS) was established by the G-20 in 2009 to prepare new capital and liquidity requirements for banks under the third Basel framework. The European Systemic Risk Board (ESRB) which was established in 2010 is responsible for the macroprudential oversight of the EU's financial system and the prevention and mitigation of systemic risk. Meanwhile, the European system of financial supervision (ESFS) which was introduced in 2010 comprises of ESRB and three European supervisory authorities (ESAs) to ensure stronger and more integrated financial supervision across the EU.<sup>58</sup>

Further, the IMF's position towards capital account crises changed its position and endorsed capital flow management and controls only after the Global Financial Crisis (2008). This is reflected in the document officially endorsed in the IMF (2012). The IMF has now published some documents which show the actual measures undertaken by several countries for capital flow management and controls as shown in the IMF (2019).<sup>59</sup>

There are some lessons learnt from this crisis: (1) the role of government in managing capital flows and supervising the bad debt of commercial bank systems; (2) the region rapidly needing to develop its own economic institutions if it wanted to be able to respond more effectively to future crises (Grimes, 2009); and (3) the need of enhancing banking regulations to prevent debt vulnerability.

#### ***2.3.4. European Debt Crisis (2009-2012)***

Unlike the Asian Crisis, the European Debt Crisis resulted from external sovereign debt and the contagion of Lehman shock in 2008. The Euro Crisis started when the Greek government defaulted on its debts in 2011. The crisis spread to other countries in the EU, such as Portugal, Ireland, Italy, and Spain. Public indebtedness also increased sharply during the sovereign debt crisis. According to the IMF, debt-to-GDP ratio of 13 of 17 countries in

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<sup>57</sup> Loans are issued to borrowers with a low credit standing.

<sup>58</sup> Three European supervisory authorities include the European Banking Authority, the European Securities and Markets Authority, and the European Insurance and Occupational Pensions Authority.

<sup>59</sup> Taxonomy on capital flow management measures (published every year recently).

the Euro zone had exceeded the convergence criteria maximum of 60% in 2012.<sup>60</sup> The average debt-to-GDP ratio across the Eurozone countries rose from 72% in 2006 to 119.5% in 2014 (Roman et al., 2017).

Before the sovereign debt crisis, the Euro system itself had its own risk factors, such as full liberalization of capital and financial accounts, fixed exchange rates in the European region, no independent monetary policy (determined by the European Central Bank [ECB]), and lower domestic savings because of dependence on the imported capital through sovereign bond issuance. The nature of the Euro crisis was sovereign debt and a capital account crisis with a huge fiscal deficit and capital outflows from Greece, Ireland, Italy, Portugal, and Spain (GIIPS). In addition, exchange rate depends on the interest rate and confidence in the European region. When the U.S. interest rate declined in 2007, capital flew from the U.S. into Europe, which led to an appreciation of the Euro and larger incentive for holding Euro Bonds. However, Euro currency fell in September 2008 with a fall in interest rate of the Euro by ECB, causing larger loss for financial institutions.

The lesson learned from this crisis was that capital control and management is one of the most essential measures for preventing capital account crisis. Asian countries already realized the importance of capital management and controls since 2000, and now, capital management is recognized as an important issue globally, not only in developing or emerging economies, but also advanced countries. In fact, after the Global Financial Crisis, financial management and controls in micro and macro prudential areas have been introduced in Europe and the U.S. Particularly, the EU has established the ESM (European Stability Mechanism) for emergency assistance in the crises. In addition, a “fiscal capacity” for the European region, joint decision making for structural reforms, and enhanced democratic processes should be created (Samantha, 2015).

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<sup>60</sup> Among them, there were some large economies like Germany (90.4%), France (111.9%), Italy (135.3%), and Spain (93.5%).

### **Chapter 3: Analysis on the Impact of Public Debt on Economic Growth in Vietnam**

This chapter analyzes the impact of public debt on economic growth in Vietnam during the period of 1995-2018. Furthermore, the analysis also covers the sub-period of 2005-2018 since there was significant change of the economy after the Global Financial Crisis in 2008. However, the periods covered are relatively short, which may directly affect the robustness of the regression. Thus, four other countries in the ASEAN region, whose data on public debt and macroeconomic indicators are available, being Indonesia, Malaysia, the Philippines, and Thailand, are included in the analysis of public debt. The dummy of those crises as the Asian Crisis and the Global Financial Crisis as well as dummy variable for Vietnam are used to capture the impact of public debt on economic growth in Vietnam.

This study attempts to fill in the gap in literature by applying a new approach toward public debt (Panel Data Regression) and addressing the question of how public borrowing may have negatively impacted the growth of the economy. The main hypothesis is that there is a negative impact of public debt on economic growth at high levels of debt. To test this proposition, this paper includes a debt squared variable and other control variables that can affect the public debt-growth relationship, such as gross fixed capital formation, fiscal balance, and real effective exchange rates. The result of this analysis for a sample of ASEAN countries is contrary to the conventional wisdom that public debt is detrimental to growth.

Despite significant differences in the level of development and economic structure among the five ASEAN countries, this paper selects this sample because of the following reasons. First, to the best of the author's knowledge, only a few empirical studies (such as Muhammad, 2017 and Tran, 2020) have been carried out to determine whether public debt affects economic growth in ASEAN countries; however, most of them were out of date and thus may not be applicable to the current situation of these countries. Meanwhile, this study covers the recent periods and compares the change of public debt-growth nexus over the periods of 1995-2018 and 2005-2018. Second, this research is the first attempt to study the relationship between GDP growth and public debt in Vietnam. Third, by using different approaches, such as methodology and database compared to previous studies, this study contributes to a better understanding of debt burden in the ASEAN region in general and Vietnam in particular.

### 3.1. Model Specifications

The non-linear effect of public debt on economic growth for advanced economies in Europe has been widely examined in previous studies, but such an empirical analysis for developing countries in Southeast Asia is hard to find. This chapter follows the empirical approach of Checherita & Rother (2010) and Baum et al. (2013) to estimate the impact of public debt on economic growth in some selected ASEAN countries, and to identify the public debt threshold level beyond which the relationship between debt and growth is expected to be negative. Particularly, following Checherita & Rother (2010) and Baum et al. (2013), this chapter investigates the impact of public debt on economic growth in Indonesia, Malaysia, the Philippines, Thailand, and Vietnam over two periods (1995-2018 and 2005-2018), by estimating a panel dataset. This analysis consists of two steps. The first one is to check the relationship between public debt and economic growth. In the second step, the existence of non-linear effects of public debt on growth is checked by including the squared term of public debt in the model.

The first empirical model is specified as follows.

#### Model 1:

$$\text{GDP\_gr}_{it} = \alpha_i + \beta_1 \text{Ini\_GDP}_{it} + \beta_2 \text{Debt}_{it} + \beta_3 \text{Crisis}_{97/98} + \beta_4 \text{Crisis}_{08/09} + D_{\text{VN}} + X_{it} \beta' + \mu_i + \varepsilon_{it} \quad (1)$$

Further, because the main hypothesis is that there exists a non-linear effect of public debt on economic growth, the model is in a quadric formula by including the debt squared variable as follows.

#### Model 2:

$$\text{GDP\_gr}_{it} = \alpha_i + \beta_1 \text{Ini\_GDP}_{it} + \beta_2 \text{Debt}_{it} + \beta_3 \text{Debtsq}_{it} + \beta_4 \text{Crisis}_{97/98} + \beta_5 \text{Crisis}_{08/09} + D_{\text{VN}} + X_{it} \beta' + \mu_i + \varepsilon_{it} \quad (2)$$

Where

$i$  and  $t$  denote country and year, respectively.

$\text{GDP\_gr}$  is the growth rate of real GDP per capita, in percentage (dependent variable).

$\text{Ini\_GDP}_{i, t-1}$  is initial real GDP per capita.

$\text{Debt}$  stands for the public debt-to-GDP ratio, in percentage

$\text{Debtsq}$  is the squared term of public-debt-to GDP ratio

$X$  denotes a vector of control variables that may affect economic growth, including gross fixed capital formation, labor force, fiscal balance, FDI, and real effective exchange rate.

$\text{Crisis}_{97/98}$  is dummy variable that captures the existence of the Asian Crisis (it takes the value of 1 if the years are 1997 and 1998, and 0 otherwise)

$\text{Crisis}_{08/09}$  is dummy variable that captures the existence of the Global Financial Crisis (it takes the value of 1 if the years are 2008 and 2009, and 0 otherwise)

$D_{VN}$  is dummy variable for Vietnam (it takes the value of 1 if the country is Vietnam and 0 otherwise)

$\alpha$  is the constant term.

$\beta$  is a vector of the estimated coefficients.

$\mu$  captures unobserved country-specific factors.

$\varepsilon$  is the error term.

### **3.2. Data**

The dependent variable in this paper is GDP per capita growth. The annual growth rate of GDP per capita is based on constant prices, expressed in the local currency. Aggregates are based on the constant value of United States Dollars (US\$) in 2010. GDP per capita is gross domestic product divided by midyear population. The advantage of using this variable is that it is a good proxy for the cross-country variation in economic performance. In addition, GDP per capita is computed by dividing the total GDP by a country's population. Therefore, it captures the variation in sizes of countries.

The first explanatory variable is the initial real GDP per capita in USD constant prices in 2010. Thus, it is adjusted for inflation. Furthermore, including this variable in the econometric model helps control for variations in the economic size. This variable is used to capture the convergence effect (Kumar & Woo, 2010). The convergence hypothesis holds that developing countries tend to experience faster economic growth rates compared with developed economies, which reduces cross-country differences in income per capita. Thus, the expected sign of the estimated coefficients for this variable is negative.

The second explanatory variable is the public debt-to-GDP ratio. Specifically, this study uses the General Government Gross Debt as a percentage of GDP, which is provided by the Historical Public Debt Database (HPDD) of the International Monetary Fund (IMF). According to the IMF, the HPDD aims to cover public debt at the general government level.<sup>61</sup> However, due to the lack of public debt data at the general government level for many countries, particularly in earlier periods, debt data at the central government level is used. Since the hypothesis is that public debt may have a negative effect on economic growth if it exceeds the threshold level, the expected sign of Debt's coefficient is positive while that of  $Debt_{sq}$  is negative.

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<sup>61</sup>The general government sector consists of all government units and all non-market non-profit institutions that are controlled and mainly financed by government units, comprising the central, state, and local governments. The general government sector does not include public corporations or quasi-corporations.

A set of control variables is incorporated in the benchmark model to reduce omitted variables bias, such as gross fixed capital formation, labor force, fiscal balance, foreign direct investment (FDI), and real effective exchange rate. This choice of these control variables is mainly motivated by previous empirical studies (see, for instance, Clements et al., 2003; Kumar & Woo, 2010; Checherita & Rother, 2010).

Gross Fixed Capital Formation (formerly Gross Domestic Fixed Investment) reflects the impact of physical capital accumulation. Since domestic investment is a key factor driving economic growth, the estimated coefficient of this variable is expected to be positive.

Labor force of working population comprises of people aged 15 years and older who supply labor to produce goods and services during a specified period. It includes both people who are currently employed, and those who are unemployed, but are seeking employing opportunities, as well as first-time job seekers. The reason for selecting labor force of working population, instead of population growth rate is that simple population growth in labor cannot be comparable between the countries. Since the growth rate of population has been quite high in the last two decades, Vietnam has benefitted from the “demographic dividend” with a young and dynamic labor force (ILO, 2018). Therefore, the expected sign of the estimated coefficient of this variable is positive.

Fiscal balance is used to capture the impact of fiscal budgetary policies on economic growth. ASEAN countries included in the sample of this study have experienced fiscal deficit over the last 10 years. This is because the government typically prioritizes public spending on socio-economic investment projects at early stages of economic development to enhance economic growth in the long-term. Hence, the estimated coefficient of this variable is expected to be positive.

Moreover, ASEAN countries have attracted remarkable foreign capital inflows since 1990 that help foster socio-economic development targets of the government. For this reason, FDI is an important factor that affects economic growth. Particularly, FDI tends to boost economic growth via its spillover effects on domestic total factor productivity and technology transfers. Thus, the estimated coefficient of FDI is expected to have a positive sign.

Real Effective Exchange Rate (REER) is included to control for the effect of external competitiveness on economic growth. REER is the real effective exchange rate, measured by the value of a currency against the weighted average of several foreign currencies and divided by a price deflator or an index of costs. An increase in REER implies that exports become relatively more expensive, while imports are relatively cheaper. Therefore, an increase in

REER may hinder economic growth through reducing net exports. The expected sign of REER's estimated coefficient is negative.

In addition, dummy variables, including  $Crisis_{97/98}$  and  $Crisis_{08/09}$ , are used to control for the effect of the Asian Crisis (1997/98) and the Global Financial Crisis (2008/09) on economic growth. The estimated coefficients of these variables are expected to be negative.

The list of variables and data sources is summarized in Table 8.

**Table 8: Summary of Variables and Data Sources**

Variables	Definition	Measurement	Sources
GDP_gr	Economic growth	GDP per capita growth (annual %)	World Bank Development Indicators (WDIs)
Ini_GDP	Initial real GDP per capita	Real GDP per capita in the starting year (based on constant 2010 price \$US)	WDIs
Debt	Public debt	General government gross debt (% of GDP)	IMF, Historical Public Debt Database
Fiscal	Budget balance	Overall budgetary surplus/deficit (% of GDP)	IMF, Fiscal Monitor
GFCF	Capital formation	Gross fixed capital formation (% of GDP)	WDIs
LF	Labor force	Natural logarithm of labor force	WDIs
FDI	Foreign direct investment	Foreign direct investment inflows (as % of GDP)	WDIs
REER	Exchange rate	Real effective exchange rate index (2010=100)	WB, Global Economic Monitor
D_VN	Dummy variable for Vietnam	It takes the value of 1 if the country is Vietnam and 0 otherwise	
$Crisis_{97/98}$	Dummy variable for Asian financial crisis	It takes the value 1 if the years are 1997 and 1998, and 0 otherwise	
$Crisis_{08/09}$	Dummy variable for Global financial crisis	It takes the value 1 if the years are 2008 and 2009, and 0 otherwise	

### 3.3. Method of Analysis

This chapter analyses the impacts of public debt on economic growth based on the Panel Data Regression of the selected ASEAN countries. However, when estimating equation (1), it is necessary to take into consideration two possible issues of bias. The first problem of omitted variable bias arises because of unobserved country heterogeneity. This can be effectively addressed by adopting the fixed effects (FE) or first-differencing methods (Wooldridge, 2015). FE estimation can yield consistent estimates, given country heterogeneities. If we assume the individual specific effect, which is correlated with the independent variables, the FE method would remove the effect of those time-invariant characteristics. An important assumption of the FE model is that those time-invariant

characteristics are unique to the individual and should not be correlated with other individual characteristics. Each country is different; therefore, the country's error term and the constant, which captures individual characteristics, should not be correlated with the others. In a fixed effects model, the intercept estimates are allowed to vary across countries.

The second problem is a possible reverse causality between public debt and economic growth. In fact, the growth of GDP affects the size of public debt and in contrast, the accumulated public debt may have positive or negative impact on GDP growth (Checherita et al., 2010, Bilan et al., 2015; Alejandro et al., 2017). Reverse causality or simultaneity is one of main sources of endogeneity issues (Antonakis et al., 2014). To address endogeneity concerns, it is necessary to identify valid instrumental variables that exert no direct influence on economic growth except through its effects on the endogenous regressors (Wooldridge, 2015). Furthermore, the instruments should be highly correlated with public debt to avoid weak instrument bias. This helps identify the causal effect of public debt on economic growth. However, it is difficult to find a valid external instrument in this context. Further, IV estimation is not an effective strategy due to the third bias issue engendered by the persistency or the dynamic of the dependent variable.

Another satisfactory response to tackle the above problem is the Generalized Method of Moments (GMM) estimator (Arellano & Bond, 1991; Arellano & Bover, 1995; Blundell & Bond, 1998). The fundamental estimation of the dynamic GMM panel consists of two main steps. The first one is to take first differences, which can be expressed as follows:

$$\Delta GDP_{grit} = \beta_1 \Delta Init\_GDP_{it} + \beta_2 \Delta Debt_{it} + \beta' \Delta X_{it} + \Delta \varepsilon_{it} \quad (3)$$

$$\Delta GDP_{grit} = \beta_1 \Delta Init\_GDP_{it} + \beta_2 \Delta Debt_{it} + \beta_3 \Delta Debtsq_{it} + \beta' \Delta X_{it} + \Delta \varepsilon_{it} \quad (4)$$

Where:  $\Delta$  is the first difference sign.

Taking first differences helps account for the presence of time-invariant unobserved heterogeneity. Next, the lags of variables in levels are used as instruments for variables in first differences. The instruments are collected from the set of lagged dependent variables.

Nevertheless, the method suffers from weak instrument bias, given the high time persistency of the dependent variable and the short time period (Arellano & Bover, 1995, Blundell & Bond, 1998). In such cases, the lagged levels of variables are weakly correlated with the corresponding first differences, leading to weak instruments. Hence, a system GMM estimator, developed by Arellano & Bover (1995) and Blundell & Bond (1998), has been widely applied in numerous studies to alleviate potential biases and inaccuracy associated with the difference GMM estimator. More specifically, it relies on a system of equations in



levels and first differences. The lags of variables in levels are used as instruments for variables in first differences while the lags of first-differenced variables are used as instruments for variables in levels.

$$\begin{bmatrix} GDP\_gr_{it} \\ \Delta GDP\_gr_{it} \end{bmatrix} = \beta_1 \begin{bmatrix} Ini\_GDP_{it} \\ \Delta Ini\_GDP_{it} \end{bmatrix} + \beta_2 \begin{bmatrix} Debt_{it} \\ \Delta Debt_{it} \end{bmatrix} + \beta' \begin{bmatrix} X_{it} \\ \Delta X_{it} \end{bmatrix} + \varepsilon_{it} \quad (5)$$

$$\begin{bmatrix} GDP\_gr_{it} \\ \Delta GDP\_gr_{it} \end{bmatrix} = \beta_1 \begin{bmatrix} Ini\_GDP_{it} \\ \Delta Ini\_GDP_{it} \end{bmatrix} + \beta_2 \begin{bmatrix} Debt_{it} \\ \Delta Debt_{it} \end{bmatrix} + \beta_3 \begin{bmatrix} Debtsq_{it} \\ \Delta Debtsq_{it} \end{bmatrix} + \beta' \begin{bmatrix} X_{it} \\ \Delta X_{it} \end{bmatrix} + \varepsilon_{it} \quad (6)$$

Using the GMM estimator, this study also corrects for the heteroskedasticity and autocorrelation that may be present in the error term by using the inclusion of lagged internal instruments. This research adopts the use of the debt and debt squared variables for each country through either of its time lags. While using lagged terms of regressors as instruments is relatively common practice with macroeconomic data for the debt-to-GDP ratio, this may be problematic, given the high persistency of the debt stock variable (Checherita et al., 2010). The endogeneity problem is also mitigated in this regression by using the lagged 1 to 2 years of independent variables. Furthermore, the two-step GMM presents some efficiency gains over the traditional IV/2-SLS estimator derived from the use of the optimal weighting matrix, the over-identifying restrictions of the model, and the relaxation of the independent and identical distribution assumption (Baum et al., 2007).

### 3.4. Results and Discussion

The panel data estimates result for impact of public debt on economic growth of five ASEAN countries, including Vietnam over the periods of 1995-2018 and 2005-2018 are presented as follows. Since FDI and fiscal balance are highly correlated with public debt and *Ini\_GDP* (Appendix1-Table 2), these variables are separated by Model 1 and Model 2 to avoid multicollinearity problems. Moreover, debt and debt square are used for instrumental variables in each equation of the GMM regression.

