School of Economics and Finance

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An Assessment of the Economywide Effects of Vietnam's Ongoing Microeconomic Reform

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Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

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Abstract

Vietnam implemented the *Doi Moi* (or Renovation) policy in 1986. This policy involved the introduction of many structural reforms in an attempt to move Vietnam towards a market economy. As part of *Doi Moi*, Vietnam's two ongoing microeconomic reform programs aimed at domestic enterprises are of particular significance, including state-owned enterprise (SOE) reforms and the private sector development (PSD) policy. This thesis develops a computable general equilibrium (CGE) model of Vietnam (referred to as VNGEM) with twenty four industries, six labour groups based on educational qualifications and one representative household, which aims to assess the likely effects of these reform programs on Vietnam's national economic outcomes and industries.

These reform programs are found to be pro-growth as reflected in their contribution to increasing aggregate output in both short and long run. This output increase is largely the result of export expansion and local market expansion due to relatively lower domestic price levels. Hence, Vietnam experiences an expansion in aggregate employment and a trade surplus in the short run. Likewise, these reform programs generate positive welfare effects on household consumption in the long run as real wages and labour incomes rise. In terms of industry winners and losers, the most favourably affected industries in the short run include steel, electrical, and textile, clothing and footwear (TCF), while the least favourably affected industries include construction and public administration. These least favourably affected industries are either non-traded or inward-oriented. Hence, they do not benefit much from trade expansion. Similarly, the most favourably affected industries in the long run include electrical, steel and other manufacturing, while the least favourably affected industries include rice and paddy, and oil, gas and petroleum (OGP). These industries are least favourably affected because of rising labour cost and an increasing land rental rate, which significantly hamper their economic activities.

The findings in this thesis suggest that promoting the private sector and, at the same time, reducing or removing the preferential treatment by the government of the SOE sector can solve Vietnam's employment problem. Export-oriented industries such as the TCF industry are well positioned to absorb Vietnam's labour force. To reduce trade deficits, domestic import-substituting producers need to improve their

product quality and prices that are comparable to foreign goods in the medium and long term. Besides providing vocational training for workers, the government needs to improve domestic human capital through education, and research and development (R&D) in order to acquire a sufficient number of high-skilled personnel to work with new technologies, machinery and equipment. Finally, to achieve greater reform outcomes, SOE reforms should be extended to include medium to large SOEs across all industries. Some areas of improvement include: (i) managing and utilising the compensation funds more wisely; (ii) unleashing the private sector and encouraging its participation in the equitisation process; (iii) improving the fairness and transparency of the equitisation process; (iv) improving the asset valuation method and strictly governing activities related to management buyouts and bankruptcy; (v) establishing a new structure of corporate governance to provide checks and balances in an enterprise; and (vi) reducing the government's political influence on SOEs and equitised SOEs.

JEL classifications: C68, O53, P22.

Keywords: SOE reform, equitisation program, competition policy, private sector development, preferential treatment, CGE model.

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Abbreviations

ADB	Asian Development Bank
AFTA	ASEAN Free Trade Agreement
AMCs	Asset Management Companies
ASEAN	Association of South East Asian Nations
ATM	Automatic Teller Machine
BIDV	Bank for Investment and Development of Vietnam
BOPs	Balance of Payments
BTAs	Bi-lateral Trade Agreements
CAD	Current Account Deficit
CEPT	Common Effective Preferential Tariff
CES	Constant Elasticity of Substitution
CET	Constant Elasticity of Transformation
CGE	Computable General Equilibrium
CIE	Centre for International Economics
CIEM	Central Institute for Economic Management
CMEA	Council for Mutual Economic Assistance
CN	Canadian National (a company name)
CPE	Centrally Planned Economy
CPI	Consumer Price Index
CRS	Constant Returns to Scale
DBS	Development Bank of Singapore
EAAU	East Asia Analytical Unit
EFs	Equitisation Funds
EOI	Export-Oriented Industrialisation
EPZs	Export-Processing Zones
EU	European Union
EV	Equivalent Variation
FDI	Foreign Direct Investment
FIEs	Foreign-Invested Enterprises
FTA	Free Trade Agreement
FYPs	Five-Year Plans
GATT	General Agreement on Tariff and Trade

GCs	General Corporations
GDP	Gross Domestic Product
GNE	Gross National Expenditure
GSO	General Statistics Office
GTAP	Global Trade Analysis Project
HCMC	Ho Chi Minh City
HIP	Heavy Industry Priority
IA	Indochina Airlines
ICT	Information, Communication and Technology
IMF	International Monetary Fund
I-O	Input-Output
ISI	Import-Substitution Industrialisation
JSBs	Joint-Stock Banks
JVBs	Joint-Venture Banks
JVs	Joint Ventures
LES	Linear Expenditure System
MBOs	Management Buyouts
MDHDB	Mekong Delta Housing Development Bank
MFN	Most-Favoured Nations
MNCs	Multinational Corporations
MoF	Ministry of Finance
MoT	Ministry of Trade (recently renamed as MoIT)
MoIT	Ministry of Industry and Trade (previously known as MoT)
NA	National Assembly
NPLs	Non-Performing Loans
NSEs	Non-State Enterprises
NTBs	Non-Tariff Barriers
ODA	Official Development Assistance
OECD	Organisation of Economic Cooperation and Development
OGP	Oil, Gas and Petroleum
OMOs	Open Market Operations
PPF	Production Possibility Frontier
PSD	Private Sector Development

PVN	PetroVietnam (a company name)
QRs	Quantitative Restrictions
R&D	Research and Development
SAM	Social Accounting Matrix
SBV	State Bank of Vietnam
SCIC	State Capital Investment Corporation
SMEs	Small and Medium Enterprises
SOCBs	State-Owned Commercial Banks
SOEs	State-Owned Enterprises
T-bills	Treasury Bills
TCF	Textile, Clothing and Footwear
TFP	Total Factor Productivity
UK	United Kingdom
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Program
UNIDO	United Nations Industrial Development Organisation
USBTA	The US-VN Bi-lateral Trade Agreement
USD	United States Dollar
VBARD	Vietnam Bank for Agricultural & Rural Development
VBIT	Vietnam Bank for Industry and Trade
VBSP	Vietnam Bank for Social Policies
VCAD	Vietnam Competition Administration Department
VCC	Vietnam Competition Council
VCP	Vietnamese Communist Party
VDB	Vietnam Development Bank
VLSS	Vietnam Living Standard Survey
VNCC	Vietnam Cement Corporation
VND	Vietnam Dong
VNGEM	General Equilibrium Model of Vietnam
VSC	Vietnam Steel Corporation
WRF	Worker Redundancy Fund
WTO	World Trade Organisation

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Chapter 1
Introduction

1.1 Background

After its national unification in 1975, the Vietnamese Communist Party (VCP) led a Soviet-style centrally planned economy (CPE). This economic model failed to achieve almost all planned economic targets in the period 1976-80. At the same time, many economic problems occurred including slow economic growth, high unemployment, food shortages and rising food prices, aggravated by Vietnam's loss of financial aid from the Soviet Union and China. These contributed to the country's overall poor economic performance up until the beginning of the 1980s (Sepehri and Akram-Lodhi, 2002).

To escape from those crises, Vietnam introduced the *Doi Moi* (or Renovation) policy in 1986 in an attempt to move towards a market economy. The *Doi Moi* policy was implemented with many structural reforms, most of which have been implemented on an ongoing basis consistent with Vietnam's overall gradualist approach. As a result, Vietnam's performance since *Doi Moi* has improved significantly. In other words, Vietnam's impressive economic performance since *Doi Moi* has been the result of a vast number of policy changes implemented from 1986 onwards. Among these, Vietnam's two ongoing microeconomic reform programs aimed at domestic enterprises are of particular significance, including the state-owned enterprise (SOE) reforms and the private sector development (PSD) policy.