**Table 9-1-1: Real GDP per Capita Growth Regression Results, 1995-2018 (Model 1)**

Explanatory variables	Real GDP per capita growth (%), 1995-2018											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Ini_GDP	0.387 (0.455) [0.851]	-0.245 (0.430) [-0.570]	0.967 (0.905) [1.069]	-0.037 (0.588) [-0.062]			0.926 (0.654) [1.416]	1.323 (0.889) [1.489]	2.629 (1.028) [2.558]	0.010 (0.635) [0.016]		
Debt	<b>0.048**</b> <b>(0.020)</b> <b>[2.458]</b>						<b>0.091**</b> <b>(0.026)</b> <b>[3.498]</b>	<b>0.055**</b> <b>(0.023)</b> <b>[2.431]</b>	<b>0.066**</b> <b>(0.027)</b> <b>[2.476]</b>	<b>0.076***</b> <b>(0.022)</b> <b>[3.416]</b>		
GFCF		<b>0.141**</b> <b>(0.049)</b> <b>[2.878]</b>					<b>0.286**</b> <b>(0.111)</b> <b>[2.586]</b>			<b>0.286***</b> <b>(0.067)</b> <b>[4.277]</b>		
LF			1.226 (1.017) [1.206]					1.176 (0.873) [1.347]		-0.137 (0.434) [-0.316]		0.946 (0.648) [1.459]
REER				0.020 (0.137) [0.147]					-0.047 (0.040) [-1.173]	-0.013 (0.028) [-0.471]	-0.004 (0.026) [-0.154]	<b>-0.101*</b> <b>(0.075)</b> <b>[-1.350]</b>
Fiscal					<b>0.701***</b> <b>(0.172)</b> <b>[4.071]</b>						<b>0.585**</b> <b>(0.286)</b> <b>[2.045]</b>	
FDI						<b>0.481*</b> <b>(0.277)</b> <b>[1.738]</b>						<b>0.893*</b> <b>(0.548)</b> <b>[1.628]</b>
Crisis <sub>97/98</sub>	<b>-5.775***</b> <b>(0.835)</b> <b>[-6.919]</b>	<b>-6.410***</b> <b>(0.831)</b> <b>[-7.717]</b>	<b>-5.352***</b> <b>(0.993)</b> <b>[-5.390]</b>	<b>-5.943***</b> <b>(0.852)</b> <b>[-6.975]</b>	<b>-6.636***</b> <b>(0.830)</b> <b>[-7.995]</b>	<b>-6.334***</b> <b>(0.827)</b> <b>[-7.662]</b>	<b>-6.423***</b> <b>(0.862)</b> <b>[-7.450]</b>	<b>-5.124***</b> <b>(0.969)</b> <b>[-5.289]</b>	<b>-4.861***</b> <b>(1.041)</b> <b>[-4.670]</b>	<b>-6.730***</b> <b>(0.886)</b> <b>[-7.595]</b>	<b>-6.515***</b> <b>(0.850)</b> <b>[-7.665]</b>	<b>-6.290***</b> <b>(1.040)</b> <b>[-6.049]</b>
Crisis <sub>08/09</sub>	<b>-2.174***</b> <b>(0.823)</b> <b>[-2.643]</b>	<b>-2.343***</b> <b>(0.801)</b> <b>[-2.925]</b>	<b>-2.344***</b> <b>(0.866)</b> <b>[-2.707]</b>	<b>-2.279***</b> <b>(0.835)</b> <b>[-2.729]</b>	<b>-2.128**</b> <b>(0.812)</b> <b>[-2.620]</b>	<b>-2.339***</b> <b>(0.791)</b> <b>[-2.955]</b>	<b>-2.133***</b> <b>(0.791)</b> <b>[-2.697]</b>	<b>-2.087**</b> <b>(0.846)</b> <b>[-2.468]</b>	<b>-2.072**</b> <b>(0.971)</b> <b>[-2.133]</b>	<b>-2.167***</b> <b>(0.812)</b> <b>[-2.667]</b>	<b>-2.163***</b> <b>(0.802)</b> <b>[-2.698]</b>	<b>-2.390***</b> <b>(0.974)</b> <b>[-2.455]</b>
D_VN	<b>2.605***</b> <b>(0.786)</b> <b>[3.314]</b>	<b>1.731**</b> <b>(0.817)</b> <b>[2.118]</b>	<b>3.370***</b> <b>(1.072)</b> <b>[3.144]</b>	<b>2.421**</b> <b>(1.167)</b> <b>[2.075]</b>	<b>3.489***</b> <b>(0.616)</b> <b>[5.659]</b>	0.849 (1.110) [0.765]	<b>1.928*</b> <b>(0.999)</b> <b>[1.930]</b>	<b>3.455***</b> <b>(1.023)</b> <b>[3.379]</b>	<b>5.532***</b> <b>(1.437)</b> <b>[3.849]</b>	0.941 (0.989) [0.951]	<b>3.340***</b> <b>(0.691)</b> <b>[4.834]</b>	-0.256 (1.987) [-0.129]
C	-1.734 (4.150) [-0.418]	2.204 (3.513) [0.627]	-25.730 (24.485) [-1.051]	1.980 (10.550) [0.188]	<b>4.759***</b> <b>(0.390)</b> <b>[12.208]</b>	<b>2.551***</b> <b>(0.679)</b> <b>[3.759]</b>	<b>-15.166**</b> <b>(7.331)</b> <b>[-2.069]</b>	-30.392 (22.297) [-1.363]	<b>-16.712*</b> <b>(8.482)</b> <b>[-1.970]</b>	-3.232 (11.475) [-0.282]	<b>4.961*</b> <b>(2.601)</b> <b>[1.907]</b>	-5.204 (11.649) [-0.447]
No. of observations	115	115	115	115	115	115	115	110	110	110	110	110
R <sup>2</sup>	0.42	0.45	0.35	0.43	0.43	0.45	0.47	0.40	0.21	0.47	0.45	0.21
Adjusted R <sup>2</sup>	0.39	0.42	0.32	0.41	0.41	0.43	0.44	0.36	0.16	0.43	0.42	0.16

Note: 1. Figures in ( ) and [ ] are standard errors and t-statistic value, respectively.

2. \*, \*\*, and \*\*\* denotes significance at 10%, 5%, and 1%, respectively.

3. Countries included: Indonesia, Malaysia, Philippines, Thailand, and Vietnam

4. Lists of instrumented variables: (1) [Debt(-1)]; (2) [FDI(-1), LF(-1)]; (3) [FDI(-1), GFCF]; (4) [FDI(-1), GFCF(-1), LF(-1)]; (5) [Debt(-1), FDI(-1), GFCF]; (6) [Debt(-1), Fiscal(-1), GFCF];

(7) [Debt(-1), Fiscal(-1), FDI(-1), LF, REER]; (8) [Debt(-1), Fiscal(-2), FDI(-1), GFCF(-1), REER]; (9) [Debt(-1), Fiscal(-2), FDI(-1), GFCF, LF, REER(-1)]; (10) [Debt(-1), Fiscal(-1), FDI(-1), GFCF(-1), LF(-1), REER(-1)];

(11) [Debt(-1), LF(-1), REER(-1)]; (12) [Debt(-2), LF(-1), FDI(-1), REER(-1), Fiscal(-1)].

Source: Author's estimations

**Table 9-1-2: Real GDP per Capita Growth Regression Results, 2005-2018 (Model 1)**

Explanatory variables	Real GDP per capita growth (%), 2005-2018											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Ini_GDP	<b>-0.678*</b> (0.357) [-1.897]	<b>-0.677*</b> (0.352) [-1.922]	-0.021 (0.574) [-0.037]	<b>-0.722*</b> (0.363) [-1.989]			<b>-0.796*</b> (0.461) [-1.729]	-0.650 (0.897) [-0.725]	-0.822 (0.532) [-1.544]	-0.567 (1.474) [-0.385]		
Debt	0.001 (0.020) [0.025]						0.001 (0.033) (0.036)	0.024 (0.033) [0.732]	0.017 (0.026) [0.661]	0.018 (0.035) [0.515]		
GFCF		0.016 (0.060) [0.262]					0.004 (0.084) [0.050]			0.055 (0.226) [0.242]		
LF			0.715 (0.483) [1.479]					0.507 (0.653) [0.777]		0.063 (1.276) [0.049]		0.042 (0.548) [0.077]
REER				-0.022 (0.031) [-0.728]					-0.040 (0.035) [-1.141]	0.001 (0.063) [0.013]	0.007 (0.030) [0.249]	-0.029 (0.052) [-0.552]
Fiscal					1.160 (0.742) [1.564]						0.460 (0.291) [1.584]	
FDI						0.848 (0.752) [1.127]						-0.512 (0.631) [-0.810]
Crisis <sub>08/09</sub>	<b>-2.594***</b> (0.495) [-5.241]	<b>-2.591***</b> (0.491) [-5.277]	<b>-2.435***</b> (0.519) [-4.694]	<b>-2.705***</b> (0.521) [-5.188]	<b>-2.141**</b> (0.819) [-2.616]	<b>-2.308***</b> (0.553) [-4.175]	<b>-2.612***</b> (0.501) [-5.213]	<b>-2.578***</b> (0.560) [-4.605]	<b>-2.854***</b> (0.577) [-4.950]	<b>-2.557***</b> (0.535) [-4.777]	<b>-2.313***</b> (0.552) [-4.190]	<b>-2.740***</b> (0.763) [-3.593]
D <sub>VN</sub>	0.811 (0.629) [1.291]	0.777 (0.614) [1.266]	1.359* (0.716) [1.897]	1.002 (0.656) [1.527]	<b>4.663**</b> (2.092) [2.229]	-1.709 (2.963) [-0.577]	0.661 (0.783) [0.845]	0.442 (0.974) [0.454]	0.932 (0.820) [1.137]	0.650 (2.569) [0.253]	2.729*** (0.909) [3.002]	4.003 (3.240) [1.236]
C	<b>9.696***</b> (3.048) [3.181]	<b>9.316***</b> (3.337) [2.791]	-8.339 (12.585) [-0.663]	<b>12.319***</b> (4.692) [2.626]	<b>5.521***</b> (1.033) [5.344]	1.926 (1.850) [1.041]	<b>10.559*</b> (5.394) [1.957]	-0.381 (18.559) [-0.021]	14.191** (6.185) [2.294]	5.465 (24.517) [0.223]	3.864 (2.919) [1.324]	7.351 (14.267) [0.515]
No. of observations	65	65	65	65	65	65	65	60	60	65	65	60
R <sup>2</sup>	0.41	0.42	0.38	0.40	0.54	0.30	0.41	0.40	0.39	0.44	0.33	0.36
Adjusted R <sup>2</sup>	0.37	0.38	0.34	0.36	0.62	0.27	0.36	0.34	0.34	0.37	0.29	0.32

Note: 1. Figures in ( ) and [ ] are standard errors and t-statistic value, respectively.

2. \*, \*\*, and \*\*\* denotes significance at 10%, 5%, and 1%, respectively.

3. Countries included: Indonesia, Malaysia, Philippines, Thailand, and Vietnam

4. Lists of instrumented variables: (1)[Debt(-1)]; (2) [FDI(-1), LF(-1)]; (3) [FDI(-1), GFCF]; (4) [FDI(-1), GFCF(-1), LF(-1)]; (5) [Debt(-1), FDI(-1), GFCF]; (6)[Debt(-1), Fiscal(-1), GFCF];

(7) [Debt(-1), Fiscal(-1), FDI(-1), LF, REER]; (8) [Debt(-1), Fiscal(-2), FDI(-1), GFCF(-1), REER]; (9) [Debt(-1), Fiscal(-2), FDI(-1), GFCF, LF, REER(-1)];

(10) [Debt(-1), Fiscal(-1), FDI(-1), GFCF(-1), LF(-1), REER(-1)]; (11) [Debt(-1), LF(-1), REER(-1)]; (12) [Debt(-2), LF(-1), FDI(-1), REER(-1), Fiscal(-1)].

Source: Author's estimations.

In the first step of the empirical analysis, 12 different regressions have been performed. Tables 9-1-1 and 9-1-2 show the estimated impact of public debt and other control variables on economic growth in Model 1 for the periods of 1995-2018 and 2005-2018, respectively. Particularly, in columns (1) to (6), the results indicate the separate effect of each explanatory variable on real GDP, while columns (7) to (12) reveal several combinations of impacts of debt and other variables on real GDP. Since the list of variables for input of regression is defensible and there is not much multicollinearity, the model would be fine even with low R-squared values.

#### **For the period of 1995-2018 (Model 1)-Table 9-1-1**

The results shown in columns (1) and (7)-(10) indicate that public debt has a statistically significant impact on economic growth at conventionally accepted levels. An appropriate explanation for the positive impact of public debt on economic growth in ASEAN countries is that the accumulated debt is not oversized and government borrowing to finance increased public spending has beneficial impact on the nation's productivity. Particularly, while debt-financed public investment raises a country's debt ratios in the short-run, it can also enhance productivity through the construction of infrastructure, thus leading to higher economic growth. The finding is in line with Fincke & Greiner (2014), and Muhammad (2017).

Moreover, depending on the particularities of each country as well as the periods or stages of development and economic structure, the threshold level of public debt in each country is different. For example, five selected ASEAN countries have set up the public debt ceiling of 55 to 65% of GDP at present. However, in some countries like Malaysia or the Philippines, the debt ceiling level is not mandatory. Malaysia's debt limit was set at 40% in April 2003, revised to 45% in June 2008, and subsequently 55% in July 2009. Vietnam's government also established the ceiling of public debt at 65% of GDP since 2012.<sup>62</sup>

As in the case of public debt, fiscal balance has a positive and statistically significant impact on real GDP per capita growth at the 1% and 10% levels in columns (5) and (11), respectively. This may be explained by the fact that although ASEAN

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<sup>62</sup>Decision No. 450/QĐ-TTg dated 18/04/2012 of the Prime Minister approving the Financial Strategy until 2020.

countries have had fiscal deficit in past decades, public expenditure is utilized for investment development purposes, which can enhance economic growth in the long-term.

FDI is found to have a statistically significant and positive effect on economic growth at the 10% level in column (6) and (12). This finding is in line with previous studies, such as Borensztein, Gregorio, and Lee (1995) and Yerrabati & Hawkes (2014). In fact, Vietnam, like many ASEAN countries, received massive FDI inflows since the early 1990s and FDI has become an important vehicle for the transfer of technology, contributing relatively to employment and export of manufactured goods in the countries as well as economic growth.

As indicated in the columns (2), (7), and (10), gross fixed capital has a positive and statistically significant correlation with GDP at conventionally accepted levels. This suggests that apart from FDI, domestic investment is a crucial factor that helps promote economic growth in ASEAN over the period of 1995-2018. This finding is consistent with several previous empirical studies, such as Almasaied et al. (2008) and Ridzuan et al. (2018).

Furthermore, as indicated in columns (3), (8), and (10), labor force has a positive but statistically insignificant effect on economic growth. This could be explained by the fact that even if industrialization and modernization have been shifting the occupational structure of Vietnam in positive ways, the growth rate of labor force is still lower than the population growth (ILO, 2018). In addition, the quality of labor remains modest with low levels of education and many workers are working in informal sectors with low wages. As a result, despite Vietnam being recognized as a country with abundant young labor resources with labor force as one of the key factors in attracting FDI inflows, the positive impact of this variable on GDP growth is still limited.

Otherwise, as shown in column (12), the results reveal that real effective exchange rate (REER) negatively and significantly impacts GDP growth. This result is in line with the normal theory that an appreciation of REER would be negative for exports and GDP growth. Furthermore, overvalued currencies may associate with foreign currency shortages, unsustainably large current account deficits, and balance of

payment crises, all of which are harming to growth.<sup>63</sup> This empirical result is also similar to the earlier empirical findings by Acar (2000), Rodrik (2008), and Abid (2011) as well.

Finally, the Asian Financial Crisis and Global Financial Crisis have had significant and negative impacts on economic growth in ASEAN countries during the period of 1995-2018. Furthermore, the Asian Financial Crisis in 1997 had greater impact than the Global Financial Crisis in 2008. This might be explained by the fact that capital inflows into ASEAN before the 1997 crisis were higher than that after the crisis as governments of these countries are well managed in financial systems and prudential capital controls have been introduced in ASEAN countries in order to maintain macroeconomic stability since the 2000s.

#### **For the period of 2005-2018 (Model 1)-Table 9-1-2**

As shown in columns (1)-(2), (4), and (7), the initial level of real GDP per capita is significantly and negatively correlated with its growth rate. The results of the initial GDP variable are in line with findings from Barro & Sala, 1991 and Mankiw et al., 1992 for the convergence of income levels among countries which indicated that rich countries grow slower than the poor countries.

The dummy variable of the Global Financial Crisis (2008/09) has a significantly negative effect on GDP growth during the period 2005-2018. Meanwhile, public debt and other control variables in the sub-period remain to have the same effects on GDP growth as in the whole period, but the results become insignificant. The appropriate explanations for these findings are as follows.

First, as the Global Financial Crisis in 2008 has significantly affected public debt and other macroeconomic factors, it may constrain the impacts of these variables on economic growth. The crisis caused a deterioration in economic growth of these countries that heavily rely on trade (Thailand, Malaysia) through the decline in demand for Southeast Asian goods in the world market, and led to a drop in export value by more than 25% in the first half of 2009 (Emmers and Ravenhill, 2010). The public debt-to-GDP ratio began to rise in the post-crisis and reached the range of 48-55% at the end

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<sup>63</sup>Rodrik (2008), "The Real Exchange Rate and Economic Growth", *Brookings Papers on Economic Activity*, pp. 366

of 2015 in some ASEAN countries such as Malaysia, Vietnam, and Thailand. However, since these countries have improved their prudential policy frameworks after the Asian crisis (1997), they recovered quickly by tightening fiscal policy to lower financial vulnerabilities in the post-Global Financial Crisis.

Second, GDP growth in almost all ASEAN countries has been stabilized and not radically changed in recent years. According to the WB, five selected ASEAN countries except for Thailand had average GDP growth rate in the range of 5-6% for the last 5 years. Meanwhile, domestic investment and FDI have not increased as rapidly as in the former period (except Vietnam). In fact, most of ASEAN countries reached the highest level in FDI inflows before the crisis in 2008, while domestic investment was also affected by the outbreak of the two recent crises. Thus, real GDP per capita might not have been influenced by such factors.

Third, as output structure has changed in the direction of increasing the service sector while lowering the role of the industrial sector in ASEAN countries in the recent years, the investment amount may not push GDP growth figures. In fact, according to the ASEAN integration report 2019, from 2010 to 2018, the services sector grew at an average annual rate of 6.0%, compared with the industry sector's 5.2%. As a result, the share of services in total economic production increased from 48.7% in 2010 to 50.1% in 2018, and the share of the industry sector has remained stable at around 37.1%.

As this paper follows a number of previous empirical analyses that suggested a possibility of the “inverted U-shaped curve” effect, implying a negative impact of public debt on economic growth at higher levels of debt, the second step of this analysis is to check the presence of this non-linear effect by including the squared values of public debt (Debtsq) in Model 2.

#### **For the period of 1995-2018 (Model 2) - Table 9-2-1**

The results of Table 9-2-1 show that the other control variables, such as FDI, fiscal balance, gross fixed capital formation, population growth, and real effective exchange rate, still retain the same effect on the growth rate of real GDP per capita as in Model 1. However, the results of the impacts of those control variables are not significant. This may be due to the fact that higher level of public debt may hide the effect of those variables on GDP growth.

As shown in columns (2)-(7), the squared term of public debt has positive impact on real GDP per capita growth rate at conventionally accepted levels. This result is consistent with the effect of the public debt variable in Model 1. A possible explanation for the positive impact of higher public debt on growth would be that accumulated past budget deficits were used to finance productive public investment. In fact, public debt is necessary for developing countries like Vietnam at the earlier stages of development because of the high necessity for infrastructure investment or socio-economic programs to improve economic growth in the long-term.

Furthermore, this result implies that there is no existence of adverse effects of high indebtedness on economic growth in the short-covered time period as shown in column (1). This could be explained by the fact that the number of countries in this study comprises only five ASEAN countries, which is relatively small compared to other previous studies with a larger sample of emerging countries, as in Reinhart & Rogoff (2010) and Cecchetti et al. (2011). In addition, most of the external borrowings and public debt in ASEAN have been used for real purposes, like infrastructure development and manufacturing investment, which is different from cases in Latin America.

Moreover, it should be noted that depending on the particularities of each country and the periods of development, negative effects on growth may occur at even lower public debt ratios, while the contrary is also not to be excluded (Bilan & Ihnatov, 2015). Therefore, besides the public debt threshold level, the debt situation needs to be evaluated based on the practical macroeconomic condition in each country.

Regarding threshold levels of public debt that are proposed in many past papers, as this study cannot cover such a long-term analysis, the estimation results may suggest that the countries in the sample would not have reached such a tipping point, beyond which the relationship between debt and growth turns negative. However, in the context of the spread of the coronavirus and global economic crisis in 2020, if governments do not manage the public debt level effectively, the public debt-to-GDP ratio may reach a turning point in this decade and create high risks on fiscal sustainability as well as put high pressure on debt repayment obligation. Therefore, governments should predict the debt level for the coming years to make progress in public and external debt



management, and take tax system reform into consideration to increase government revenue and finance fiscal deficit.

**Table 9-2-1: Real GDP per Capita Growth Regression Results, 1995-2018 (Model 2)**

Explanatory variables	Real GDP per capita growth (%), 1995-2018								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ini_GDP	0.412 (0.477) [0.864]	0.450 (0.466) [0.966]	0.533 (0.487) [1.095]	1.342 (1.553) [0.864]	0.496 (0.514) [0.965]	0.426 (0.577) [0.738]	0.464 (0.598) [0.775]		
Debt	0.024 (0.085) [0.287]								
Debtsq	0.0002 (0.001) [0.264]	<b>0.0005**</b> <b>(0.0002)</b> <b>[2.495]</b>	<b>0.001***</b> <b>(0.0003)</b> <b>[2.806]</b>	<b>0.001**</b> <b>(0.0003)</b> <b>[1.951]</b>	<b>0.0005**</b> <b>(0.0003)</b> <b>[2.148]</b>	<b>0.0005***</b> <b>(0.0002)</b> <b>[2.704]</b>	<b>0.0006***</b> <b>(0.0002)</b> <b>[2.799]</b>		
GFCF			0.143 (0.096) [1.493]			0.087 (0.065) [1.339]	0.087 (0.065) [1.328]		
LF				0.550 (0.725) [0.758]		0.093 (0.405) [0.230]	0.110 (0.414) [0.265]		0.586 (0.543) [1.080]
REER					-0.011 (0.034) [-0.323]		0.000 (0.027) [-0.018]	-0.002 (0.025) [-0.094]	-0.007 (0.026) [-0.270]
Fiscal								0.509 (0.307) [1.656]	
FDI									0.609 (0.466) [1.306]
Crisis97/98	<b>-5.833***</b> <b>(0.864)</b> <b>[-6.749]</b>	<b>-5.893***</b> <b>(0.839)</b> <b>[-7.026]</b>	<b>-6.457***</b> <b>(0.933)</b> <b>[-6.918]</b>	<b>-5.504***</b> <b>(1.025)</b> <b>[-5.368]</b>	<b>-5.825***</b> <b>(0.872)</b> <b>[-6.680]</b>	<b>-6.155***</b> <b>(0.873)</b> <b>[-7.047]</b>	<b>-6.146***</b> <b>(0.883)</b> <b>[-6.962]</b>	<b>-6.438***</b> <b>(0.848)</b> <b>[-7.591]</b>	<b>-6.320***</b> <b>(0.859)</b> <b>[-7.354]</b>
Crisis08/09	<b>-2.146**</b> <b>(0.838)</b> <b>[-2.562]</b>	<b>-2.110**</b> <b>(0.830)</b> <b>[-2.541]</b>	<b>-1.962**</b> <b>(0.835)</b> <b>[-2.350]</b>	<b>-2.109**</b> <b>(0.843)</b> <b>[-2.501]</b>	<b>-2.025**</b> <b>(0.857)</b> <b>[-2.363]</b>	<b>-2.102**</b> <b>(0.801)</b> <b>[-2.624]</b>	<b>-2.092**</b> <b>(0.808)</b> <b>[-2.590]</b>	<b>-2.181***</b> <b>(0.792)</b> <b>[-2.753]</b>	<b>-2.369***</b> <b>(0.801)</b> <b>[-2.956]</b>
D_VN	<b>2.651***</b> <b>(0.813)</b> <b>[3.263]</b>	<b>2.705***</b> <b>(0.793)</b> <b>[3.409]</b>	<b>2.066**</b> <b>(0.954)</b> <b>[2.166]</b>	<b>3.610**</b> <b>(1.694)</b> <b>[2.131]</b>	<b>2.880***</b> <b>(0.889)</b> <b>[3.239]</b>	<b>2.288**</b> <b>(0.916)</b> <b>[2.497]</b>	<b>2.311**</b> <b>(0.947)</b> <b>[2.440]</b>	<b>3.230***</b> <b>(0.701)</b> <b>[4.605]</b>	0.254 (1.827) [0.139]
C	-1.366 (4.187) [-0.326]	-1.126 (4.039) [-0.279]	-6.476 (5.213) [-1.242]	-18.204 (25.236) [-0.721]	-0.726 (4.894) [-0.148]	-4.849 (10.508) [-0.461]	-5.460 (10.595) [-0.515]	4.686 (2.565) [1.826]	-7.252 (10.188) [-0.712]
No. of observations	115	115	110	115	110	115	115	115	115
R <sup>2</sup>	0.42	0.41	0.42	0.40	0.39	0.46	0.46	0.46	0.45
Adjusted R <sup>2</sup>	0.38	0.38	0.39	0.37	0.35	0.43	0.42	0.44	0.42

Note: 1. Figures in ( ) and [ ] are standard errors and t-statistic value, respectively.