1.2 Issues and Questions

Microeconomic reform has been a common practice, which aims at improving the economic efficiency of sectors in an economy. Many countries around the world, such as Australia and New Zealand, implemented such reform in the 1980s and 1990s and acclaimed its successes upon completion. However, many transitional economies in Eastern Europe, such as Ukraine, Belarus and Czech Republic, struggled with many problems associated with a big bang approach to reform.

China, and then Vietnam, a transitional economy, soon realised the seriousness of such approach, thereby adopting a gradualist approach to reform instead. The Vietnamese reform, in particular, had a mixture of both successes and failures. For instance, successful reform outcomes were linked to high output growth rates, increasing labour incomes and moderate unemployment rates. However, many problems were worth considering, such as persistent current account and trade deficits, huge external debt, and relatively high inflation rates. Worse still, there remain many unfavourable economic conditions such as weak public management, bureaucracy, red-tape, corruption, and rapidly changing laws and regulations.

Over time, the influence from the central planning days largely explains why Vietnam has made such a slow and incomplete transformation process towards a market economy. Such influence restricted the ability of the Vietnamese government in formulating and implementing its public policies, which were often designed with multiple contradictory objectives and lacked consistent coordination across ministry lines. Likewise, many policies (such as industrial and trade policies) were aimed at creating high protection for domestic SOEs. Regardless of being granted many privileges, these SOEs failed to deliver outstanding performance and also failed to lead the economy's growth. The weaknesses of the SOE sector, coupled with the under-development of the non-state enterprise (NSE) sector, have been a formidable challenge to Vietnam's future growth path. To accelerate and sustain growth, Vietnam has to re-examine its SOE reforms and PSD policy, aiming at further improving economic efficiency of all domestic enterprises.

Given its unique features of having a historically low resource endowment due to wartime and a very complex socio-economic setting, Vietnam represents a good case study for investigating microeconomic reform since *Doi Moi*. Therefore, the key objective of this thesis is to develop a computable general equilibrium (CGE) model of Vietnam (referred to as VNGEM) to assess the likely effects of SOE reforms and the PSD policy on Vietnam's national economic outcomes and industries. VNGEM is a comparative-static model, representing the Vietnamese economy with twenty four industries producing twenty four commodities, which can be produced domestically or imported from abroad. There are four margin commodities, six labour groups categorised by educational qualifications and one representative household. Both short-run and long-run simulations are conducted by hypothetically increasing the across-the-board primary factor productivity by 5 per

cent. In so doing, this thesis provides a numerical benchmark for investigating the direct and indirect effects, as well as identifying the winners and losers from these reform programs. Accordingly, this thesis attempts to answer the following research questions:

i. How does Vietnam's microeconomic reform contribute to the national output and employment growth?
ii. How does such reform affect different industry groups?
iii. What is the effect on the labour market in both short and long run?
iv. Does the reform generate any positive welfare effects? How?
v. What can be done to further improve the reform outcomes?

The development of VNGEM in this thesis is aimed at closing several literature gaps. First, this thesis contributes to the literature of privatisation in a context of a transition economy like Vietnam, which has not been investigated at the macro level in any great detail. Second, this thesis extends the current literature by investigating the impacts of Vietnam's reform programs not only on GDP growth and employment, but also on many other macroeconomic variables mentioned above in a general equilibrium context. Third, while previous studies investigate whether or not privatisation, as part of the reform packages, generates positive, negative, or neutral effects on productivity, this thesis deliberately assumes the positive impacts of Vietnam's reform programs not only on firms' efficiency, but also on industries' efficiency. It then investigates the likely impacts of these efficiency gains on industries, and on the macro-economy of Vietnam. Fourth, this thesis extends the work of Chisari et al. (1999) by using more generalised CES (constant elasticity of substitution) functional forms in replacement of the Cobb-Douglas ones. It also extends the work of Pham and Mohnen (2012) by adopting a more realistic assumption of a small open economy of Vietnam. Finally, the use of VNGEM could generate simulation results for both short-run and long-run effects of SOE reforms on the Vietnamese economy. In addition, VNGEM identifies winners and losers from such reforms, and quantifies the general welfare effects on the overall Vietnamese economy. The decomposition technique in VNGEM provides detailed expositions of the sources of output growth.