2. \*, \*\*, and \*\*\* denotes significance at 10%, 5%, and 1%, respectively.

3. Countries included: Indonesia, Malaysia, Philippines, Thailand, and Vietnam.

4. Lists of instrumented variables: (1) [Debtsq (-1), Debt (-1)]; (2) [Debt(-1)]; (3) [Debt(-2), LF, GFCF(-1), REER(-1)];

(4) [Debt(-1), Fiscal(-1), FDI(-1), GFCF(-1), LF(-1)]; (5) [Debt(-2), GFCF(-1), Fiscal(-2), LF, REER(-1), FDI(-1)];

(6) [Debt(-1), Fiscal(-1), LF(-1), FDI(-1), GFCF(-1), REER(-1)]; (7) [Debt(-1), LF(-1), GFCF(-1), FDI(-1), REER(-1)];

(8) [Ini\_GDP, Debtsq(-1), LF(-1), REER(-1)]; (9) [Ini\_GDP, Debtsq(-1), LF(-1), REER(-1)].

Source: Author's estimations

**For the period of 2005-2018 (Model 2) - Table 9-2-2**

The finding of Table 9-2-2 shows that the squared term of public debt has a positive effect on real GDP per capita growth; however, the statistical result is not significant. This can be explained by the fact that a higher level of public debt and the Global Financial Crisis had restricted the impact of debt on the economic growth of ASEAN countries during this period. Though public debt has still not put an adverse effect on GDP growth, in addition to an increase in public debt, these selected economies have accumulated other vulnerabilities, such as growing fiscal and current account deficits, and a compositional shift toward short-term external debt, which could amplify the impact of shocks (World Bank, 2020, p. 8). Therefore, it is essential that public debt and its impact on economic growth in ASEAN countries should be taken into consideration to prevent the negative effect on sustainable growth in the long-term.

**Table 9-2-2: Real GDP per Capita Growth Regression Results, 2005-2018 (Model 2)**

Explanatory variables	Real GDP per capita growth (%), 2005-2018									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Ini_GDP	<b>-0.726*</b> (0.375) [-1.934]	<b>-0.679*</b> (0.356) [-1.907]	<b>-0.914**</b> (0.405) [-2.258]	-0.530 (0.503) [-1.053]	<b>-0.877**</b> (0.423) [-2.072]	-0.785 (0.581) [-1.350]	-0.885 (0.699) [-1.267]			
Debt	0.063 (0.147) [0.427]									
Debtsq	-0.001 (0.002) [-0.420]	0.00002 (0.00022) [0.08596]	0.001 (0.0001) [1.171]	0.0002 (0.0003) [0.286]	0.0002 (0.0003) [0.5462]	0.0002 (0.0003) [0.6648]	0.0003 (0.0004) [0.7085]			
GFCF			0.090 (0.078) [1.156]			0.068 (0.084) [0.809]	0.101 (0.153) [0.660]			
LF				0.170 (0.402) [0.422]		-0.091 (0.501) [-0.181]	-0.223 (0.717) [-0.311]			-0.011 (0.815) [-0.013]
REER					-0.025 (0.034) [-0.730]		0.013 (0.050) [0.257]	0.007 (0.030) [0.249]		-0.022 (0.050) [-0.437]
Fiscal								0.460 (0.291) [1.584]		
FDI										-0.558 (1.065) [-0.524]
Crisis08/09	<b>-2.645***</b> (0.512) [-5.164]	<b>-2.592***</b> (0.495) [-5.235]	<b>-2.631***</b> (0.509) [-5.172]	<b>-2.551***</b> (0.509) [-5.015]	<b>-2.777***</b> (0.561) [-4.953]	<b>-2.592***</b> (0.503) [-5.151]	<b>-2.551***</b> (0.526) [-4.853]	<b>-2.313***</b> (0.552) [-4.190]	<b>-2.699***</b> (0.789) [-3.422]	
D_vn	0.732 (0.653) [1.122]	0.802 (0.622) [1.289]	-0.090 (0.901) [-0.100]	0.889 (0.658) [1.350]	0.713 (0.756) [0.943]	0.420 (0.871) [0.482]	0.103 (1.511) [0.068]	2.729*** (0.909) [3.002]	3.989 (4.774) [0.836]	
C	<b>8.772**</b> (3.733) [2.350]	<b>9.691***</b> (3.014) [3.215]	<b>8.511**</b> (3.671) [2.319]	5.353 (10.714) [0.500]	<b>13.579**</b> (5.402) [2.514]	10.085 (11.880) [0.849]	11.080 (12.456) [0.890]	3.864 (2.919) [1.324]	7.714 (20.248) [0.381]	
No. of observations	65	65	60	60	60	65	65	65	65	65
R <sup>2</sup>	0.41	0.41	0.40	0.41	0.4	0.44	0.45	0.33	0.28	
Adjusted R <sup>2</sup>	0.36	0.37	0.39	0.36	0.35	0.38	0.39	0.29	0.25	

Note: 1. Figures in ( ) and [ ] are standard errors and t-statistic value, respectively.

2. \*, \*\*, and \*\*\* denotes significance at 10%, 5%, and 1%, respectively.

3. Countries included: Indonesia, Malaysia, Philippines, Thailand, and Vietnam.

4. Lists of instrumented variables: (1) [Debtsq (-1), Debt (-1)]; (2) [Debt(-1)]; (3) [Debt(-2), LF, GFCF(-1), REER(-1)];

(4) [Debt(-1), Fiscal(-1), FDI(-1), GFCF(-1), LF(-1)]; (5) [Debt(-2), GFCF(-1), Fiscal(-2), LF, REER(-1), FDI(-1)];

(6) [Debt(-1), Fiscal(-1), LF(-1), FDI(-1), GFCF(-1), REER(-1)]; (7) [Debt(-1), LF(-1), GFCF(-1), FDI(-1), REER(-1)];

(8) [Debtsq(-1), LF(-1), REER(-1)]; (9) [Debtsq(-1), LF(-1), REER(-1)].

Source: Author's estimations

### 3.5. Summary of the Panel Regressions

This empirical study investigates the impact of public debt on real GDP per capita growth based on estimating panel data for Vietnam and four other ASEAN

countries, including Indonesia, Malaysia, the Philippines, and Thailand, during the period of 1995-2018 and sub-period of 2005-2018. A set of control variables, such as FDI, fiscal balance, gross fixed capital formation, and real effective exchange rate, is included in the regression. Most previous studies examine the impacts of public debt on economic growth in advanced economies or emerging countries in Latin America. Meanwhile, studies with a special focus on Vietnam and other Asian economies are still scarce. This study, therefore, departs from the existing literature in two main aspects. First, it investigates the influence of public debt on economic growth with comparison between the whole period of 1995-2018 and the sub-period of 2005-2018. Second, it checks whether higher debt level may reduce economic growth in Vietnam.

The estimation results reveal that public debt exerts a statistically significant and positive influence on real GDP per capita growth over the period of 1995-2018. However, the result becomes statistically insignificant for the sub-period of 2005-2018. Reasons for this include: (i) the Global Financial Crisis has constrained the impact of public debt on economic growth; (ii) GDP growth in these countries has been stabilized while domestic investment and FDI have not increased rapidly recently, compared to the pre-crisis period; and (iii) an increase in the share of the service sector on total output led to a decline in investment in industry, and thus, GDP figure may not be increased by investment amount.

This evidence proves that in the two past decades until the present, the selected ASEAN countries (Indonesia, Malaysia, the Philippines, Thailand, and Vietnam) have not faced the problem of high levels of public debt. In addition, this analysis shows that there is no presence of the inverted U-shaped relationship between public debt and economic growth in the selected ASEAN countries included in the sample of this study. In fact, although public debt-to-GDP ratios in most of the ASEAN countries are still under a safe level,<sup>64</sup> once this threshold level is exceeded, public debt will undermine economic growth because high debt levels may not only increase uncertainty about economic perspectives and policies, but also raise vulnerability to crises (Kumar & Woo, 2010).

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<sup>64</sup>The level that should be an appropriate threshold of public debt for the 5 selected ASEAN countries is roughly between 50% and 70%, based on the actual situation of each country at present. The finding is in line with studies in literature, such as Reinhart & Rogoff (2010), Cecchetti et al. (2011), and Baum et al. (2013).

The result of this study on the public debt issue in the selected ASEAN countries differs from that of previous studies in Latin American countries (LACs) and African countries. Excessive external debt in foreign currencies and short-term debt which was used for a huge budget deficit had put negative impacts on GDP growth in these countries during the past decades.

Fiscal deficit is found to be positively associated with the growth rate of real GDP per capita in Vietnam and other selected ASEAN countries. This may be because past budget deficits were utilized to finance long-term socio-economic investments and thereby boosted economic growth, especially during the critical period of industrial development in the selected ASEAN countries. Further, FDI and gross fixed capital formation are two key factors that play a critical role in the development of ASEAN economies. Similarly, labor force also has a positive, but insignificant impact on economic growth. Meanwhile, real effective exchange rate and two past crises showed negative effects on real GDP per capita growth.

It is noted that the analysis in this chapter is based on the past data, which is different from future prospects of the Vietnamese economy. Therefore, it is necessary to conduct a simulation on the public-debt-to GDP ratio for the next 10 years (2019-2028) in the next chapter to investigate the sustainability of public debt in Vietnam in the medium to long-term.

## **Chapter 4: Simulation on Public Debt Sustainability in Vietnam**

According to the empirical results in Chapter 3, public debt has not had a negative impact on economic growth in the selected ASEAN countries, including Indonesia, Malaysia, the Philippines, and Vietnam for the past over two decades. However, recent high level of public debt-to-GDP ratio may raise concern about debt vulnerability in Vietnam in the coming years. Once public debt becomes larger, the government may have to either raise taxes or cut expenditure to reduce fiscal deficit and pay back the debt's principal and interests. Hence, public debts, by nature, are gradual tax levies used by most governments to finance budget expenditure (Vuong, 2011). Therefore, this chapter will attempt to simulate the public debt sustainability in Vietnam for the next 10 years based on some assumptions of the tax revenue side. Particularly, this study focuses on the changes of tax rate in three categories (corporate income tax, personal income tax, and value added tax) and the impacts on total revenue and public debt-to-GDP ratio.

In addition, the analyses on the effects of each tax category (corporate income tax, personal income tax, and value-added tax) may be quite uncertain since several tax systems have been changed during the covered period. For example, during the period of 1997-2017, the corporate income tax (CIT) rate was decreased (5 times) in order to attract investment from both domestic and foreign companies. Even though personal income tax (PIT) was first introduced in 2007 and came into effect in 2009, it has been amended to broaden tax base in 2012. Thus, before simulating the sustainability of debt in Vietnam based on the assumptions of three categories of tax, the nature and extent of the causal relationship between tax revenue and economic growth in Vietnam needs to be taken into consideration.

### **4.1. Empirical Analysis of Tax Revenue and Economic Growth in Vietnam**

#### ***4.1.1. Model Specifications***

The relationship between tax revenue and economic growth has been mentioned in many previous studies in the past; however, the findings have been ambiguous. Some of them found negative effects (Marsden, 1984; Ogbonna et al., 2011) while others

showed the opposite (Masood et al., 2010; Santiago et al., 2012) or neutral side (Solow, 1956), depending on the importance of the role of tax revenue. The majority of past studies have neglected the changes of the tax rates and categories in each country, and that in the process of development, tax revenue structure should be changed, so that the effects of tax on GDP growth would be varied, especially in developing and emerging countries. For the case of Vietnam, until now, there are a few studies on the impacts of tax revenue on economic growth. Some of them focused on the change in tax policy reform by using qualitative methods while others applied quantitative analysis, but were out of date, which may not be applicable for the current tax system in Vietnam. For example, Pham et al. (2011) emphasized the issues that Vietnam will be facing in the process of reforming its tax policy and administration, and provided some policy recommendations contributing to the preparation of key policies and legislative documents to ensure the achievement of the state budget revenue target and other tax administration reform targets in the Socioeconomic Development Plan of 2011–2015. Su et al. (2015) investigated the response of economic growth when the tax system changed in Vietnam during the period of 1988 to 2013. An empirical result showed that raising tax revenue size is of no benefit to economic growth. Hence, this is practically the only study based on the latest data with varied tax categories, which illustrates a need for this study.

The identity of total tax revenue (TAX) and various categories of tax such as corporate income tax (CIT), personal income tax (PIT), value-added tax (VAT), and other tax, is shown as follows.

$$\text{TAX} = \text{CIT} + \text{PIT} + \text{VAT} + \text{Other taxes}$$

$$\text{CIT} = r_c \times \text{Tax base}; \quad \text{PIT} = r_p \times \text{Tax base}; \quad \text{VAT} = r_v \times \text{Tax base}$$

Where:  $r_c$  is corporate tax rate

$r_p$  is personal income tax rate

$r_v$  is value-added tax rate

The change in tax rate may affect to revenue of each category of tax and thus, it may lead to the change in total tax revenue. For example, if the CIT rate increases, after-tax return will decrease. As a result, the income of labor and economic output will be lower because of discouraged capital formation. Therefore, it is necessary to

investigate the impact of each category of tax and the change in tax rate on total tax revenue.

The empirical model on the nexus between tax revenue and economic growth in Vietnam during the period of 1997-2017 is formulated from the analysis of the traditional supply-side variables of the tax effort. More specifically, following Bird et al. (2004), GDP and tax revenue-to-GDP ratio were two main variables that added to this empirical analysis. The model included other variables, such as FDI, domestic savings, investments, and non-agriculture to capture indirect correlation of these control variables to tax revenue. In fact, since 2000, the flows of FDI into Vietnam have changed the output structure as well as the nation's economy remarkably. FDI enhanced economic growth via crowding-in effects in domestic investments, labor income, and savings. Once GDP growth and personal income had been improved, the revenue from tax also increased. Therefore, the set of explanatory variables above, which plays a key important role on socioeconomic development in Vietnam, is necessary for this model.

Furthermore, for the case of Vietnam, after four phases of tax reform, law changes relevant to the main categories of tax (CIT, PIT, and VAT) have significantly affected total tax revenue. Thus, the dummy variables of changes in taxation laws need to be added in the model. For instance, since the CIT and VAT law changes were in 1999, the dummy variable of taxation law change takes the value of 0 before 1999, and 1 from 1999 onwards. Similarly, the dummy variables of the tax law changes in 2004, 2009, 2013, 2014, 2016 will be applied.

Within the scope of this analysis, three categories of tax (corporate income tax, personal income tax, and value-added tax) are used as sub-dependent variables to investigate the relationship between the three main taxes and total tax revenue in Vietnam for the past 20 years. Empirical models are formulated as follows.

$$TAX = \alpha + \beta_1 GDP_t + \beta_2 X_t + \varepsilon \quad (7)$$

$$TAX = \alpha + \beta_1 CIT_t + \beta_2 X_t + \beta_3 D_{t99} + \beta_4 D_{t04} + \beta_5 D_{t09} + \beta_6 D_{t14} + \beta_7 D_{t16} + \varepsilon \quad (8)$$

$$TAX = \alpha + \beta_1 PIT_t + \beta_2 X_t + \beta_3 D_{t09} + \beta_4 D_{t13} + \varepsilon \quad (9)$$

$$TAX = \alpha + \beta_1 VAT_t + \beta_2 X_t + \beta_3 D_{t99} + \beta_4 D_{t04} + \beta_5 D_{t09} + \beta_6 D_{t13} + \beta_7 D_{t14} + \varepsilon \quad (10)$$

Where: TAX is tax revenue-to-GDP ratio (%)



GDP is GDP per capita growth rate, annual (%)

CIT is the share of corporate income tax on GDP (%)

PIT is the share of personal income tax on GDP (%)

VAT is the share of value added tax on GDP (%)

X is a set of control variables, including:

S as gross domestic savings (% of GDP)

I as gross domestic investments (% of GDP)

NON\_AGR as non-agriculture sector (% of GDP)

FDI as foreign direct investments (net inflows, % of GDP)

D<sub>t99</sub> is dummy variable of the year having changes in CIT and VAT laws (0 before 1999, and 1 from 1999 onwards)

D<sub>t04</sub> is dummy variable of the year having changes in CIT and VAT laws (0 before 2004, and 1 from 2004 onwards)

D<sub>t09</sub> is dummy variable of the year having changes in CIT, PIT and VAT laws (0 before 2009, and 1 from 2009 onwards)

D<sub>t13</sub> is dummy variable of the year having change in PIT law (0 before 2013, and 1 from 2013 onwards)

D<sub>t14</sub> is dummy variable of the year having changes in CIT and VAT laws (0 before 2014, and 1 from 2014 onwards)

D<sub>t16</sub> is dummy variable of the year having change in CIT law (0 before 2016, and 1 from 2016 onwards)

$\alpha$  is the intercept or constant term

t is the trend term

$\beta_i$  is the coefficients of independent variables

$\varepsilon$  is the error term

#### **4.1.2. Data**

The dependent variable is total tax revenue, denoted by TAX in the model. It is calculated by the ratio of tax revenues to GDP, which has been used in previous literature to measure the tax capacity and tax effort (Le et al., 2012). As a reminder, this analysis uses three categories of tax (corporate income tax, personal income tax, and

value-added tax) as sub-dependent variables. Total tax revenue is measured as a share of GDP. In addition, tax revenues for each category of tax used as percentage of GDP as proxy for the change of the effects of tax system reform on the shares for each category of tax. A set of explanatory variables, which are GDP per capita growth rate, gross domestic savings, gross domestic investments, non-agriculture, and foreign direct investments (FDI), is included in the model. This selection of control variables is based on the results of former empirical studies, such as Tanzi (1992), Bird et al. (2004), and Su et al. (2015).

The first explanatory variable is GDP per capita growth rate, which is denoted by  $GDP$ . Annual percentage growth rate of GDP per capita is based on constant local currency. Aggregates are based on constant 2010 U.S. dollars. GDP per capita is gross domestic product divided by midyear population. Given that the higher GDP per capita growth rate is, the higher capacity of tax collection from individual income, this variable is expected to have a positive impact on tax revenue.

Gross domestic saving, denoted by  $S$ , is measured as the percentage of GDP. It is expected to have a positive correlation with economic growth and total tax revenue, especially through the savings-investment link.

$I$  denotes gross domestic investment or gross capital formation. This variable, which is measured as a percentage of GDP, is an explanatory variable of economic growth and domestic savings. Since domestic investment is one of the most important factors, besides foreign investment, contributing to the development of economy and tax revenue, the coefficient of this variable is expected to have a positive sign.

Non-agriculture is denoted by  $NON\_AGR$ . It is calculated by the share of the industrial and services sector on GDP. In detail, the data for  $NON\_AGR$  is measured in output, which is provided by the Asia Development Bank. In Vietnam, income from agricultural activities receives tax exemptions due to political reasons as well as difficulties in collecting tax. After the innovation of Doi Moi in 1986, the Vietnamese economy has been changed in the past three decades with larger shares of manufacturing industries. Hence, the higher share of non-agriculture or manufacturing sector in GDP may create higher tax revenue.

Foreign direct investment (FDI) shows net inflows (new investment inflows, less disinvestment) in the reporting economy from foreign investors and is divided by GDP.

FDI plays an important role for development in Vietnam. In detail, arguments about the role of FDI in promoting socioeconomic development are built on the Harrod-Domar model. According to this view, FDI solves the three major constraints faced by developing economies: the saving-investment, foreign exchange, and fiscal gaps (Pham, 2004). Thus, FDI may have a positive impact on tax revenue of the government by providing additional jobs as well as helping to improve income distribution.

In addition, the dummy variables ( $D_{t99}$ ,  $D_{t04}$ ,  $D_{t09}$ ,  $D_{t13}$ ,  $D_{t14}$ , and  $D_{t16}$ ) are used to capture the effect of changes in tax laws on total revenue. The coefficients of these variables are expected to have a positive sign. The summaries of variables are as follows.

**Table 10: Summary of Variables and Data Sources**

Variables	Definition	Measurement	Period	Sources
TAX	Total tax revenue	Tax revenue/GDP (%)	1997-2017	Asian Development Bank (ADB)
CIT	Corporate income tax	Corporate income tax/GDP (%)	1997-2017	IMF & the MoF of Vietnam
PIT	Personal income tax	Personal income tax/GDP (%)	1997-2017	IMF & the MoF of Vietnam
VAT	Value added tax	Value added tax/GDP (%)	1997-2017	IMF & the MoF of Vietnam
GDP	GDP per capita growth rate	GDP per capita growth rate, annual (%)	1997-2017	World Bank Development Indicators (WDIs)
S	Gross domestic saving	Gross domestic saving (% of GDP)	1997-2017	WDIs
I	Gross domestic investment	Gross capital formation (% of GDP)	1997-2017	WDIs
NON_AGR	Non-agriculture	Non-agriculture/GDP (%)	1997-2017	ADB
FDI	Foreign direct investment	Foreign direct investment, net inflows (% of GDP)	1997-2017	WDIs
$D_{t99}$	Dummy variable of change in CIT and VAT laws	0 before 1999, and 1 from 1999 onwards		
$D_{t04}$	Dummy variable of change in CIT and VAT laws	0 before 2004, and 1 from 2004 onwards		
$D_{t09}$	Dummy variable of change in CIT, PIT and VAT laws	0 before 2009, and 1 from 2009 onwards		
$D_{t13}$	Dummy variable of change in PIT law	0 before 2013, and 1 from 2013 onwards		
$D_{t14}$	Dummy variable of change in CIT and VAT laws	0 before 2014, and 1 from 2014 onwards		
$D_{t16}$	Dummy variable of change in CIT law	0 before 2016, and 1 from 2016 onwards		

Total tax revenue and non-agriculture are obtained from the ADB while GDP, gross domestic savings, gross domestic investments, and FDI are from the World Bank data. Corporate income tax, personal income tax, and value-added tax are collected from the Ministry of Finance of Vietnam.

#### ***4.1.3. Method of Analysis***

This study uses multiple regression analysis with the following steps of empirical analysis. The first step is to check whether each variable has a unit root or not. The second step is to test for co-integration among variables, if all variables have the same order of integration. Finally, the linear relationship between tax revenue and GDP will be investigated by applying Ordinary Least Squares (OLS) regression.

The reason why this study employs these tests are as follows. First, this study refers to Bird et al. (2004) in selecting a set of control variables, however, the number of observations is relatively small (21 observations). Hence, multiple regression analysis has been utilized to identify the relationship between tax revenue and economic growth. This method is in line with earlier studies on this issue within other developing countries, such as Su et al. (2015) and Abomaye et al. (2018). Second, because non-stationary often occurs due to fluctuations in business activities from which most of the data is derived, testing for unit roots is critical in a time series analysis. In addition, spurious relationships among variables may lead to the estimated results when in fact no relationship exists. Finally, in this study, OLS regression is used to investigate whether the relationship between tax revenue and economic growth is positive or negative.

#### **Unit Root Test**

Before testing for co-integration, the time series needs to be checked on whether each variable has a unit root or not. There are two motives behind the unit root test. The first one is to know the order of integration, which is crucial for setting up an econometric model. The second one is to investigate the properties of the prior test to the construction of an econometric model. In this case, unit root tests are mainly a descriptive tool performed to classify a series as stationary or non-stationary. The most commonly conducted technique for testing unit root is Augmented Dickey-Fuller (ADF) test.

### **Co-Integration Test**

Testing for co-integration is the next necessary step to check whether the model has empirically meaningful relationships. If there is no co-integration, it is necessary to continue to work with variables in differences instead. There are several tests of co-integration and one of the most fundamental tests is the Johansen test. Johansen proposes two different likelihood ratio tests of the significance of these canonical correlations and thereby the reduced rank of the  $\Pi$  matrix: the Trace Test and Maximum Eigenvalue Test. The Trace Test assesses the null hypothesis of  $r$  co-integrating vectors against the alternative hypothesis of  $n$  co-integrating vectors. The Maximum Eigenvalue Test examines the null hypothesis of  $r$  co-integrating vectors against the alternative hypothesis of  $r+1$  co-integrating vector. Neither of these tests follows a chi-square distribution in general; asymptotic critical values can be found in Johansen and Juselius (1990), and are also available in EViews.

### **Ordinary Least Squares (OLS) Regression**

Ordinary Least Squares (OLS) is used for estimating the unknown parameters in a linear regression model. OLS chooses the parameters of a linear function of a set of explanatory variables by the principle of least squares: minimizing the sum of the squares of the differences between the observed dependent variable (values of the variable being predicted in the given dataset and those predicted by the linear function.

#### ***4.1.4. Results and Discussion***

##### **Unit Root Test**

The ADF results (Table 11) show that at each level, each of the series has a single unit root for both models (constant, constant and trend) since their ADF statistics are lower than the critical value of the ADF test at the 10% level. However, at the 1<sup>st</sup> difference, the null hypothesis of a single unit root is clearly rejected. This proves that all variables are stationary at the first difference and they are, therefore, integrated of order one.

**Table 11: Augmented Dickey-Fuller (ADF) Test**

	level	p	lag	1st	p	lag
GDP	-3.21	0.03	(0)*	-5.75	0.0002	(1)*
	-2.75	0.23	(1)	-5.59	0.002	(1)***
TAX	-1.53	0.49	(0)	-4.94	0.001	(0)***
	-1.3	0.86	(0)	-5.69	0.001	(0)***
CIT	-1.76	0.39	(0)	-4.74	0.001	(0)***
	-1.26	0.86	(0)	-5.57	0.001	(0)***
PIT	-0.52	0.87	(0)	-5.11	0.000	(0)***
	-2.16	0.49	(0)	-5.01	0.004	(0)***
VAT	-1.5	0.51	(0)	-4.51	0.002	(0)***
	-0.95	0.92	(0)	-5.08	0.004	(0)***
S	-1.96	0.3	(0)	-4.52	0.002	(0)***
	-3.74	0.05	(4)**	-4.76	0.006	(0)***
I	-1.05	0.71	(0)	-3.57	0.017	(0)***
	-1.37	0.84	(0)	-3.78	0.04	(0)**
NON_AGR	-1.02	0.73	(0)	-3.76	0.01	(0)*
	-2.74	0.23	(4)	-3.67	0.05	(0)*
FDI	-2.55	0.12	(1)	-3.57	0.02	(0)**
	-2.77	0.22	(1)	-3.44	0.08	(0)*

Note: 1. Upper: Constant; Lower: Constant and Trend;

2. \*\*\*, \*\*, \* denote significance at 1%, 5%, and 10%, respectively.

Source: Author's calculations based on the data of WDIs, ADB, and MoF.

### **Co-Integration Test**

In this section, the co-integration test is used to check whether or not there is a long-run relationship between tax revenue and economic growth. Since all series are stationary at 1<sup>st</sup> difference and they are integrated in the same order one or I(1), the Johansen co-integration test is performed in order to check whether the long-run relationship between tax revenue and economic growth exists. The result is shown in Table 12. The Trace Test indicates 4 co-integration equations while the Max-Eigenvalue Test indicates 3 co-integration equations at the 5% level of significance. This suggests that there exists a long-run relationship between total tax revenue and economic growth.

**Table 12: Johansen Co-Integration Test**  
**Unrestricted Co-Integration Rank Test (Trace)**

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.992018	252.4406	95.75366	0.0000
At most 1 *	0.985636	160.6603	69.81889	0.0000
At most 2 *	0.919073	80.04279	47.85613	0.0000
At most 3 *	0.646429	32.27294	29.79707	0.0254
At most 4	0.478924	12.51918	15.49471	0.1337
At most 5	0.007020	0.133857	3.841466	0.7145

Trace Test indicates 4 co-integrating equation(s) at the 0.05 level.

\* denotes rejection of the hypothesis at the 0.05 level.

\*\*MacKinnon-Haug-Michelis (1999) p-values.

**Unrestricted Co-Integration Rank Test (Maximum Eigenvalue)**

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.992018	91.78027	40.07757	0.0000
At most 1 *	0.985636	80.61752	33.87687	0.0000
At most 2 *	0.919073	47.76985	27.58434	0.0000
At most 3	0.646429	19.75375	21.13162	0.0770
At most 4	0.478924	12.38533	14.26460	0.0970
At most 5	0.007020	0.133857	3.841466	0.7145

Max-Eigenvalue Test indicates 3 co-integrating equation(s) at the 0.05 level.

\* denotes rejection of the hypothesis at the 0.05 level.

\*\*MacKinnon-Haug-Michelis (1999) p-values.

### **Ordinary Least Squares (OLS) Regression**

Finally, the correlation between total tax revenue as well as three main categories of tax and economic growth will be examined by using OLS regression. Since domestic investment and total tax revenue are highly correlated, in the OLS regression, the variable (I) and TAX are in a separate run to avoid multicollinearity. In addition, domestic savings (S) and investments (I) should be in principle equal in GDP definition, though the two variables will be run separately in the model (Appendix 3). The results in Table 13-1-1 and 13-1-2 show that total tax revenue has a positive correlation with GDP growth, though it is not significant. This may be because of the lack of transparency and accountability in tax collection, reflecting on the significance of this analysis.

Non-agriculture has a significant and positive correlation with total tax revenue at conventionally accepted levels in Table 13-1-1 and Table 13-1-2. This can be explained by the exemption from taxes of agriculture activities for political reasons, as a higher share of non-agriculture sectors in GDP should produce a higher tax ratio (Bird et al., 2004). In fact, the shift of output structure from agriculture to the manufacturing industry has obtained remarkable achievements, including a higher gross national income per capita and a stable real GDP growth rate, and thus directly contributed to government revenue from taxes.

**Table 13-1-1. Regression Analysis on Total Tax Revenue, GDP and Savings**

**Dependent Variable: TAX**  
Method: Least Squares  
Sample: 1997-2017  
Included Observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP	0.276	0.453	0.610	0.550
<b>S</b>	<b>0.206**</b>	<b>0.076</b>	<b>2.708</b>	<b>0.016</b>
<b>FDI</b>	<b>0.518*</b>	<b>0.263</b>	<b>1.973</b>	<b>0.066</b>
<b>NON_AGR</b>	<b>0.328**</b>	<b>0.141</b>	<b>2.329</b>	<b>0.033</b>
C	-16.752	11.622	-1.441	0.169
R-squared	0.4800	Mean dependent var		19.7061
Adjusted R-squared	0.3500	S.D. dependent var		1.9483
S.E. of regression	1.5706	Akaike info criterion		3.9451
Sum squared resid	39.470	Schwarz criterion		4.1938
Log likelihood	-36.423	Hannan-Quinn criter.		3.9990
F-statistic	3.6932	Durbin-Watson stat		0.8724
Prob(F-statistic)	0.0258			

\*\*\*, \*\*, and \* denote significance at 1%, 5%, and 10% level, respectively.

Domestic saving has a positive relationship with total tax revenue at the 5% significance level (Table 13-1-1). This can be explained by the fact that any increase in private savings will provide a net gain in the nation's wealth and thus, it may have a positive impact on GDP as well as revenue from tax (Penner, 2006).

Similarly, FDI has a positive correlation with total tax revenue at 10% significance level. This finding is in line with several previous studies, such as Fuest & Riedel (2009), UNCTAD (2012), Nguyen et al. (2013), and Camara (2019). In addition, the coefficient of FDI is higher than that of domestic savings and non-agriculture, which



shows the need for tax revenue at the moment in Vietnam. An appropriate explanation for this result is that Vietnam has been successful in mobilizing massive foreign-invested capital to support its rapid growth and FDI inflows may enhance tax revenue through direct and indirect channels. For example, foreign-invested enterprises create more jobs and thereby increase income tax, while capital gains and profits generated by those companies contribute to corporate tax revenues. The capital inflows by FDI have changed output structure, supporting the industrial and service sectors, and thus, improved revenue of VAT on goods and services.

**Table 13-1-2. Regression Analysis on Total Tax Revenue, GDP and Investments**

**Dependent Variable: TAX**  
Method: Least Squares  
Sample: 1997-2017  
Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP	0.165	0.336	0.491	0.6299
<b>I</b>	<b>0.330***</b>	<b>0.068</b>	<b>4.845</b>	<b>0.0002</b>
<b>NON_AGR</b>	<b>0.200*</b>	<b>0.103</b>	<b>1.938</b>	<b>0.0694</b>
C	-7.309	8.062	-0.906	0.3773
R-squared	0.6802	Mean dependent var		19.7062
Adjusted R-squared	0.6239	S.D. dependent var		1.9483
S.E. of regression	1.1949	Akaike info criterion		3.3636
Sum squared resid	24.2714	Schwarz criterion		3.5626
Log likelihood	-31.3179	Hannan-Quinn criter.		3.4068
F-statistic	12.0571	Durbin-Watson stat		1.6019
Prob(F-statistic)	0.0002			

\*\*\* and \* denote significance at 1% and 10% level, respectively.

Domestic investment has a positive effect on total tax revenue at the significance level of 1% (Table 13-1-2). This can be interpreted through the consideration that after the innovation in 1986, domestic investment has become a critical driver of economic growth in Vietnam. Along with the policy of government in encouraging the private sector, the expansion of gross domestic capital in industrial and service sectors led to high increases in tax revenue. In fact, since the Enterprise Law, which came into effect from January 1, 2000, the number of enterprises increased significantly from 14,553 newly registered enterprises in 2000 to 131,275 enterprises in 2018, according to the

GSO of Vietnam. Private enterprises accounted for an estimated 42% of GDP and created 83.3% of new employment in 2018.

Furthermore, to investigate the relationship between each category of tax and total tax revenue, the following regressions have been conducted. It is noted that as PIT and VAT are highly correlated, the two explanatory variables are separated in the same equation. Similarly, PIT, VAT, and NON\_AGR as well as TAX, PIT, CIT, and I are run separately to avoid the multicollinearity problem.

Regarding the relationship between CIT and total tax revenue, Table 13-2 shows that CIT revenue has a positive impact on total tax revenue at the significance level of 10%. This might be due to the fact that corporate income tax remains a key source of the government's total tax revenue. According to the MoF of Vietnam, CIT revenue accounted for around 25% of total tax revenue during the period of 2010-2017.

Dummy variable of 2004 has insignificantly positive effect on total tax revenue while dummy of 2014 has negative effect at the 5% of significance level. This result reflects the fact that if the CIT tax rate was reduced at a reasonable level (e.g., standard tax rate at 28% in 2004), it may enhance CIT revenue and total tax revenue through the income and substitution effects. In particular, lower tax rate would help enterprises increase after-tax return to investing, thereby expanding the productive capacity in those companies and further improving the level of economic activity. Otherwise, constant reduction of CIT rate (e.g., standard tax rate at 22% in 2014) would induce the decline in CIT revenue because of tax avoidance. In fact, a number of small firms in Vietnam keep reporting their income below the threshold to take advantage of preferential tax treatment while FDI enterprises utilize tax incentive for transfer pricing.

**Table 13-2: Regression Analysis on Total Tax Revenue and CIT Revenue****Dependent Variable: TAX**

Method: Least Squares

Sample: 1997 2017

Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
<b>CIT</b>	<b>0.605*</b>	<b>0.321</b>	<b>1.886</b>	<b>0.0818</b>
S	0.004	0.071	0.060	0.9533
D_t99	0.638	1.312	0.487	0.6347
D_t04	0.895	1.416	0.632	0.5382
D_t09	-0.091	0.868	-0.105	0.9183
<b>D_t14</b>	<b>-2.272**</b>	<b>0.964</b>	<b>-2.358</b>	<b>0.0347</b>
D_t16	1.592	1.348	1.181	0.2589
<b>C</b>	<b>14.796</b>	<b>1.662</b>	<b>8.903</b>	<b>0.0000</b>
R-squared	0.7772	Mean dependent var	19.7062	
Adjusted R-squared	0.6572	S.D. dependent var	1.9483	
S.E. of regression	1.1407	Akaike info criterion	3.3834	
Sum squared resid	16.9145	Schwarz criterion	3.7813	
Log likelihood	-27.5260	Hannan-Quinn criter.	3.4698	
F-statistic	6.4779	Durbin-Watson stat	1.1385	
Prob(F-statistic)	0.00198			

\*\* and \* denotes significance at 5% and 10% level, respectively.

Regarding the relationship between personal income tax and total tax revenue, Table 13-3 shows that PIT revenue has positive, but insignificant impact on government revenue from taxes. This might be because, although revenue from PIT has increased significantly by more than 3 times during the period of 2003-2017, compared to other categories of taxes in Vietnam, it remained a small proportion of total tax revenue. However, Vietnam will become an upper middle-income country in the coming years with the PIT revenue expected to increase and contribute more to total revenue from government taxes.

Personal income tax was amended for the first time in 2009 with reduction of tax rate from the range of 0-40% in 2004 to 5-35%. This change in tax rate shows positive impact on total tax revenue, though the statistical result is not significant. A reasonable explanation for this is that tax rate cuts may encourage work, saving, and investment because of increase in personal after-tax income, thereby resulting in increased efficiency and potentially raising the overall size of the economy (Gale & Samwick, 2014). An increase in GDP growth may enhance the tax collection. On the

other hand, the dummy variable for 2013 has negative effect on total tax revenue at the 5% of significance level. This might be due to the fact that less progressive tax rate and exemption/deduction on personal income would hinder economic growth by reducing consumption demand.

**Table 13-3: Regression Analysis on Total Tax Revenue and PIT Revenue**

**Dependent Variable: TAX**

Method: Least Squares

Sample: 1997 2017

Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PIT	1.764	2.268	0.778	0.4481
S	0.106	0.069	1.549	0.1408
D <sub>109</sub>	0.444	2.176842	0.204	0.8409
<b>D<sub>113</sub></b>	<b>-3.027**</b>	<b>1.325</b>	<b>-2.285</b>	<b>0.0363</b>
<b>C</b>	<b>15.352</b>	<b>2.537</b>	<b>6.051</b>	<b>0.0000</b>
R-squared	0.3480	Mean dependent var		19.706
Adjusted R-squared	0.1850	S.D. dependent var		1.948
S.E. of regression	1.7588	Akaike info criterion		4.171
Sum squared resid	49.495	Schwarz criterion		4.420
Log likelihood	-38.799	Hannan-Quinn criter.		4.225
F-statistic	2.1352	Durbin-Watson stat		0.6916
Prob(F-statistic)	0.1236			

\*\* denotes significance at 5% level.

Regarding the relationship between VAT and total tax revenue, VAT revenue is positively correlated with total tax revenue at the 1% level of significance (Table 13-4). This can be explained by the fact that besides corporate income tax, VAT is one of the most critical taxes contributing to total tax revenue. It recently exceeded corporate income tax and contributed about one-third of total tax revenues, which is the largest share of all taxes to total tax revenue.

Together with VAT, domestic saving has also contributed to an increase of total tax revenue at the level of 5% significance. An appropriate explanation for this result is that capital is accumulated savings, whether it is physical capital (machines and buildings used for production, but also housing held by families) or financial capital (bank and financial assets). Hence, an increase in gross savings would contribute directly to GDP growth and create higher tax revenue from domestic savings.

Dummy variable for 2004 has significantly positive effect on total tax revenue while dummy variable of 2009 shows negative effect. This can be explained by that lower VAT rate in 2004 accompany with stable inflation rate had stimulated consumption and economic growth during the period 2004-2007. Meanwhile, the widening tax base since 2009 and high inflation following the Global Financial Crisis has caused heavily burden on lower and middle income people, in turn, contributed to a decline in consumption, investment and thereby, reducing total tax revenue.

**Table 13-4: Regression Analysis on Total Tax Revenue and VAT Revenue**

Dependent Variable: TAX  
 Method: Least Squares  
 Sample: 1997 2017  
 Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
<b>VAT</b>	<b>1.012***</b>	<b>0.307</b>	<b>3.290</b>	<b>0.0054</b>
<b>S</b>	<b>0.138**</b>	<b>0.055</b>	<b>2.536</b>	<b>0.0238</b>
D <sub>t99</sub>	-1.220	1.231	-0.991	0.3385
<b>D<sub>t04</sub></b>	<b>1.529*</b>	<b>0.789</b>	<b>1.937</b>	<b>0.0731</b>
<b>D<sub>t09</sub></b>	<b>-1.974**</b>	<b>0.758</b>	<b>-2.606</b>	<b>0.0207</b>
D <sub>t14</sub>	-0.746	0.799	-0.934	0.3659
<b>C</b>	<b>10.416***</b>	<b>2.046</b>	<b>5.091</b>	<b>0.0002</b>
R-squared	0.8395	Mean dependent var		19.7062
Adjusted R-squared	0.7707	S.D. dependent var		1.9483
S.E. of regression	0.9329	Akaike info criterion		2.9602
Sum squared resid	12.1848	Schwarz criterion		3.3084
Log likelihood	-24.0822	Hannan-Quinn criter.		3.0358
F-statistic	12.2039	Durbin-Watson stat		1.2709
Prob(F-statistic)	0.00007			

\*\*\* and \*\* denotes significance at 1% and 5% level, respectively.

#### 4.1.5. Summary of the OLS regressions

Table 14 shows a summary of the OLS regression results. The results reveal that tax revenue and GDP growth have positive and insignificant correlation. This can be interpreted by the fact that the tax administration of Vietnam is inefficient because of the high collection cost, corruption, and low compliance. Thus, although GDP growth has increased gradually, it may not contribute much for collecting government taxes. Meanwhile, even though tax reforms have contributed to the total revenue of the government and, thus, enhance economic growth at this stage of development in

Vietnam, the lack of transparency and accountability of tax system has affected the results of this analysis on GDP growth.

In addition, revenues from two main categories of taxes (corporate income tax and value-added tax) have a significantly positive correlation with total tax revenue. This reflects the fact that the Corporate Income Tax (CIT) and Value-added tax (VAT) have accounted for almost two-thirds of the tax revenue of the Vietnamese government for the past two decades. In addition, the coefficient and significance level of VAT is higher than that of CIT. An appropriate explanation for this result is VAT revenue has become the most important source of state budget with the highest proportion in total tax revenue (more than 30%), while there has been a downward trend in CIT revenue since 2014.

Meanwhile, personal income tax (PIT) has an insignificantly positive effect on total tax revenue. This might be due to the limitation on collecting direct income tax since the amount of labor force in the informal sector remains a high share on total employment in Vietnam. Therefore, once Vietnam becomes an upper middle-income country, personal income tax reforms are needed to undertake the next decade.