1.3 Chapter Outlines

The remainder of the thesis is organised as follows. Chapter 2 starts with an overview of the Vietnamese economy since *Doi Moi*. The discussion on some of the key performance indicators of Vietnam shows that the country's post-*Doi Moi* economic performance has changed dramatically and impressively. The changes in economic performance have been the result of many macroeconomic policies being implemented during this period. Among these, Vietnam's industrial, trade and monetary policies play an important role in fostering the country's economic growth. Therefore, Chapter 2 also discusses these macroeconomic policies to provide a better understanding of the contributing factors to Vietnam's impressive economic performance after *Doi Moi*. Such policy discussion also sheds light on why Vietnam still struggles with many difficulties such as persistent trade deficits, huge external debt and relatively high inflation rates. Over time, the influence from the central planning days largely explains why Vietnam's macroeconomic policies were, in general, so restrictive, interventionist and protectionist, which seriously held back the liberalisation process, as well as holding back the overall transformation process towards a market economy.

Vietnam's restrictive, interventionist and protectionist macroeconomic policies largely explain the high protective barriers erected for domestic producers, especially domestic SOEs. Regardless of being granted many privileges, these SOEs could not lead the economy towards favourable economic outcomes. In this respect, Chapter 3 discusses Vietnam's microeconomic reform of domestic enterprises to describe the overall SOE sector and its reform process since *Doi Moi*. To achieve favourable reform outcomes, the private sector needs to be developed to its full potential with consistent domestic policies. Ideally, the private sector should replace the SOE sector in leading the economy, creating more employment opportunities and sustaining growth in the future. First, Chapter 3 discusses SOE reforms by briefly introducing the SOE sector, which has long been enjoying preferential treatment from the government, explaining the reasons for reforming this sector, and evaluating the overall SOE reform process over the past decades. In this respect, the equitisation program and competition policy are important for promoting the economic efficiency and competitiveness of SOEs and other enterprises in Vietnam. Second, Chapter 3 discusses the private sector development (PSD) policy, starting with a discussion on the private sector, which faces many ongoing obstacles. This section also discusses

the benefits of developing the private sector and proposes ways to develop this sector as a leading economic force in Vietnam.

Because Vietnam's equitisation program, which is commonly known as privatisation internationally, is an integral part of SOE reforms, Chapter 4 reviews relevant theoretical and empirical literature of privatisation in Vietnam and in other countries. First, Chapter 4 discusses the theory of privatisation, including a brief definition of privatisation, the types of privatisation, and the objectives and benefits of privatisation. Soft budget constraints and multiple conflicting objectives largely explain why most SOEs are inefficient compared with private enterprises. Hence, privatisation of SOEs is believed to improve their efficiency and profitability. Second, Chapter 4 analyses several empirical studies, both internationally and domestically, regarding the economic impacts of privatisation at the micro and macro levels. Due to differences in research methodologies, sample sizes and study periods, there are mixed results found in the empirical literature of privatisation. Chapter 4 also identifies several research limitations in a number of reviewed studies, providing the basis for the development of VNGEM used in this thesis.

In terms of methodology, this thesis adopts a positive economic approach to investigate the impacts of privatisation on the Vietnamese economy at the micro and macro levels, based on the balance of evidence that SOE reforms and the PSD policy would contribute greatly to Vietnam's economic growth in the future. If these reform programs are implemented effectively, the domestic Vietnamese enterprises across all industries should be able to improve their competitiveness and efficiency. Therefore, Chapter 5 is built around this productivity improvement issue to examine the likely impacts of ongoing reform policies on Vietnam's national economic outcomes and industries. First, Chapter 5 discusses the detailed specification of the model of Vietnam (referred to as VNGEM), which is a comparative-static model, used to quantify the economy-wide impacts of SOE reforms and the PSD policy on Vietnam's national outcomes and industries. Second, it describes the model database, especially the schematic input-output (I-O) table, sources of data and data treatment. Finally, Chapter 5 briefly explains the model equations, model closures and simulation design, which altogether are very important for generating simulation results.