Dummy variables of recent changes in tax laws show negative effects on total tax revenue. This reflects the fact that reduction tax rates for corporate income and heavy burden of VAT may increase tax loss from domestic SMEs and FDI firms as well as reduce consumption, and thereby hindering economic growth and budget revenue. It is noted that VAT itself is regressive, which is damage for the lower income people. Hence, if government relies on VAT, it may put negative effects on income distribution.

Domestic investments and FDI have a positive and significant correlation with total tax revenue. This could be explained by the combination of FDI and domestic investments that encouraged business activities, created more employment opportunities, and increased people's income and consumption. As a result, revenue from CIT, PIT, and VAT were improved, and directly contributed to total tax revenue. The significance of PIT would be changed in accordance with the emergence of middle-class consumers. Because of the rising purchasing power of the middle class, the number of foreign brands is expected to increase sharply, boosting CIT and VAT revenue in the future.<sup>65</sup>

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<sup>65</sup>According to the Ministry of Investment and Industry (2018), 183 foreign brands have been granted a franchise in Vietnam, mostly from the U.S., Australia, South Korea, and the EU.

Similarly, domestic saving also shows a positive and significant effect on total tax revenue. An appropriate explanation for this result is that gross domestic saving is one of the most important sources of economic development, through which capital is utilized for investment. And thereby, it would create higher productivity of growth and contribute to government tax revenue. Non-agriculture also shows a significant and positive correlation with the total tax revenue. This reflects the fact that the higher share of non-agriculture as a percentage of GDP may reduce the exemption of tax and, thus, enhance tax revenue.

Finally, since the period covered is short (only 21 years), the value of R-squared is not so high. However, low R-squared does not mean that there is a biased or consistent estimator of the effect of policy change (Wooldrige, 2003). Hence, even when R-squared is low, if the p-values are good, it still indicates a real relationship between the significant predictors and the response variable.

The results would be changed in the next decades because of the change in the share of the three main categories of taxes on total tax revenue, especially after the ASEAN Economic Community (AEC) 2025 Consolidated Strategic Action Plan is adopted. In the process of regional economic integration, revenue from VAT on imports may decrease because of lower tariff rate in the AEC. Consequently, to compensate for the loss in customs duty revenue, Vietnam should restructure the tax system from a FDI dependent one to personal income and domestic enterprises based revenue in the long-term.

**Table 14: Summary of the OLS Regression Results**

Explanatory Variables	Total Tax Revenue (TAX)				
	(1)	(2)	(3)	(4)	(5)
GDP	0.276 (0.453) [0.610]	0.165 (0.336) [0.491]			
CIT			<b>0.605*</b> <b>(0.321)</b> <b>[1.886]</b>		
PIT				1.764 (2.268) [0.778]	
VAT					<b>1.012***</b> <b>(0.307)</b> <b>[3.290]</b>
S	<b>0.206**</b> <b>(0.076)</b> <b>[2.708]</b>		0.004 (0.071) [0.060]	0.106 (0.069) [1.549]	<b>0.138**</b> <b>(0.055)</b> <b>[2.536]</b>
I		<b>0.330***</b> <b>(0.068)</b> <b>[4.845]</b>			
FDI	<b>0.518*</b> <b>(0.263)</b> <b>[1.973]</b>				
NON_AGR	<b>0.328**</b> <b>(0.141)</b> <b>[2.329]</b>	<b>0.200*</b> <b>(0.103)</b> <b>[1.938]</b>			
D <sub>t99</sub>			0.638 (1.312) [0.487]		-1.22 (1.231) [-0.991]
D <sub>t04</sub>			0.895 (1.416) [0.632]		<b>1.529*</b> <b>(0.789)</b> <b>[1.937]</b>
D <sub>t09</sub>			-0.091 (0.869) [-0.105]	0.444 (2.177) [0.204]	<b>-1.974**</b> <b>(0.758)</b> <b>[-2.606]</b>
D <sub>t13</sub>				<b>-3.027**</b> <b>(1.325)</b> <b>[-2.285]</b>	
D <sub>t14</sub>			<b>-2.272**</b> <b>(0.964)</b> <b>[-2.358]</b>		-0.746 (0.799) [-0.934]
D <sub>t16</sub>			1.592 (1.349) [1.181]		
Constant	-16.752 (11.622) [-1.441]	-7.309 (8.062) [-0.906]	<b>14.796***</b> <b>(1.662)</b> <b>[8.903]</b>	<b>15.352***</b> <b>(2.537)</b> <b>[6.051]</b>	<b>10.416***</b> <b>(2.046)</b> <b>[5.091]</b>
No. of Observation	21	21	21	21	21
R2	0.48	0.68	0.78	0.35	0.84

Notes: 1. Figures in ( ) and [ ] are standard errors and t-statistic value, respectively.

2. \*\*\*, \*\*, and \* coefficients are significant at the 1%, 5%, and 10% levels, respectively.

Source: Author's calculations.



## 4.2. Simulation on Public Debt Sustainability in Vietnam

### 4.2.1. Methodology

Following Pham (2011), this study assumes that there is no money printing, so the government must borrow to finance budget deficit and, as a result, public debt occurs. Thus, a change in public debt-to-GDP ratio is expressed in the following equations.

$$\Delta D = G - T + r \times D \quad (11)$$

Where: D is public debt;  $\Delta D$  is change in public debt;

G is primary government expenditure that excludes interest payments;

T is total revenue of government;

$r \times D$  is interest payments

Dividing both sides of equation (11) by nominal gross domestic product (Y):

$$\frac{\Delta D}{Y} = \frac{G-T}{Y} + r \frac{D}{Y} \quad (12)$$

Since  $\Delta D/Y = \Delta(D/Y) + (\Delta Y/Y) (D/Y)$ , equation (11) can be rewritten as follows.

$$\Delta \left( \frac{D}{Y} \right) = \frac{G-T}{Y} + (r - g) \frac{D}{Y} \quad (13)$$

Where: D/Y is public debt-to-GDP ratio;

r is nominal interest rate;

$g = \Delta Y/Y$  is nominal GDP growth rate

Hence, the change in public debt-to-GDP ratio depends on the change in primary budget balance and/or interest rate as well as GDP growth rate. If the government can achieve budget balance, which can cover the interest cost under a given growth rate ( $PB \geq 0$ ), the debt-to-GDP ratio will decrease. Otherwise, if the government runs a primary budget deficit ( $PB \leq 0$ ) and/or nominal interest rate exceeds nominal GDP growth rate, the debt-to-GDP ratio will increase. To forecast public debt sustainability, this study predicts primary budget balance and nominal GDP growth rate over the years.

It should be noted that this simulation result was calculated on two assumptions. First, all the revenue of the government should be from tax and within the scope of this study, the three categories of taxes (CIT, PIT, and VAT) are focused on. Second, all public debts are fully expressed in the figure of 58.4% of GDP at the end of 2018.

The analysis consists of the following steps. The first step maintains some assumptions of nominal GDP, real GDP growth, and inflation. Secondly, based on projected nominal GDP as well as the changes on the share of fiscal revenue and expenditure as a percentage of GDP for the next 10 years (2019-2028), as proposed by the author's calculation, the changes on the absolute value of each item will be simulated. Lastly, from the change on total expenditure and total revenue of government, this study calculates the change on primary budget deficit and public debt-to-GDP ratio, based on the relationship between budget deficit and public debt, which is expressed in equation (13).

### **Assumptions of Nominal GDP, Real GDP Growth, and Inflation**

According to the 5-year socioeconomic plan of the Vietnamese government, there are three scenarios of fundamental elements of macroeconomic performance (nominal GDP, inflation, and real GDP growth), which are summarized in the following tables. In fact, the Ministry of Finance of Vietnam has estimated the country's GDP growth for the period of 2020-2022 at an average 6.8% while the inflation rate will be around 3%-3.5%. However, given the economic impact of the COVID-19 pandemic at the first quarter of 2020, it will be difficult to achieve this GDP growth target. The assumed GDP growth rate is much lower than the normal assumption.

Particularly, during the Global Financial Crisis, Vietnam's GDP growth rate decreased 1.4 percentage points within 2 years, from 7.1% in 2007 to 5.7% in 2008, respectively. Meanwhile, the coronavirus has rapidly spread around the world and it may have long-lasting consequences on the global economy. Since almost all countries have closed their borders and many cities have been put under strict lockdowns, tourist sectors and major industrial production chains have suffered heavy losses. According to the OECD, the global economy could grow at its slowest rate this year since 2009 due to the coronavirus outbreak. Hence, this study proposes three scenarios for Vietnam's GDP growth rate in 2020 that are 4.5%, 2.8%, and 1.5% in the good, medium, and bad case, respectively. From 2021 to 2028, economic growth in Vietnam is expected to recover quickly in the range of 5-6%, 4-5%, and 3-4% for the three scenarios.

Besides, although the inflation rate is forecasted to rise to just under the 4% target in 2020 by the government plan, this target is difficult to achieve. In fact,

according to the General Statistics Office of Vietnam, the average inflation rate in the first 2 months of 2020 increased by 3.1% compared to the same period in 2019, while the consumer price index (CPI) in February reached the highest level in the last 7 years. An increase of inflation rate is derived from rising pork's price in the fourth-quarter of 2019 as well as the rising price of drugs, medical supplies, and equipment in early 2020. Therefore, the forecast on inflation rate depends on how long the coronavirus can be controlled. Since Vietnam's government has implemented timely measures to cope with the current pandemic, the inflation rate in 2020 is proposed to reach to 8%, 9.2%, and 10.2% for the good, medium, and bad case, respectively. After that, along with the recovery of the economy, inflation rate is expected to decline to around 5%, 6%, and 7% in 2028 within the three cases of good, medium, and bad.

Based on the estimations of GDP growth rate and inflation growth rate, the author will assume the nominal GDP growth rate and the absolute value of nominal GDP as follows:

$$\text{Nominal GDP growth rate} = \text{Real GDP growth rate} + \text{Inflation rate} \quad (14)$$

$$\text{Nominal GDP}_t = \text{Nominal GDP}_{t-1} \times (1+g) \quad (15)$$

**Table 15: Baseline Scenarios of Nominal GDP, Real GDP Growth, and Inflation**

<b>Good Case</b>	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Real GDP growth rate (%)	6.9	4.5	5	5.2	5.4	5.5	5.6	5.7	5.8	6
Inflation rate (%)	2.8	8	7.5	7.2	6.9	6.2	6	5.6	5.5	5.3
Nominal GDP growth rate (%)	9.7	12.5	12.5	12.4	12.3	11.7	11.6	11.3	11.3	11.3
Nominal GDP (billion VND)	6,079,938	6,839,930	7,694,922	8,649,092	9,712,930	10,849,343	12,107,867	13,476,056	14,998,850	16,693,721

<b>Medium Case</b>	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Real GDP growth rate (%)	5.5	2.8	3.5	3.7	4	4.5	4.6	4.7	4.8	5
Inflation rate (%)	4.1	9.2	8.5	8.2	7.8	7.3	7	6.5	6.2	6
Nominal GDP growth rate (%)	9.6	12	12	11.9	11.8	11.8	11.6	11.2	11	11
Nominal GDP (billion VND)	6,074,396	6,803,323	7,619,722	8,526,469	9,532,592	10,657,438	11,893,701	13,225,796	14,680,633	16,295,503

<b>Bad Case</b>	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Real GDP growth rate (%)	4.2	1.5	2	2.3	2.5	2.9	3.2	3.5	3.7	4
Inflation rate (%)	5.1	10.2	9.6	9	8.7	8.2	8	7.6	7.3	7.2
Nominal GDP growth rate (%)	9.3	11.7	11.6	11.3	11.2	11.1	11.2	11.1	11	11.2
Nominal GDP (billion VND)	6,057,769	6,766,528	7,551,445	8,404,758	9,346,091	10,383,507	11,546,460	12,828,117	14,239,210	15,834,002

Source: Author's calculations.

### **Assumptions on the Fiscal Revenue Side**

Based on the data of tax revenue for the past 16 years and the government's plan for tax reforms, this study proposes three assumptions on the three categories of tax in Vietnam as follows.

*First*, the revenues from the three main categories of taxes (CIT, PIT, and VAT) will increase over the next 10 years (2019-2028). In fact, the absolute value of each category of tax increased significantly in the past two decades and contributed to total government revenue. For the next decade, collection from tax revenue, in general and in the three major categories of tax, is expected to continue to increase in order to finance the fiscal deficit because of increases in government spending.

*Second*, the share of CIT in total revenue will decrease following the COVID-19 shock. In the context of the global recession, because of the negative impacts of the coronavirus pandemic on a large number of domestic enterprises' business activities since 2020, the government may consider reducing the tax rate of CIT to support the recovery of the economy.

*Third*, the share of PIT and VAT on total tax revenue is expected to increase over the next 10 years. Actually, there has been an upward trend of individual income recently while the government has planned to increase the standard VAT rate from 10% in 2019 to 12% in 2020. After the global crisis in 2020, the government should consider creating stimulus packages to pull consumption. To achieve this target, progressive tax rates of personal income by raising the tax rate on wealthy people and reducing the tax burden on the middle and low-income group as well as broadening tax base and increasing the tax rate of VAT would be applied.

The elasticity of tax on GDP is calculated by the following equation:

$$\varepsilon_{\text{tax}} = \Delta \text{Tax revenue (\%)} / \Delta \text{GDP (\%)} \quad (16)$$

Equation (16) is applied for calculating the elasticity of each category of tax (CIT, PIT, VAT) revenue on GDP. Based on the data of tax revenue in Vietnam provided by the MoF, average elasticity of tax revenue on GDP for 16 years (2003-2018) is shown in Table 16.

**Table 16: Elasticity of Tax Revenue on GDP for the Period of 2003-2018**

	Nominal GDP (billion VND)	CIT Revenue (billion VND)	Elasticity of CIT Revenue	PIT Revenue (billion VND)	Elasticity of PIT Revenue	VAT Revenue (billion VND)	Elasticity of VAT Revenue
2003	613,443	47,410	-	2,951	-	33,130	-
2004	715,307	56,987	1.22	3,521	1.16	38,814	1.03
2005	914,001	75,847	1.19	4,234	0.73	45,878	0.66
2006	1,061,565	99,796	1.96	5,179	1.38	55,148	1.25
2007	1,246,769	104,552	0.27	7,415	2.47	69,822	1.53
2008	1,616,047	137,239	1.06	12,940	2.52	91,506	1.05
2009	1,809,149	112,164	-1.53	14,318	0.89	108,549	1.56
2010	2,157,828	148,655	1.69	26,276	4.33	155,022	2.22
2011	2,779,880	196,058	1.11	38,469	1.61	192,064	0.83
2012	3,245,419	215,798	0.60	44,959	1.01	174,056	-0.56
2013	3,584,262	231,146	0.68	46,548	0.34	208,536	1.90
2014	3,937,856	207,807	-1.02	47,844	0.28	241,129	1.58
2015	4,192,862	200,030	-0.58	56,723	2.87	251,758	0.68
2016	4,502,733	188,485	-0.78	65,235	2.03	271,604	1.07
2017	5,005,975	211,358	1.09	78,775	1.86	309,308	1.24
2018	5,542,332	251,556	1.78	94,366	1.85	344,046	1.05

*Source: Author's calculation based on database of the MoF of Vietnam.*

Assuming that the change in CIT, PIT, and VAT revenue is based on the change in nominal GDP, the average elasticity of CIT, PIT, and VAT revenue on GDP for the next 10 years (2019-2028) are calculated by a five-year moving average method. For example, the elasticity of CIT revenue in 2019 is an average of elasticity from that of the recent 5 years (2014-2018). This methodology is useful for forecasting long-term trends.

**Table 17: Elasticity of CIT, PIT, and VAT revenue for the period of 2019-2028**

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
CIT elasticity	0.10	0.32	0.50	0.76	0.69	0.47	0.55	0.59	0.61	0.58
PIT elasticity	1.78	2.08	1.92	1.89	1.90	1.91	1.94	1.91	1.91	1.92
VAT elasticity	1.12	1.03	1.10	1.11	1.08	1.09	1.08	1.09	1.09	1.09

*Source: Author's calculations.*

The absolute value of each category of tax for the period of 2019-2028 will be calculated by following equations (17)-(19). Particularly, the simulation on the absolute value of the three categories of taxes for the three scenarios is presented in Table 18.

$$\varepsilon_{CITrev.} = \frac{CIT_{t+1} - CIT_t}{CIT_t} \div \frac{GDP_{t+1} - GDP_t}{GDP_t} \quad (17)$$

$$\varepsilon_{PITrev.} = \frac{PIT_{t+1} - PIT_t}{PIT_t} \div \frac{GDP_{t+1} - GDP_t}{GDP_t} \quad (18)$$

$$\varepsilon_{VATrev.} = \frac{VAT_{t+1} - VAT_t}{VAT_t} \div \frac{GDP_{t+1} - GDP_t}{GDP_t} \quad (19)$$

**Table 18: Simulation on CIT, PIT, and VAT Revenue for the Period of 2019-2028**

<b>Good case</b>	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Nominal GDP (billion VND)	6,079,938	6,839,930	7,694,922	8,649,092	9,712,930	10,849,343	12,107,867	13,476,056	14,998,850	16,693,721
CIT revenue (billion VND)	253,891	264,032	280,502	306,764	332,757	351,119	373,391	398,381	425,883	453,897
Share of CIT revenue on total tax revenue (%)	19.8	16.5	15.4	15.1	14.8	14.4	13.7	12.4	12.3	12.1
PIT revenue (billion VND)	110,628	139,328	172,721	213,301	263,210	322,130	394,645	479,985	583,738	710,158
Share of PIT revenue on total tax revenue (%)	8.6	8.5	9.5	10.5	11.7	13.2	14.5	15.0	16.9	19.0
VAT revenue (billion VND)	381,570	430,811	490,196	557,664	631,987	712,630	802,226	901,412	1,012,686	1,137,294
Share of VAT revenue on total tax revenue (%)	29.8	26.9	27.0	27.5	28.0	29.2	29.4	28.2	29.2	30.4
Revenue of (CIT+PIT+VAT) (billion VND)	<b>746,089</b>	<b>834,172</b>	<b>943,419</b>	<b>1,077,730</b>	<b>1,227,954</b>	<b>1,385,878</b>	<b>1,570,262</b>	<b>1,779,778</b>	<b>2,022,307</b>	<b>2,301,349</b>

<b>Medium case</b>	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Nominal GDP (billion VND)	6,074,396	6,803,323	7,619,722	8,526,469	9,532,592	10,657,438	11,893,701	13,225,796	14,680,633	16,295,503
CIT revenue (billion VND)	253,867	263,602	279,387	304,490	329,241	347,564	369,611	394,129	420,616	447,549
Share of CIT revenue on total tax revenue (%)	19.9	16.5	15.5	15.3	14.9	14.5	13.8	12.6	12.5	12.3
PIT revenue (billion VND)	110,460	137,971	169,716	207,982	254,667	312,163	382,434	464,401	562,121	680,627
Share of PIT revenue on total tax revenue (%)	8.6	8.5	9.4	10.4	11.5	13.0	14.3	14.8	16.6	18.7
VAT revenue (billion VND)	381,183	428,407	485,098	549,172	619,388	699,099	786,994	883,436	989,595	1,108,129
Share of VAT revenue on total tax revenue (%)	29.8	26.9	26.9	27.5	28.1	29.2	29.4	28.2	29.3	30.5
Revenue of (CIT+PIT+VAT) (billion VND)	<b>745,510</b>	<b>829,979</b>	<b>934,200</b>	<b>1,061,644</b>	<b>1,203,297</b>	<b>1,358,826</b>	<b>1,539,039</b>	<b>1,741,966</b>	<b>1,972,331</b>	<b>2,236,305</b>



**Table 18: Simulation on CIT, PIT, and VAT Revenue for the Period of 2019-2028 (Cont.)**

<b>Bad case</b>	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Nominal GDP (billion VND)	6,057,769	6,766,528	7,551,445	8,404,758	9,346,091	10,383,507	11,546,460	12,828,117	14,239,210	15,834,002
CIT revenue (billion VND)	253,795	263,283	278,524	302,287	325,610	342,657	363,642	387,549	413,594	440,558
Share of CIT revenue on total tax revenue (%)	19.9	16.6	15.6	15.4	15.1	14.7	14.0	12.8	12.7	12.5
PIT revenue (billion VND)	109,957	136,658	167,053	202,819	246,031	298,282	363,113	440,244	532,880	647,265
Share of PIT revenue on total tax revenue (%)	8.6	8.6	9.4	10.3	11.4	12.8	14.0	14.5	16.3	18.4
VAT revenue (billion VND)	380,022	425,925	480,409	540,665	606,279	679,673	762,180	854,746	957,458	1,074,228
Share of VAT revenue on total tax revenue (%)	29.8	26.9	26.9	27.5	28.1	29.2	29.4	28.2	29.4	30.6
Revenue of (CIT+PIT+VAT) (billion VND)	<b>743,774</b>	<b>825,867</b>	<b>925,986</b>	<b>1,045,772</b>	<b>1,177,920</b>	<b>1,320,611</b>	<b>1,488,935</b>	<b>1,682,540</b>	<b>1,903,932</b>	<b>2,162,052</b>

Source: Author's calculation.

The simulation on total tax revenue in absolute value is based on the assumption of the change of shares for the three main categories of tax (CIT, PIT, and VAT) on total tax revenue (Table 19). The absolute levels of tax revenues in each category would increase, which would affect the total tax revenue. Accordingly, based on the past data of the MoF of Vietnam for the period of 2003-2018, this study supposes that the share of three categories of tax revenue on total tax revenue in 2020 will decrease significantly, even lower than the rates during the global financial crisis (2008-2009). After that, the proportion will be improved and expected to increase gradually until 2028. Finally, based on the change of the share of total tax revenue on total government revenue for the past two decades (Appendix 4), the simulation on total government revenue for the period of 2019-2028 is calculated. The results of the simulation are summarized in the following table.