Chapter 6 is aimed at interpreting the short-run and long-run results from the simulation, starting with the overall macroeconomic results and then examining

industry results. These results provide a numerical benchmark for investigating the direct and indirect effects, as well as identifying the winners and losers from policy reform. Two sensitivity tests are conducted to see how the dependent variables respond to changes in the model's key parameters as well as changes in the simulated value of the across-the-board primary factor productivity.

Chapter 7 is aimed at providing a brief summary of the main findings and concludes the thesis. It also cites some research limitations and provides useful directions for subsequent studies in the future.

Chapter 2
Economic Performance and Macroeconomic Policies in Vietnam

2.1 Introduction

This chapter starts with an overview of the Vietnamese economy since *Doi Moi*. The discussion on some of the key performance indicators of Vietnam shows that the country's post-*Doi Moi* economic performance has changed dramatically and impressively. The changes in the overall economic performance have been the result of many macroeconomic policies being implemented during this period. Among these, Vietnam's industrial, trade and monetary policies play an important role in fostering the country's economic growth. Therefore, this current chapter discusses these macroeconomic policies to provide a better understanding of the contributing factors to Vietnam's impressive economic performance after *Doi Moi*. Over time, the influence from the central planning days largely explains why Vietnam's macroeconomics policies were, in general, so restrictive, interventionist and protectionist, which seriously held back the liberalisation process, as well as holding back the overall transformation process towards a market economy.

The organisation of this chapter is as follows. Section 2.2 reports a number of key economic performance indicators in the period 1988-2011. Section 2.3 discusses Vietnam's industrial policy in two distinct periods: (i) the development of heavy industry before *Doi Moi*; and (ii) the strategic shift to light industry development since *Doi Moi*. This has been the right move in placing more emphasis on developing the agriculture and light industries instead of heavy industry. Section 2.4 discusses Vietnam's trade policy, which has been liberalised in an attempt to move towards a market economy, including: (i) Vietnam's open-door policy on trade; (ii) Vietnam's first round of trade reform during 1987-98; and (iii) Vietnam's second round of trade reform during 1999-2009. Section 2.5 discusses the history of inflation during 1986-2011 and the SBV's conduct of monetary policy in controlling high levels of inflation since *Doi Moi*. Section 2.6 concludes the chapter.

2.2 Economic Performance Indicators

2.2.1 Population Growth

In 2011, Vietnam's population size was ranked fourteenth worldwide. Within the ASEAN region, Vietnam was the third populous country after Indonesia and the Philippines, and followed by Thailand (Annex 1). In two decades, Vietnam's population increased by 24 million, from 64.3 million during 1988-89 to 88.3 million during 2010-11 (Table 2.1). The population growth rate slowed down from 2 per cent during 1988-89 to 1.1 per cent during 2010-11.[1]

2.2.2 Output Growth

The *Doi Moi* policy in 1986 changed Vietnam's economic performance dramatically, with strong output growth from 1990 onwards (Table 2.1). For instance, real GDP increased steadily from the annual average of $US15.9 billion during 1990-94 to $US29.1 billion during 2010-11. Likewise, during 1990-2000, real GDP growth rate always exceeded 7 per cent per year, with a record high of 7.5 per cent per year in the period 1995-99. Most notably, 1995 was the best performing year when Vietnam for the first time approached the highest output growth rate of 9.5 per cent. However, during 2010-11, real GDP growth rate increased moderately at the annual average of 6.3 per cent.[2]

2.2.3 Employment Growth

Over the past two decades, total employment increased steadily from the annual average of 28.7 million during 1988-89 to 49.7 million during 2010-11 (Table 2.1). On average, Vietnam created about 950,000 new jobs each year over the sample period. The average employment growth rate in the period 1988-2011 was recorded at 2.5 per cent per annum. Strong employment growth translated into favourably low unemployment rates, decreasing from 4.5 per cent during 1995-99 to 3.1 per cent during 2010-11.

[1] This may be the result of the ongoing nationwide family-plan program implemented since the 1990s, which encouraged each family to have only one or two children, regardless of whether they were boys or girls. This program was strictly applied to employees working in the public sector such that if they had more than two children, they would be penalised or even immediately lose their jobs.