**Table 19: Simulation on Total Tax Revenue and Total Government Revenue (Billion VND)  
during the period 2019-2028**

<b>Good Case</b>	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Revenue of (CIT+PIT+VAT) (billion VND)	746,089	834,172	943,419	1,077,730	1,227,954	1,385,878	1,570,262	1,779,778	2,022,307	2,301,349
Revenue of (CIT+PIT+VAT)/ Total tax revenue (%)	58.3	52.1	51.9	53.5	54.6	56.8	57.5	58.4	59.1	60.5
Total tax revenue (billion VND)	1,279,741	1,601,097	1,817,763	2,014,448	2,248,999	2,439,927	2,730,891	3,047,565	3,421,839	3,803,883
Total tax revenue/ Total government revenue (%)	72.1	67.8	68.2	69.1	69.6	71.2	71.5	72.4	73.2	73.9
<b>Total government revenue (billion VND)</b>	<b>1,774,952</b>	<b>2,361,500</b>	<b>2,665,341</b>	<b>2,915,264</b>	<b>3,231,321</b>	<b>3,426,864</b>	<b>3,819,428</b>	<b>4,209,344</b>	<b>4,674,644</b>	<b>5,147,339</b>

<b>Medium Case</b>	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Revenue of (CIT+PIT+VAT) (billion VND)	745,510	829,979	934,200	1,061,644	1,203,297	1,358,826	1,539,039	1,741,966	1,972,331	2,236,305
Revenue of (CIT+PIT+VAT)/ Total tax revenue (%)	58.3	52.1	51.9	53.5	54.6	56.8	57.5	58.4	59.1	60.5
Total tax revenue (billion VND)	1,278,748	1,593,050	1,800,000	1,984,381	2,203,840	2,392,299	2,676,590	2,982,819	3,337,278	3,696,372
Total tax revenue/ Total government revenue (%)	72.1	67.8	68.2	69.1	69.6	71.2	71.5	72.4	73.2	73.9
<b>Total government revenue (billion VND)</b>	<b>1,773,576</b>	<b>2,349,631</b>	<b>2,639,297</b>	<b>2,871,753</b>	<b>3,166,437</b>	<b>3,359,970</b>	<b>3,743,483</b>	<b>4,119,915</b>	<b>4,559,123</b>	<b>5,001,857</b>

**Table 19: Simulation on Total Tax Revenue and Total Government Revenue (Billion VND)  
during the period 2019-2028 (Cont.)**

<b>Bad Case</b>	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Revenue of (CIT+PIT+VAT) (billion VND)	743,774	825,867	925,986	1,045,772	1,177,920	1,320,611	1,488,935	1,682,540	1,903,932	2,162,052
Revenue of (CIT+PIT+VAT)/ Total tax revenue (%)	58.3	52.1	51.9	53.5	54.6	56.8	57.5	58.4	59.1	60.5
Total tax revenue (billion VND)	1,275,771	1,585,157	1,784,173	1,954,714	2,157,362	2,325,020	2,589,452	2,881,061	3,221,543	3,573,639
Total tax revenue/ Total government revenue (%)	72.1	67.8	68.2	69.1	69.6	71.2	71.5	72.4	73.2	73.9
<b>Total government revenue (billion VND)</b>	<b>1,769,447</b>	<b>2,337,989</b>	<b>2,616,090</b>	<b>2,828,819</b>	<b>3,099,659</b>	<b>3,265,478</b>	<b>3,621,612</b>	<b>3,979,366</b>	<b>4,401,016</b>	<b>4,835,777</b>

*Source: Author's calculation.*

### **Assumptions on the Expenditure Side**

Similar to the revenue side, based on the current situation of two categories of government spending and the 5-year government plan, assumptions on state expenditure are as follows.

First, government spending continues to increase to finance a large budget deficit after the COVID-19 pandemic. The state budget expenditure increased significantly by more than 8 times from 197 trillion VND in 2003 to 1,616 trillion VND in 2018, and the speed of growth in government spending has become faster in the post-global financial crisis era to cover a large budget deficit in Vietnam. However, the recent global impact on the economy of Vietnam from the COVID-19 may put high pressure on the prospect of government revenues. Hence, for the period of 2020-2023, government spending will increase rapidly due to the decrease in tax revenue and for the period of 2024-2028, it is expected to increase at a lower rate thanks to the recovery of Vietnam's economy.

Second, recurrent expenditure as well as development investment expenditure are expected to continue to increase in terms of absolute value and proportion of total government spending, given the needs of infrastructure investment projects to enhance long-term economic growth. Accordingly, based on data for two categories of expenditure from 2003 to 2018, the average elasticity of each category of government expenditure on GDP for the past 16 years is calculated in Table 20.

**Table 20: Elasticity of Two Categories of Government Expenditure on GDP (2003-2018)**

	Nominal GDP (billion VND)	Recurrent Expenditure (billion VND)	Elasticity of Recurrent Expenditure	Development Investment Expenditure (billion VND)	Elasticity of Development Investment Expenditure
2003	613,443	95,608	-	59,629	-
2004	715,307	107,979	0.78	66,115	0.66
2005	914,001	132,327	0.81	79,199	0.71
2006	1,061,565	161,852	1.38	88,341	0.71
2007	1,246,769	204,746	1.52	104,302	1.04
2008	1,616,047	252,375	0.79	119,462	0.49
2009	1,809,149	303,371	1.69	181,363	4.34
2010	2,157,828	376,620	1.25	183,166	0.05
2011	2,779,880	467,017	0.83	208,306	0.48
2012	3,245,419	603,372	1.74	268,812	1.73
2013	3,584,262	704,165	1.60	271,680	0.10
2014	3,937,856	723,292	0.28	248,452	-0.87
2015	4,192,862	788,500	1.39	308,853	3.75
2016	4,502,733	822,343	0.58	296,451	-0.54
2017	5,005,975	881,688	0.65	372,792	2.30
2018	5,542,332	1,102,923	2.34	411,277	0.96

*Source: Author's calculation based on database of the MoF of Vietnam.*

Third, assuming that the change in two categories of total expenditure of government is based on the change in nominal GDP, elasticity of recurrent expenditure and development investment expenditure on GDP for the next 10 years (2019-2028) are calculated by a five-year moving average method (Table 21). For example, the elasticity of recurrent expenditure in 2019 is an average of elasticity from that of the recent 5 years (2014-2018).

**Table 21: Elasticity of Two Categories of Expenditures for the Period of 2019-2028**

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Recurrent expenditure's elasticity	1.05	1.20	1.16	1.28	1.41	1.22	1.25	1.26	1.29	1.29
Development Investment expenditure's elasticity	1.12	1.52	1.07	1.40	1.22	1.27	1.29	1.25	1.28	1.26

*Source: Author's calculations.*

Finally, based on the change of the share of recurrent expenditure and development investment expenditure on total government spending, the absolute value of total government spending for the period of 2019-2028 will be calculated as in Table 22. In fact, according to the MoF of Vietnam, in the past 16 years (2003-2018), the

share of two main categories of expenditure accounted for more than 70% of total government expenditure on average (Appendix 5). Along with high budget deficit and the deterioration of economic growth, the government has to borrow more in order to finance its spending. Thus, for the next 10 years, the proportion of two main categories on total expenditure is supposed to increase at a higher rate than in the previous period (2003-2018).

**Table 22: Simulation on Recurrent Expenditure, Development Investment Expenditure, and Total Government Expenditure for the Period of 2019-2028**

<b>Good case</b>	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Nominal GDP (billion VND)	6,079,938	6,839,930	7,694,922	8,649,092	9,712,930	10,849,343	12,107,867	13,476,056	14,998,850	16,693,721
① Recurrent expenditure (billion VND)	1,214,954	1,397,433	1,600,659	1,854,707	2,175,641	2,486,137	2,847,868	3,254,910	3,727,592	4,269,353
② Development Investment expenditure (billion VND)	456,052	542,711	615,527	722,131	830,069	952,978	1,096,045	1,250,739	1,432,231	1,636,415
① + ② (billion VND)	1,671,006	1,940,144	2,216,186	2,576,837	3,005,709	3,439,114	3,943,914	4,505,649	5,159,823	5,905,769
(① + ②) / Total government expenditure (%)	83.8	68.3	70.0	75.0	79.2	85.0	87.9	91.3	94.3	98.2
<b>Total government expenditure (billion VND)</b>	<b>1,993,830</b>	<b>2,840,295</b>	<b>3,165,511</b>	<b>3,434,210</b>	<b>3,794,671</b>	<b>4,045,276</b>	<b>4,485,361</b>	<b>4,937,051</b>	<b>5,469,583</b>	<b>6,015,412</b>

<b>Medium case</b>	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Nominal GDP (billion VND)	6,074,396	6,803,323	7,619,722	8,526,469	9,532,592	10,657,438	11,893,701	13,225,796	14,680,633	16,295,503
① Recurrent expenditure (billion VND)	1,214,304	1,393,729	1,592,201	1,843,075	2,164,459	2,484,294	2,856,745	3,273,814	3,751,605	4,299,633
② Development Investment expenditure (billion VND)	456,117	544,861	615,664	723,062	829,448	957,322	1,106,120	1,265,293	1,449,789	1,656,951
① + ② (billion VND)	1,670,421	1,938,590	2,207,865	2,566,137	2,993,908	3,441,616	3,962,865	4,539,108	5,201,394	5,956,584
(① + ②) / Total government expenditure (%)	82.8	66.7	68.8	74.0	78.7	84.9	88.0	91.6	95.1	99.1
<b>Total government expenditure (billion VND)</b>	<b>2,016,552</b>	<b>2,907,504</b>	<b>3,210,776</b>	<b>3,468,605</b>	<b>3,805,121</b>	<b>4,052,704</b>	<b>4,504,680</b>	<b>4,953,140</b>	<b>5,469,322</b>	<b>6,012,178</b>



**Table 22: Simulation on Recurrent Expenditure, Development Investment Expenditure, and Total Government Expenditure for the Period of 2019-2028 (Cont.)**

<b>Bad case</b>	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Nominal GDP (billion VND)	6,057,769	6,766,528	7,551,445	8,404,758	9,346,091	10,383,507	11,546,460	12,828,117	14,239,210	15,834,002
① Recurrent expenditure (billion VND)	1,210,808	1,385,136	1,575,682	1,811,026	2,109,998	2,402,828	2,750,278	3,148,110	3,607,556	4,144,440
② Development Investment expenditure (billion VND)	454,700	540,813	608,727	709,310	808,235	925,222	1,063,903	1,215,595	1,392,844	1,595,597
① + ② (billion VND)	1,665,508	1,925,949	2,184,410	2,520,336	2,918,233	3,328,050	3,814,181	4,363,705	5,000,400	5,740,037
(① + ②) / Total government expenditure (%)	81.6	66.0	67.8	72.9	77.4	83.4	86.6	90.7	94.6	99.2
Total government expenditure (billion VND)	<b>2,042,046</b>	<b>2,919,911</b>	<b>3,220,206</b>	<b>3,459,176</b>	<b>3,772,577</b>	<b>3,992,323</b>	<b>4,406,771</b>	<b>4,813,194</b>	<b>5,283,847</b>	<b>5,785,817</b>

Source: Author's calculation.

#### 4.2.2. Data

The data on nominal GDP, state budget revenue and expenditure for the period of 2003-2018 are collected from the Ministry of Finance of Vietnam. Meanwhile, the projected nominal GDP (in billion VND, at current market prices), the share of three categories of tax on nominal GDP and total government revenue, and the share of two categories of expenditure on nominal GDP and total government expenditure for the next 10 years are based on the author's estimations.

#### 4.2.3. Results and Discussion

From the simulations on total revenue and total expenditure of government, the overall budget deficit is calculated as follows.

Overall budget deficit = Total government expenditure – Total government revenue (20)

Moreover, following equation (13), the primary budget deficit and nominal interest rate have to be estimated in order to calculate public-debt-to GDP ratio. Particularly, equation (13) can be rewritten as follows.

$$\begin{aligned} \left(\frac{D}{Y}\right)_t - \left(\frac{D}{Y}\right)_{t-1} &= \frac{G_t - T_t}{Y_t} + (r - g) \left(\frac{D}{Y}\right)_{t-1} \\ \rightarrow \left(\frac{D}{Y}\right)_t &= \frac{G_t - T_t}{Y_t} + (1 - r + g) \left(\frac{D}{Y}\right)_{t-1} \end{aligned} \quad (21)$$

After the Global Financial Crisis and the sovereign debt crisis in Europe, the Vietnamese government has paid attention to managing fiscal positions at a stable level as well as lowering the public debt-to-GDP ratio. In fact, public debt remains at less than 60% of GDP for the last 3 years. However, the impact of coronavirus on the global economy, including Vietnam, may lead to a recession in GDP growth in the long-term and the forecasts on fiscal balance and public debt sustainability are needed to prevent a crisis in the future. The scenarios analyze the sensitivity of public debt dynamics in the medium to long-term under various macroeconomic assumptions and fiscal policy adjustments (Table 23 and Figure 21).

The interest rate of public debt is a combination of domestic and external public debt's interest rate. Effective interest rate of domestic public debt can be calculated in detail based on information about the number and yield of outstanding government bonds and government-guaranteed bonds. The interest rate of external public debt in the

future is assumed to be equal to the average interest rate during the period of 2013-2017, provided in the MoF's 8<sup>th</sup> Bulletin on external debt. The recent falling inflation trend in Vietnam has pushed real interest rates higher; however, after the global impact of coronavirus in 2020, increase in inflation rate may lead to a decline in nominal interest rate. The interest rate is forecasted to decrease within the range of 9-10%.

Primary budget deficit is calculated by taking overall budget deficit and excluding interest payment. This calculation depends on the subjective desires of government in planning budget revenue spending for a certain year. Thus, to capture the effects of fiscal orientation for public debt in the future, primary budget deficit is supposed to increase in 2020 because of the outbreak of the COVID-19 pandemic and afterwards, it is expected to decrease at the level of 3-4%, 4-5%, and 5-6% for the three scenarios of the good, medium, and bad case, respectively.

**Table 23: Simulation Results on Public Debt-to-GDP Ratio for the Period of 2019-2028**

<b>Good Case</b>	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Total government expenditure (billion VND)	1,993,830	2,840,295	3,165,511	3,434,210	3,794,671	4,045,276	4,485,361	4,937,051	5,469,583	6,015,412
Total government revenue (billion VND)	1,774,952	2,361,500	2,665,341	2,915,264	3,231,321	3,426,864	3,819,428	4,209,344	4,674,644	5,147,339
Overall budget deficit (billion VND)	-218,878	-478,795	-500,170	-518,946	-563,350	-618,413	-665,933	-727,707	-794,939	-868,073
<b>Overall budget deficit (% GDP)</b>	-3.6	-7.0	-6.5	-6.0	-5.8	-5.7	-5.5	-5.4	-5.3	-5.2
Interest payment (billion VND)	-36,480	-102,599	-115,424	-129,736	-155,407	-184,439	-205,834	-256,045	-284,978	-333,874
Primary budget deficit (billion VND)	-182,398	-376,196	-384,746	-389,209	-407,943	-433,974	-460,099	-471,662	-509,961	-534,199
Primary budget deficit (% GDP)	<b>-3.0</b>	<b>-5.5</b>	<b>-5.0</b>	<b>-4.5</b>	<b>-4.2</b>	<b>-4.0</b>	<b>-3.8</b>	<b>-3.5</b>	<b>-3.4</b>	<b>-3.2</b>
Nominal interest rate (%)	9.6	12.3	12.4	12.3	12.3	11.7	11.6	11.2	11.2	11.3
<b>Public debt-to-GDP ratio (%)</b>	<b>59.0</b>	<b>63.5</b>	<b>61.7</b>	<b>60.8</b>	<b>59.3</b>	<b>57.9</b>	<b>56.5</b>	<b>56.2</b>	<b>55.9</b>	<b>55.2</b>

<b>Medium Case</b>	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Total government expenditure (billion VND)	2,016,552	2,907,504	3,210,776	3,468,605	3,805,121	4,052,704	4,504,680	4,953,140	5,469,322	6,012,178
Total government revenue (billion VND)	1,773,576	2,349,631	2,639,297	2,871,753	3,166,437	3,359,970	3,743,483	4,119,915	4,559,123	5,001,857
Overall budget deficit (billion VND)	-242,976	-557,873	-571,479	-596,853	-638,684	-692,733	-761,197	-833,225	-910,199	-1,010,321
<b>Overall budget deficit (% GDP)</b>	-4.0	-8.2	-7.5	-7.0	-6.7	-6.5	-6.4	-6.3	-6.2	-6.2
Interest payment (billion VND)	-12,149	-108,853	-99,056	-102,318	-142,989	-159,862	-190,299	-238,064	-278,932	-342,206
Primary budget deficit (billion VND)	-230,827	-449,019	-472,423	-494,535	-495,695	-532,872	-570,898	-595,161	-631,267	-668,116
Primary budget deficit (% GDP)	<b>-3.8</b>	<b>-6.6</b>	<b>-6.2</b>	<b>-5.8</b>	<b>-5.2</b>	<b>-5</b>	<b>-4.8</b>	<b>-4.5</b>	<b>-4.3</b>	<b>-4.1</b>
Nominal interest rate (%)	9.5	11.8	11.9	11.8	11.7	11.8	11.5	11.1	10.9	10.9
<b>Public debt-to-GDP ratio (%)</b>	<b>61.2</b>	<b>67.5</b>	<b>65.8</b>	<b>64.3</b>	<b>63.2</b>	<b>60.4</b>	<b>59.7</b>	<b>59.3</b>	<b>59.1</b>	<b>59</b>

**Table 23: Simulation Results on Public Debt-to-GDP Ratio for the Period of 2019-2028 (Cont.)**

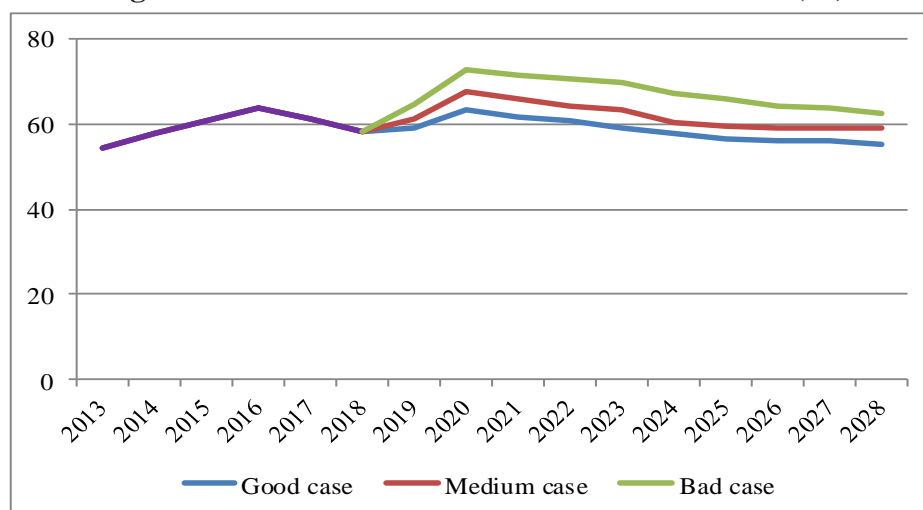
<b>Bad Case</b>	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Total government expenditure (billion VND)	2,042,046	2,919,911	3,220,206	3,459,176	3,772,577	3,992,323	4,406,771	4,813,194	5,283,847	5,785,817
Total government revenue (billion VND)	1,769,447	2,337,989	2,616,090	2,828,819	3,099,659	3,265,478	3,621,612	3,979,366	4,401,016	4,835,777
Overall budget deficit (billion VND)	-272,600	-581,921	-604,116	-630,357	-672,919	-726,846	-785,159	-833,828	-882,831	-950,040
<b>Overall budget deficit (% GDP)</b>	-4.5	-8.6	-8.0	-7.5	-7.2	-7.0	-6.8	-6.5	-6.2	-6.0
Interest payment (billion VND)	-30,289	-121,798	-113,272	-117,667	-130,845	-155,753	-184,743	-192,422	-185,110	-190,008
Primary budget deficit (billion VND)	-242,311	-460,124	-490,844	-512,690	-542,073	-571,093	-600,416	-641,406	-697,721	-760,032
Primary budget deficit (% GDP)	<b>-4.0</b>	<b>-6.8</b>	<b>-6.5</b>	<b>-6.1</b>	<b>-5.8</b>	<b>-5.5</b>	<b>-5.2</b>	<b>-5.0</b>	<b>-4.9</b>	<b>-4.8</b>
Nominal interest rate (%)	9.1	11.5	11.5	11.2	11.1	11.1	11.1	11.0	10.9	11.1
<b>Public debt-to-GDP ratio (%)</b>	<b>64.5</b>	<b>72.6</b>	<b>71.5</b>	<b>70.6</b>	<b>69.8</b>	<b>67.4</b>	<b>65.8</b>	<b>64.3</b>	<b>63.6</b>	<b>62.5</b>

*Source: Author's estimations.*

Accordingly, in the best scenario, except for the year 2020, primary budget deficit and public debt-to-GDP ratio are expected to be sustainable at the range of 3-4% and 55-60%, respectively. This decline reflects the assumption that the primary fiscal balance will be improved. Despite the global economic slowdown from the COVID-19, Vietnam should successfully recover its economy and control inflation rate. Furthermore, Vietnam cannot heavily rely on FDI inflows in the long-term and domestic investment will play a critical role for socioeconomic development. Since domestic investment is related to the change in capital, additional capital goods may improve economic growth as well as tax revenue from domestic enterprises. An increase in revenue from taxes will contribute to the reduction of public debt.

On the contrary, in the worst-case scenario, the public debt-to-GDP ratio increases significantly (around 70%), which is higher than the ceiling debt level regulated in the public debt management law in Vietnam. The element that contributes to raising public debt is a larger fiscal deficit with the highest level of -6.8% in 2020. If essential budget deficit continues to increase sharply and the government fails to bring public debt back to the right orbit, debt crisis would be unavoidable in the future. The medium scenario lies between the two scenarios above, in which primary budget deficit is simulated at -4.1% while public debt will be 59% of GDP by 2028.

**Figure 21: Scenarios of Public Debt-to-GDP Ratio (%)**



*Source: Author's estimations.*

In short, the simulation result suggests that public debt in Vietnam is expected to be sustainable for the next 10 years. This finding is in line with the modern money theory, which is stated by Wray (2014) wherein fiscal deficit would not constrain economic growth and the government may expand budget expenditure for the time being, by financing through issuing bonds. Meanwhile, government bonds should be utilized for financing expenditure fully for deficit. In fact, according to the ADB, the government bonds in Vietnam are not held by foreign investors (around 1% of total government holders), but mostly held by domestic entities (more than 90%) at present. Therefore, domestic debt by the public sector may be sustainable for the moment.

## **Chapter 5: Issues to be addressed and Policy Recommendations**

### **5.1. Problems and Issues**

The empirical results of the analysis show that the public debt has not put negative impact on economic growth in Vietnam for the past two decades. However, according to the current situation of fiscal position, Vietnam has no other choice but to continue borrowing to compensate for the recurrent spending of government, causing public debt to rise. Therefore, despite the public debt at the moment is not serious, it is important to take sustainable policies from the point of view of risk avoidance of external debt in the future.

Vietnam's public debt has not faced budget constraints as government bonds are mostly held by domestic institutions/investors. If the authorities maintain a large proportion of domestic shareholders in the government bonds market, Vietnam may prevent the risk of increasing external debt in the future. Indeed, for an advanced country like Japan, a high share of government bonds held by domestic institutions has contributed much to the stability of the financial sector over the last decades. Thus, it can be said that maintaining the sustainability of public debt by issuing government bonds for domestic investors is a major task for the Vietnamese government at the present.

Additionally, the government needs to consider the longer-term development of their taxation strategy to finance the fiscal deficit over the years. In particular, raising tax revenue is the most effective method that may help reduce budget deficit and public debt in the long run. To achieve this target, medium-term strategy and long-term strategy for tax reforms need to be introduced to increase the overall revenue sources in the long-run. Hence, this section discusses the issue of the two main factors that affect fiscal balance in Vietnam as follows.

#### ***5.1.1. Current policies' risks on capital account liberalization***

With the 2017 Roadmap for Developing the Bond Market under Decision No. 1191/QĐ-TTg, the MoF of Vietnam proposed these objectives for the roadmap: (i) increase the size of the existing bond market to 45% of GDP in 2020 and to 65% of



GDP in 2030,<sup>66</sup> (ii) the outstanding amount of government bonds, government-guaranteed bonds, and municipal bonds should be about 38% of GDP in 2020 and about 45% of GDP in 2030. It is noticeable that developing the government bond market is one of the priorities of the Vietnamese government in the coming years. Therefore, the critical issues for public debt management in Vietnam now are: (i) how the increased public bond issues will be dealt with in the future, (ii) how to maintain the currently high levels of government bonds held by domestic institutions, while reducing that of foreign investors to prevent an external debt crisis, and (iii) the introduction and strict control of bond trading to avoid sudden sales of short-term investments of foreign investors.

In addition, since the securities market in Vietnam is still underdeveloped, the bond market is mostly dominated by government bonds. As a result, FDI enterprises trading in Vietnam's stock market remain limited. However, according to the Roadmap in 2017, apart from government bonds, the foundation for the development of the bond market boosting the development of the corporate bond market to support enterprises in raising funds is also encouraged by the Vietnamese government with the target that corporate bonds outstanding should be about 7% of GDP in 2020 and 20% in 2030. If the major investors are foreign institutions, it may be risky for the underdeveloped financial market of Vietnam at present. Hence, in the future, when the financial market in Vietnam is highly integrated with the global financial market, the government may have to consider managing foreign exchange and transferring for the purpose of FDI.

However, the current public debt management law and Securities law in Vietnam remain with some shortages that need to be addressed as follows.

(1) "There is no regulation that limits foreign ownership in debt securities. Foreign investors can invest without restrictions in government bonds, government-backed bonds, local government bonds, and corporate bonds unless stipulated by the issuing organization" (ADB, 2018, p. 45).

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<sup>66</sup> This is because of the priority of Vietnamese government in promoting financial market in the long-term based on the current situation of bond market. In fact, the size of the bond market increased significantly from 19% of GDP in 2011 to 36.9% of GDP in 2016 which is close to the target level of 38% of GDP by 2020.

(2) Except for oil and gas sectors, there was no rule on foreign exchange management for outward investment activities until now.<sup>67</sup>

(3) Foreign investors may hold up to 100% stake in public companies if they satisfy several conditions of this law, except in some sectors related to national security.<sup>68</sup> However, in the future, if financial sectors are open for foreign entities with 100% ownership and they freely transfer the money, this may lead to great vulnerabilities within the financial system in the case of a surge in capital outflows.

(4) The total proportion of share ownership of foreign investors should not exceed 30% of the charter capital of a Vietnamese commercial bank. However, in 2018, the MoF of Vietnam drafted a revision of this decree to allow a foreign ownership ratio in commercial banks in Vietnam up to 50%.

It can be said that the Vietnamese government has eased the limits/restrictions on nonresident investors with regard to bond transactions, including the buying and selling of foreign currencies recently. However, without effective measures for capital management controls, Vietnam will face the high risk of financial fragility because a surge in capital inflows may lead to excessive foreign borrowing and foreign currency exposure, fueling domestic credit booms and asset bubbles (Ostry et al., 2010). Meanwhile, strong policies on capital flow controls helped developing countries like Malaysia in reducing financial fragility and growth slowdowns in the Asian crisis. Therefore, one of the most important majorities of Vietnam now is holding the high share of government bonds and public debt held by domestic institutions. Furthermore, in order to manage the risks of liberalized capital flows, besides macroeconomic policies, including monetary, fiscal, and exchange rate management, capital flows measures (CFMs) should be considered by the authorities in Vietnam.

Experiences of other developing countries on managing capital account liberalization in the past crises of the 1990s and 2000s may provide a good lesson for Vietnam in the context of increasing integration with the international financial market.

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<sup>67</sup> The regulation on foreign exchange management for outward investment in the petroleum industry, known as “Circular No. 31/2018/TT-NHNN”, was issued on December 18, 2018.

<sup>68</sup> These conditions include: (1) having licenses for 2 consecutive years of operation in banking, securities, and insurance sectors before the year of capital contribution or share acquisition in the relevant securities company; (2) the licensing authority of the country where the foreign investor is incorporated and the State Securities Commission of Vietnam have signed bilateral or multilateral cooperation agreements in the securities sector; (3) being profitable for 2 consecutive years before the year of capital contribution or share acquisition in the relevant securities company/FMC, and the financial statement of the latest year has been audited by an unqualified opinion.

The CFMs of these countries focused on two main policy measures for capital inflow and outflow controls and management. The methods of control in several countries are introduced specifically in the following table.

**Table 24: The CFMs in some selected countries**

<b>Measures designed to limit inflows</b>	
Indonesia	<p>2005 – Bank of Indonesia launched foreign currency swaps with 1-7 days maturity as an instrument of open market operations, provided 3-6 month swap facilities with the option of extension for hedging by investors, and prohibited margin trading of the rupiah against foreign currency.<sup>69</sup></p> <p>2011 – Imposition of a six-month holding period on central bank bonds and of a limit on short-term foreign borrowing by banks to 30% of capital.</p> <p>2015 – Non-bank corporations holding external debt in foreign currency were required to implement prudential principles by fulfilling a minimum hedging ratio by hedging foreign currency against the rupiah (starting from 2016, at least 25% of net foreign exchange liabilities maturing within six months; the minimum ratio was 20% in 2015); a minimum liquidity ratio by providing adequate foreign currency assets to meet foreign currency liabilities that mature within 3 months from the end of the quarter (70% from 2016; 50% in 2015). Starting from 2017, hedging transactions must be undertaken with banks in Indonesia.</p>
Brazil	2009 - Introduction of a 2 percent tax on portfolio equity and debt inflows
India	<p>1995 – Foreign portfolio investors (FPI) scheme covered investment by nonresidents in Indian securities including equity shares, government bonds, corporate bonds, and convertible securities.</p> <p>2018 – Limit for FPI investment in central government securities was increased by 0.5% each year to 5.5% of the outstanding stock of securities in 2018-2019 and 6% of the outstanding stock of securities in 2019-2020. Limits on all bonds and single/group investor-wise limits on corporate bonds were established and aggregate limits in government securities raised to 30% from 20%. FPI investment in corporate bonds with residual maturity below one year was permitted with a limit of 20% of the total investment, and in treasury bills issued by the Central Government. The single investor limit was raised from 20% to 25%.</p> <p>2013 – In 2013, limits on bank borrowing from banks' head offices were increased from 15% to 100% of unimpaired Tier I capital at the close of the previous quarter or US\$ 10 million (or its equivalent). Limit on the foreign currency hedging requirement was lowered to 75% of the exposure (from 100%).</p> <p>2015 – The policy was revised with fewer restrictions on end-uses and higher all-in-cost ceiling for long-term borrowings and borrowings denominated in rupee.</p> <p>2018 – Mandatory hedging requirement was reduced from 100% to 70% for external commercial borrowings under Track I with average maturity between 3 and 5 years.</p>
South Korea	<p>2010 – The maximum limits on banks' foreign exchange derivative contracts were set at 50% (domestic banks) and 250% (foreign bank branches) of the bank's capital in the previous month.</p> <p>2016 – The limits were raised to 40% for domestic banks and 200% for foreign bank branches.</p>
Thailand	2010 – Imposition of a 15 percent withholding tax on nonresidents' interest earnings and capital gains on new purchases of state bonds

<sup>69</sup> Kim & Sahminan, "Exchange Rate Movements in Indonesia: Determinants, Effects, and Policy Challenges", *Bank of Indonesia WP/25/2008*.

<b>Table 24: The CFMs in some selected countries (Cont.)</b>	
<b>Measures designed to limit outflows</b>	
China	2010 – Foreign central and commercial banks were permitted to invest in Chinese domestic (RMB) bonds.  2017 – Enforcement of FDI-related regulations were tightened with: (1) People’s Bank of China urging commercial banks to tighten their scrutiny of funds remitted through oversea direct investment (ODI); (2) ODI regulators paying close attention to certain irregular activities; and (3) SAFE requiring companies to explain to banks the sources and purposes of the investment funds
Argentina	2001 – Establishment of Corralito, which limited bank withdrawals and imposed restrictions on transfers and loans in foreign currency.
India	2003 – The limit on overseas direct investment was initially set at 100% of the net worth of Indian entities under the automatic route.
Malaysia	1998 – Imposition of 12-month waiting period for nonresidents to convert proceeds from the sale of Malaysian securities 2016 – Limits on foreign currency (FC) investments by residents with domestic ringgit borrowing were introduced.
Thailand	1997 – Imposition of limits on forward transactions and introduction of export surrender requirements.

*Source: IMF, 2012 & IMF 2019 Taxonomy of Capital Flow Management Measures.*

For the case of Vietnam, FDI and foreign portfolio investment (FPI) have increased significantly and contributed to GDP growth in the past two decades. Foreign capital inflows are predicted to rapidly increase because of a larger shift in investments from China to other countries, including Vietnam, especially after the COVID-19 pandemic. Because FDI is generally for long-term investments while FPI is considered to be for short-term, the former is less risky than the latter in this sense. Given inadequate regulations on limits and restrictions on capital inflows - outflows in Vietnam at the moment, such controls that are exemplified by the above countries’ practices need to be applied. The appropriate measures will be presented in the next part of this chapter.

### **5.1.2. Tax System Issues**

In order to sustainable fiscal structure and avoid increasing public debt in the long-term, improving tax revenue through structural tax reforms is one of the most critical tools. Along with the international trade integration progress, the indirect tax revenue in customs duty activities, such as import and export taxes, special consumption tax on imports, and value-added tax on imports, are in trend of decline due to the decrease in tax rate of import-export products. Thus, it is imperative to seek

alternative sources of revenue in the future in order to finance fiscal deficit. In particular, increasing the tax revenue of three main categories (corporate income tax, personal income tax, and VAT) is one of the most important priorities for the Vietnamese government in the next decades.

In fact, Vietnam has implemented four phases of tax reform over the past two decades with significant changes on tax law for a number of categories. However, the current system is not appropriate for several categories of tax as follows.

#### ***(a) Issue for Corporate Income Tax***

Corporate income tax rate was reduced from 22% in 2014 to 20% in 2016 and is proposed to decrease to 17% in the coming years. Tax incentives have been changed in the direction of increasing the reduction on tax rate and time-limited tax exemptions.<sup>70</sup> Although the purpose of reducing the CIT rate is to create a favorable investment environment for foreign investors, the subject of attracting FDI and sustainability in reducing the corporate tax rate could be a dilemma for tax revenue. Since the lower tax rates will decrease tax revenue and an impact on budget deficit may arise, as government is unable to cover the cost of providing public services with tax revenue (Haris, 2018).

Reduction of CIT rate to attract foreign investment in Vietnam is similar to other countries in ASEAN, such as Indonesia (from 30% in 2007 to 25% in 2010), Malaysia (from 27% in 2007 to 24% in 2016), and Thailand (from 30% in 2011 to 20% in 2013). However, evidence from empirical analyses in ASEAN countries showed that tax incentives have an insignificant effect on investment decisions and FDI flows (Banga, 2003; Gunadi et al., 2013). Indeed, large foreign companies can pay the tax, even if no advantage for tax regime is available in a potential country like Vietnam because tax difference is a small condition of investment location decision, compared to other factors, such as market size and labor cost (Vernon, 1977; Pham, 2004).

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<sup>70</sup>Under the new law on corporate income tax in 2013, the corporate income tax rates of 10%, 15%, or 17% are applied within 10 years or 15 years; tax exemption for up to 4 years, 50% reduction of tax for a maximum of 9 years for projects that applied the 10% tax rate, tax exemption for up to 2 years, 50% reduction of tax for a maximum of 4 years for investment projects in the locality or investment incentive fields (Van, 2019, p. 290).

### ***(b) Issue for Personal Income Tax***

Previous studies on the relationship between income tax and economic development (OECD, 2014; Ohta, 2017) argued that income redistribution would be good for total tax revenue and higher GDP growth. In addition, to reduce inequality, redistribution through taxes and benefits is one of the most direct tools. The empirical results also showed that fiscal balance would improve with the increase in income tax revenue accompanying a more progressive tax system. Accordingly, long-term GDP growth rate is increased only when expansion of disposable income in middle- and low-income groups push up consumer spending because consumption from the wealthy is small relative to total consumption in the national economy.

### ***(c) Issue for Value-Added Tax***

An improvement of progressive income tax would not only the government revenue and fiscal balance, but also promote economic growth (Ohta 2017). However, the dependence on VAT for tax revenue, which is now pursued by the Vietnamese government, is not fair and sustainable for the long-term, and it should be change from the point of view of income distribution for growth.

In fact, the Ministry of Finance has planned to raise the VAT rate to 12% since 2019. Once the VAT rate increases, commodity prices will also increase, which will reduce the demand for products. As a result, the demand for labor and capital inputs will decline. Therefore, increasing VAT rate should be considered cautiously to prevent adverse effects on economic growth and total tax revenue. Particularly, in the context of the global crisis because of the COVID-19 in 2020, economic growth in Vietnam is predicted to slow down with production and consumption suffering heavy losses. The proposal to increase the VAT rate may be inappropriate as of now.

## **5.2. Policy Recommendations**

This study attempts to suggest some policies on managing current public debt and fiscal deficit in order to achieve debt sustainability in the long-term. Based on the findings of this research, the policy recommendations focus on two main measures: (i) controlling capital flows and (ii) tax system reforms in accordance with reducing heavy

reliance on FDI while increasing domestic enterprise based on corporate income and personal income revenue at a progressive tax rate.

### **5.2.1. Capital Flow Management**

The government should consider how to manage the risk of capital flows liberalization and build the CFMs in accordance with the country's circumstances and objectives when there is a surge in capital inflows in the future. Strengthening prudential regulation, supervision, and risk management are necessary for Vietnam in the process of greater liberalization over the next decade in order to avoid the liquidity risk on public and external debt. In fact, along with the progress of state-owned enterprises' equitization and the development of stock market, the degree of capital account openness of Vietnam has increased significantly since 2008. Particularly, the Chinn Ito index (KAOPEN) increased from -1.21 in 2007 to -0.14 in 2008, and it remained at a stable level of -0.14 until 2017.<sup>71</sup> This index is higher than other Asian countries such as Thailand (-1.21). Therefore, the fundamental recommendation for the current policy of Vietnamese government is how to manage capital account liberalization while promoting financial market.

The recommendation concentrates on two categories of capital management and controls (capital inflows and capital outflows) in several ASEAN countries (such as Malaysia and Thailand in the past), which should be strictly monitored by Vietnamese authorities. The current restrictions on capital flow management and controls in Vietnam should be continued and improved to avoid selling government bonds to foreign investors freely.

#### **(a) Capital Inflow Control Measures**

Due to the lack of restrictions or limits on the bond market in Vietnam at present, the recommended measures on capital management and controls are as follows. This should be done with the policy of holding the current status of high share of government bonds and debt held by domestic institutions.

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<sup>71</sup> Data taken from [http://web.pdx.edu/~ito/Chinn-Ito\\_website.htm](http://web.pdx.edu/~ito/Chinn-Ito_website.htm)

*(i) Limits on purchases of government debt instruments by foreign institutions*

Since the current law on public debt management in Vietnam does not stipulate limits on the share of foreign institutions on domestic government bonds or onshore banks, the regulations on this issue need to be established. Such control is exemplified by India's practice, for instance, which limits foreign investors' purchases of government bonds or central government securities at less than 5% of the outstanding stock of securities that should be considered to apply.

*(ii) Limits on purchases of corporate bonds from domestic commercial banks and public companies by foreign investors*

The recent draft on foreign ownership ratio in commercial banks up to 50% by the MoF of Vietnam may impose risks of financial crisis in the future, if foreign-invested capital inflows boom. Hence, the government should keep the restriction on the shareholders of foreign portfolio investment purchases on corporate bonds from domestic commercial banks at less than 30% under the current law.

Meanwhile, the new Securities law allows foreign investors to hold up to 100% charter capital of a domestic securities company or securities investment fund management company, if it satisfies some condition under this law. The government should restrict the condition of foreign investors holding 100% in domestic institutions or consider increasing the limits to less than 50% to reduce the reliance on FDI and FPI inflows as well as avoid the risk of external shocks in the securities market in the future.

*(iii) Limits on overseas foreign currency bank borrowings and reserve requirement rate in foreign currency within domestic banks*

Since all public debts are dominated by strong currencies, especially USD, in the future, more strong policies need to be created to restrict or prohibit domestic financial institutions from borrowing short-term foreign currency. Furthermore, reducing the ratio of foreign currency credit should be applied by the government in order to stabilize the domestic currency exchange rate. Particularly, limits on bank overseas foreign currency borrowing need to be introduced. In addition, the regulations on a reserve requirement rate in foreign currency in domestic banks should be stricter, up to 10% from the current level of 4%.



*(iv) Absolute ceiling of foreign currency exchange*

Since the legal framework for foreign exchange management does not stipulate the absolute ceiling of foreign currency exchange in detail, the government should establish the regulations on this issue for certain transactions. In addition, certain amounts of foreign currencies are to be limited and if the foreign currency transaction exceeds a certain amount, it may require the authority's permission. Such controls that are exemplified by South Korea and Malaysia's practice, for instance, wherein the maximum limits on banks' foreign exchange derivative contracts were set at 30% (domestic banks) of the bank's capital in the previous month, or exporters must convert 75% of their foreign exchange proceeds from the export of goods into VND with a licensed onshore bank, should be considered to be adopted.

**(b) Capital Outflow Control Measures**

The government should establish the law on capital outflow management in order to ensure macroeconomic stability and allocation of capital resources. Regulations may also be necessary in actual operations. Vietnam could learn from the experiences of other developing countries that offshore investment projects must be monitored and managed. For instance, references from the current CFMs of China and Malaysia (Table 24) show the limits on overseas direct investment (ODI), such as: (i) tightening commercial banks to their scrutiny of funds remitted through ODI in the long-term; (ii) requiring domestic companies to explain to banks the sources and purposes of investment funds, and (iii) domestic banks are not allowed to participate in or facilitate offshore VND derivative trading in the short-term.

**5.2.2. Tax Reforms for Sustainable Fiscal Balance and Public Debt**

In the long-term, tax system should be reformed in the direction of increasing tax revenue of corporate income based on domestic enterprises while reducing tax exemptions for FDI enterprises. In particular, progressive income tax should be introduced and corporate tax rates are to be progressive with lower tax rate on SMEs while higher tax rate on large firms. In addition, heavier tax rates on high-income class

as well as lowering tax rate for the middle and low-income class should be applied in order to redistribute income and enhance economic growth.

### **(a) Corporate Income Tax**

*(i) Progressive tax for corporate income in the long-term should be introduced to improve the tax revenue from both domestic enterprises and FDI companies*

The government should consider increasing the current standard CIT rate of 20% to that of 25%-30% in the medium to long-term, depending on the tax base (taxable income) and the location of the taxpayer. This range of CIT rate is applied in other Asian countries, such as Indonesia, China, and the Philippines.

*(ii) Tax exemptions for foreign invested enterprises and big companies should also be abolished to achieve higher CIT revenue*

Current preferential tax rate (10%), reduction on tax (up to 50%), and time-limited tax exemptions (up to 10-15 years) for FDI enterprises and big companies in the domestic sector should be adjusted and/or removed to prevent tax avoidance or evasion from these companies because of the loophole in the legal framework of tax administration in Vietnam.

### **(b) Personal Income Tax**

In line with a trend of increasing GDP per capita in Vietnam, progressive tax on personal income needs to be applied for promotion of long-term sustainable economic growth. Moreover, how to use progressive tax rate as an effective measure to reduce inequality while improving redistribution income is also a critical issue for further discussion. To obtain this purpose, the Vietnamese government should consider applying the following policies.

*(i) Raising the tax rate on wealthy people while reducing the tax burden on middle and low-income groups*

Since the share of personal income tax on total tax revenue is expected to increase significantly over the next decade, progressive income tax should be promoted in the long-term. The government should refer to the experiences involving tax reform

of other countries, such as Japan and China, and consider changing from the current tax rate with the range of 5-35% to that of 3-45% in the next decade (2020-2030). Further, if Vietnam becomes an upper middle-income country as planned by 2035, the tax rate may adjust to 2-50%, according to the income level. In particular, the categories of tax should be levied for high-income individuals, such as the transaction of securities income tax and inheritance tax. Meanwhile, tax exemptions for low-income people, e.g. on pensions paid by the social insurance fund and income from preliminary processing of agricultural products, should be applied.

*(ii) Tax deduction for individuals and dependents*

The regulation on tax deduction for individuals and dependents, which was issued in 2013, is not appropriate for the current situation of personal income because of the significant changes in labor wages and consumer prices. In fact, due to the COVID-19 pandemic effects, the government has planned to increase the threshold of personal deduction to 11 million VND per month and deduction for each dependent of taxpayers to 4.4 million VND per month since 2020. In the medium to long-term, such adjustment of the threshold of tax reduction per taxpayer should be considered to increase in accordance with the increase in income per capita and inflation rate.

**(c) Value-Added Tax**

*(i) Progressive tax rate in the medium to long-term*

Corresponding with increases in personal income, the rise of the VAT rate is unavoidable in the long-term when consumption is in a trend of increase. Therefore, the government should consider carefully and make a plan for increasing VAT in the medium to long-term. Vietnam may refer to experiences of reformed VAT to reduce negative impacts on government revenue and economic growth in developed countries in Europe, especially the northern part. In these countries, “the income distribution function is much more effective and various low tax reductions and redistributions by improvement of the pension system are carried out for relative low-income groups in Sweden and other Nordic countries” (Ohta 2017, p. 102).

In addition, since VAT is not sustainable at a higher rate in the long-term, the government should determine how much fiscal revenue and GDP growth would be

affected by the increase VAT rate before applying the tax policy. Vietnam may refer to the experiences of advanced countries in Europe in using tax as a tool to lessen the burden on low-income groups and to remove adverse effects on economic growth.

*(ii) Tax exemptions and/or reductions in VAT for essential goods*

Exemptions and/or reductions in VAT for essential goods (like in European countries) with improved welfare payments for all people (e.g. Nordic countries) should be applied under the condition of developing statistics on tax base for households. To achieve this goal, statistics on tax base for households are necessary. In the next decade, the government has to build a database of taxpayers (such as an e-taxation system) to improve the efficiency of tax administration.

## CONCLUSION

Vietnam's public-debt-to-GDP ratio has increased significantly since the Global Financial Crisis in 2008 and maintained the highest level among ASEAN countries. This ratio stems from rising fiscal deficit accumulated over the years. Despite recent increases in public spending induced by high demands for infrastructure and socioeconomic development projects, the effectiveness of public investment is relatively low. In addition, the share of development investment expenditure in total government spending experienced a decreasing trend, whereas the share of recurrent expenditure rose up quickly. The government revenue collected from customs duties also faced downside pressure essentially because of Vietnam's commitments to joining a number of free trade agreements, including those that reduced tariffs. Moreover, recent trend of tax reforms have accelerated reduction of tax revenues from corporate income tax and general reduction of tax rates for income tax. Therefore, public debt management and reducing budget deficit appear to be some of the most important issues facing economists and policymakers in Vietnam. This justifies the motivations for exploring the topic of public debt sustainability in Vietnam.

This research attempts to determine the sustainable level of public debt for long-term economic growth of Vietnam, which has been largely ignored in previous studies. For this purpose, there is a theoretical framework for empirical analysis within this study and a literature review of related empirical studies. The effect of public debt is examined by estimating panel data for five countries, namely Indonesia, Malaysia, the Philippines, Thailand, and Vietnam over the period from 1995 to 2018. In addition, this study projects the public debt-to-GDP ratio for the next ten years from 2019 to 2028. Drawing upon the main results, some policy recommendations for public debt management in Vietnam are discussed. The main findings of this research are summarized as follows.

First, this study examines the link between public debt and economic growth in Vietnam covering two periods of 1995-2018 and 2005-2018. More specifically, dynamic panel data is constructed for five ASEAN countries, including Indonesia, Malaysia, the Philippines, Thailand, and Vietnam. The effect of public debt on the

economic growth of Vietnam is captured by incorporating a dummy variable for Vietnam in the regression. Furthermore, a system GMM estimator is employed to control for endogeneity concerns and the dynamic nature of the dependent variable. A set of control variables, such as gross fixed capital formation, labor force, and FDI, is used to account for the effect of other confounding factors on economic growth. This helps reduce omitted variable bias. The results reveal that public debt has a positive and statistically significant effect on economic growth with data from 1995 to 2018. By contrast, the estimated coefficient of public debt shows that there is no significant relationship between the public debt and growth during the period 2005-2018. The interpretations of the main findings hold that the Global Financial Crisis in 2008 constrained the impacts of public debt and other control variables on economic growth. An additional explanation is that the increases in domestic investment and FDI have recently witnessed a decreasing trend. Further, ASEAN countries have recently experienced significant structural transformation, which is characterized by the increasing contribution of the services sector to economic growth. Importantly, it is well established in previous empirical studies that increased public debt drives robust economic growth. This study also finds that FDI and gross fixed capital formation are key determinants of economic growth of ASEAN economies.

Second, this study investigates the relationship between tax revenue and economic growth in Vietnam from 1997 to 2017. Because Vietnam has undergone fundamental tax reforms since the 1990s, the classifications of taxes have been adjusted over the years. For this reason, it is important to examine the relationship between total tax revenue and three sub-categories of taxes, including corporate income, personal income, and VAT taxes. The OLS estimates show that economic growth has a positive, but statistically insignificant effect on tax revenue. This finding can be explained by the fact that tax exemption and lower corporate tax rate led to lower contribution of revenues despite of high rate of economic growth in Vietnam. In addition, revenues collected from corporate income and value-added taxes have positive impacts on total tax revenue. These results are consistent with the fact that these two categories of taxes account for two-thirds of total tax revenue. Likewise, evidence of the positive effect of domestic investment and FDI on total tax revenue is found.

Third, this study projects the public debt-to-GDP ratio and fiscal deficit for the next ten years (2019-2028) by performing numerical simulations on tax revenue and government expenditure. The results demonstrate that Vietnam's public debt levels are expected to be sustainable in the range of 55-63% of GDP by 2028. Fiscal balance should be improved in the long-term if government bonds are utilized to finance expenditure to reduce fiscal deficit.

Fourth, this research proposes some policy recommendations for public debt management in Vietnam as follows. In particular, foreign debt and financial fragility can be reduced by controlling capital inflows. For instance, the current regime of capital management and controls should be kept for the next decades to avoid the risk of capital outflows, which would not sustain the public debt in a certain level in Vietnam. Moreover, personal income tax and corporate income tax should be reformed with more progressive way. Specifically, corporate income tax imposed on domestic enterprises should be increased while tax incentives and exemptions for FDI companies should be decreased. Income tax system should be more progressive to improve the income distribution and stimulate growth of the economy. This also may increase the total revenue due to higher economic growth. In addition, exemptions and/or reductions in VAT for essential goods should be applied to prevent the negative effects of a higher VAT rate on economic growth.

A limitation of this paper is that data is available for a limited time period, thus constraining the feasible sample size. Furthermore, public debt and its squared term are incorporated in two separate econometric models, mainly because they are highly correlated. However, this empirical exercise makes it difficult to identify the turning point of the non-linear relationship between public debt and growth in Vietnam. This leaves room for future research examining the optimal level of public debt in Vietnam.

Moreover, a potential avenue for future research is to identify the channels through which public debt transmits to economic growth. In addition, future studies should conduct a comparative analysis of public debt situations in each ASEAN country to obtain a comprehensive understanding of the debt-growth nexus in Southeast Asia. It should be noted that most ASEAN countries have not achieved high-income status. Further studies exploring this literature in ASEAN countries, therefore, may explore

potential heterogeneity in the effect of public debt on the economic growth associated with different stages of economic development.

Finally, a central focus of this study is to explore public debt sustainability in Vietnam based on simulations of tax revenue. However, as the frequent changes of tax system in the past decades, fair judgment may be difficult to evaluate the tax revenue and fiscal balance, as well as projections of public debt in the future. Moreover, the scarcity of data does not allow one to empirically investigate the relationship between tax revenue and growth. Therefore, further studies may focus on analyzing the growth effect of different categories of taxes. Additionally, it may be important to understand how long it may take for public debt to be financed by issuing government bonds to reduce budget deficit until the tax system is improved and reformed.



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### **English**

World Bank

<https://data.worldbank.org/indicator>

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International Monetary Fund

IMF (2020): <https://www.imf.org/external/pubs/ft/weo/2020/01/weodata/index.aspx>

Asian Development Bank

<https://www.adb.org/publications/series/key-indicators-for-asia-and-the-pacific>

The Chinn Ito index

[http://web.pdx.edu/~ito/Chinn-Ito\\_website.htm](http://web.pdx.edu/~ito/Chinn-Ito_website.htm)

### **Vietnamese**

Review of Finance

<http://tapchitaichinh.vn/ngan-hang/than-trong-voi-noi-long-tien-te-thoi-covid19-319042.html>

## APPENDIX 1

**Table 1: Descriptive Statistics**

	GDP	Ini_GDP	GFCF	LF	Fiscal	FDI	Debt	Debtsq	REER
Mean	3.4226	8.0083	25.54	17.452	-1.8153	3.029	46.287	2375.51	97.971
Median	4	7.97	24.5	17.48	-1.69	2.83	43	1852.7	97.3
Maximum	7.7	9.4	43.1	18.7	4.8	9.71	95.9	9195.6	143.3
Minimum	-14.4	6.44	18.7	15.94	-9.02	-2.76	12.2	149.2	64.4
Std. Dev.	3.165	0.739	4.991	0.735	2.293	2.159	15.327	1627.163	11.718
Skewness	-2.917	-0.040	1.224	-0.312	-0.392	0.550	0.695	1.846	0.838
Kurtosis	14.320	2.239	4.623	2.543	3.742	4.052	4.131	7.380	5.017
Jarque-Bera	777.155	2.805	41.349	2.864	5.577	11.110	15.391	157.264	32.939
Probability	0	0.24601	0.00000	0.23878	0.06153	0.00387	0.00046	0	0
Sum	393.6	920.96	2937.1	2007.08	-208.77	348.34	5323.1	273183.7	11266.63
Sum Sq. Dev.	1141.821	62.29199	2839.976	61.66595	599.2801	531.4642	26781.16	3.02E+08	15652.67
Observations	115	115	115	115	115	115	115	115	115

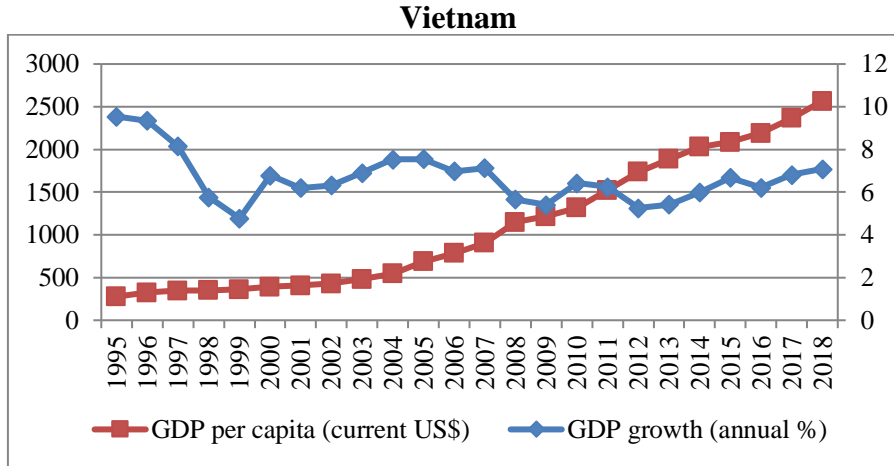
*Source: Author's calculation based on data of the ADB, IMF, and WB*

**Table 2: Correlation Matrix**

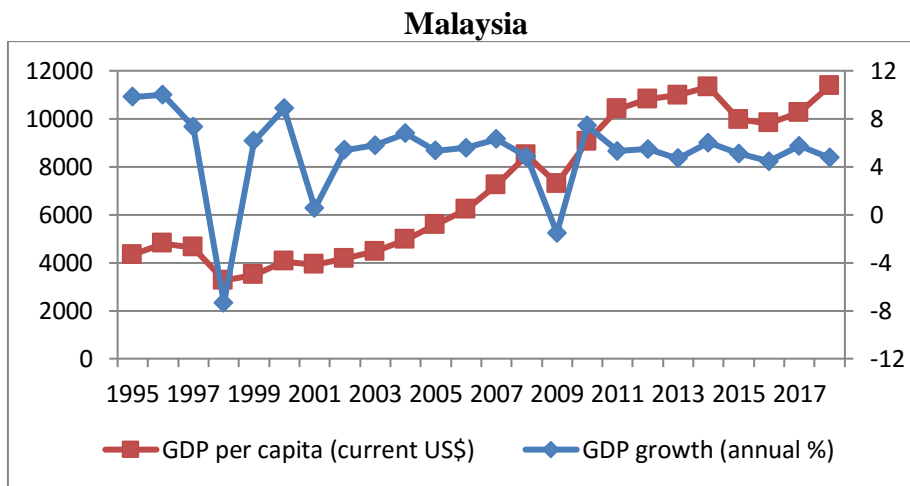
	GDP	Ini_GDP	GFCF	LF	Fiscal	FDI	Debt	Debtsq	REER
GDP	1								
Ini_GDP	-0.150	1							
GFCF	0.192	-0.059	1						
LF	0.090	-0.505	0.144	1					
Fiscal	0.119	-0.017	0.287	0.143	1				
FDI	0.317	-0.199	0.319	-0.222	-0.186	1			
Debt	0.211	-0.340	-0.341	-0.016	0.137	0.095	1		
Debtsq	0.165	-0.363	-0.310	0.044	0.126	0.087	0.972	1	
REER	0.256	0.035	0.107	0.048	0.100	0.128	0.021	-0.004	1

*Source: Author's calculation based on data of the ADB, IMF, and WB*

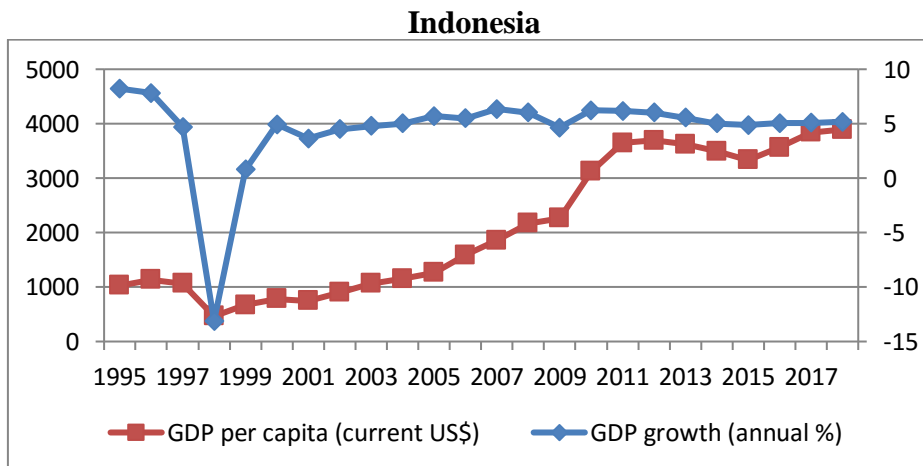
**APPENDIX 2: GDP per capita (Left axis, \$US 2010 price),  
And growth rate (Right axis, %), 1995-2018**



Source: World Bank Indicators



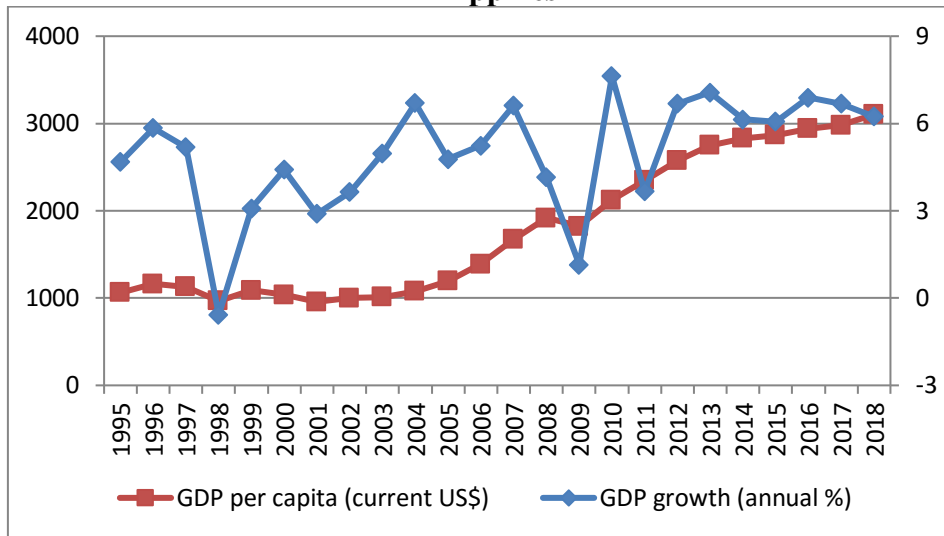
Source: World Bank Indicators



Source: World Bank Indicators

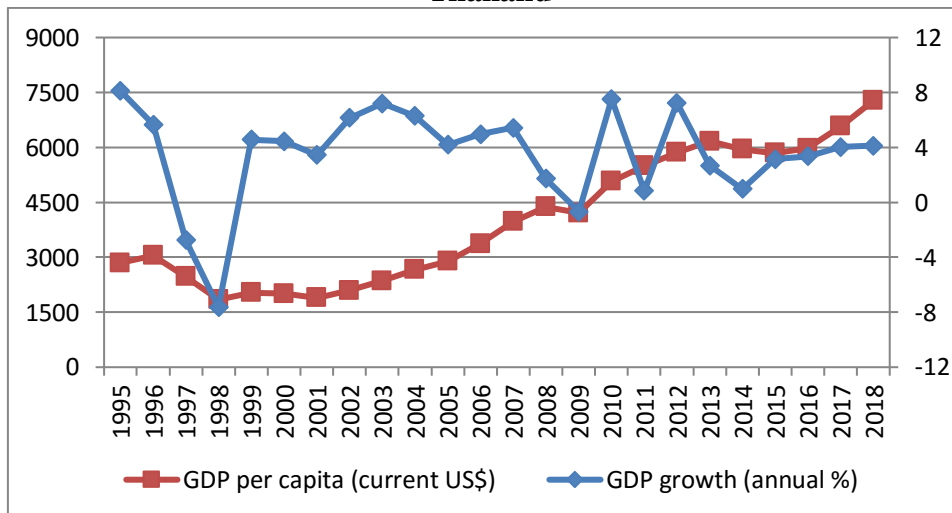


### Philippines



Source: World Bank Indicators

### Thailand



Source: World Bank Indicators

### Appendix 3: Correlation Matrix

	GDP	TAX	CIT	PIT	VAT	S	I	FDI	NON_AGR
GDP	1								
TAX	0.358	1							
CIT	0.313	0.817	1						
PIT	-0.278	-0.071	0.071	1					
VAT	-0.212	0.559	0.490	0.643	1				
S	0.328	0.341	0.382	-0.447	-0.303	1			
I	0.344	0.775	0.537	-0.503	0.238	0.327	1		
FDI	-0.126	0.060	-0.124	0.214	0.400	-0.655	0.159	1	
NON_AGR	0.153	0.383	0.460	0.543	0.657	-0.202	0.143	0.136	1

Source: Author's calculation based on data of the MoF of Vietnam, ADB, IMF, and WB

### Appendix 4: Total government revenue and Total tax revenue (Classified by revenue of CIT, PIT, VAT) for the period 2003-2018

	Share of CIT revenue on total tax revenue (%)	Share of PIT revenue on total tax revenue (%)	Share of VAT revenue on total tax revenue (%)	Share of (CIT + PIT + VAT) revenue on total tax revenue (%)	Share of total tax revenue on total government revenue (%)
2003	37.0	2.3	25.9	60.3	81.0
2004	36.6	2.3	24.9	58.4	78.3
2005	39.5	2.2	23.9	61.0	80.3
2006	42.2	2.2	23.3	63.5	81.7
2007	38.9	2.8	26.0	62.4	79.9
2008	37.8	3.6	25.2	<b>62.4</b>	<b>83.5</b>
2009	30.1	3.8	29.1	<b>57.2</b>	<b>80.0</b>
2010	30.8	5.4	32.1	62.6	82.1
2011	31.7	6.2	31.0	64.5	85.7
2012	34.9	7.3	28.2	65.9	84.0
2013	33.7	6.8	30.4	65.7	82.7
2014	29.0	6.7	33.6	63.1	81.7
2015	26.4	7.5	33.3	59.2	75.8
2016	23.4	8.1	33.7	56.0	72.9
2017	23.1	8.6	33.8	55.6	70.8
2018	24.6	9.2	33.6	58.0	71.8

Source: Ministry of Finance of Vietnam

### Appendix 5: Total government expenditure classified by two main categories

	① Share of recurrent expenditure on total government expenditure (%)	② Share of development investment expenditure on total government expenditure (%)	Share of on ① & ② on total government expenditure (%)
2003	48.4	30.2	78.6
2004	43.4	26.6	70.0
2005	42.2	25.3	67.5
2006	42.0	22.9	64.9
2007	43.6	22.2	65.8
2008	42.7	20.2	<b>62.9</b>
2009	42.4	25.4	<b>67.8</b>
2010	44.3	21.5	65.8
2011	45.2	20.1	65.3
2012	51.5	23.0	74.5
2013	55.1	21.3	76.4
2014	54.0	18.5	72.5
2015	52.5	20.6	73.1
2016	52.2	18.8	71.1
2017	65.1	27.5	92.6
2018	68.2	25.4	93.7

*Note: Data for 2018 is the 2<sup>nd</sup> estimation.*

*Source: Ministry of Finance of Vietnam*