[2] Note that real GDP level for the period 1988-89 was extremely high at $US113 billion mainly due to the exchange rate effect. The Vietnam Dong (VND) was very strong in 1988 and 1989 (607 and 4,464 VND per USD, respectively).

Table 2.1- Vietnam's Economic Performance (Period Average), 1988-2011

	Performance Indicators	1988-89	1990-94	1995-99	2000-04	2005-09	2010-11
1	Population (million)	64.3	69.0	75.3	80.5	85.0	88.3
2	Population Growth Rate (%)	2.0	2.0	1.6	1.2	1.1	1.1
3	Real GDP ($US billion)	113.0	15.9	18.7	20.9	28.1	29.1
4	Real GDP Growth Rate (%)	5.3	7.3	7.5	7.2	7.4	6.3
5	Employment (million)	28.7	30.9	34.5	39.6	45.2	49.7
6	Employment Growth Rate (%)	1.4	2.2	2.2	3.0	2.8	2.7
7	Unemployment Rate (%)	N/A	N/A	4.5	2.3	3.7	3.1

Note: N/A = Not Available.
Source: Indicators (1) and (2) are sourced from IMF (Various Issues) and indicators (3) to (7) from ADB (Various Issues).

2.2.4 Labour Incomes

Labour incomes in Vietnam increased from year to year. The nationwide average monthly incomes increased by more than three times, from $US23.3 in 2002 to $US74.5 in 2010 (Table 2.2). However, Vietnam is still categorised in the low-income country group, with a relatively low monthly income level (averaging $US45.9 per month) compared with international standards. Noticeably, income gaps existed between rural and urban areas. On average, monthly urban incomes were more than double monthly rural incomes ($US74.3 and $US35.6 per month, respectively). Likewise, income gaps also existed across the eight economic regions with the South East region having the highest average monthly income ($US75.5 per month). In contrast, the North Central Coast and North West were the two lowest-earning regions ($US29.9 and $US25.3 per month, respectively).

Table 2.2- Monthly Incomes by Economic Regions ($US), 2002-10

Rank	Regions	2002	2004	2006	2008	2010	Average
	National	23.3	30.8	39.8	61.0	74.5	45.9
	Urban	40.7	51.8	66.2	98.5	114.4	74.3
	Rural	18.0	24.0	31.6	46.8	57.5	35.6
	Regional						
1	South East	40.6	52.9	66.6	101.2	116.3	75.5
2	Red River Delta	23.1	31.0	40.8	64.3	84.2	48.7
3	Mekong River Delta	24.3	29.9	39.2	57.7	67.0	43.6
4	South Central Coast	20.0	26.3	34.4	51.7	62.4	39.0
5	Central Highlands	16.0	24.8	32.7	48.7	58.4	36.1
6	North East	17.6	24.1	32.0	47.1	56.7	35.5
7	North Central Coast	15.4	20.1	26.2	39.3	48.5	29.9
8	North West	12.9	16.9	23.3	33.7	39.8	25.3

Note: Data extracted from the GSO's 2010 Household Living Standard Survey.
Source: GSO (Various Issues).

2.2.5 Balance of Payments (BOPs)

Vietnam's BOPs was in deficit in the periods 1988-89 and 1990-94. After that, its BOPs strengthened, increasing substantially to an average surplus of $US1.65 billion a year during 2005-09 before heading towards a deficit of $US307 million a year during 2010-11 (Table 2.3). The current account deficit (CAD) jumped quickly from an average of $US667 million a year during 1988-89 to an average of $US4.9 billion a year during 2005-09 and $US2 billion a year during 2010-11.[3] Over time, Vietnam's CAD was reduced by increases in both official unrequited transfers and private unrequited transfers (or overseas remittances). According to the Asian Development Bank (ADB, Various Issues), these transfers increased considerably, on average, from $US593.2 million a year during the 1990s to $US3.8 billion a year during the 2000s. Most notably, the total transfers reached a record high of $US8.7 billion in 2010, of which $US8.4 billion was overseas remittances. The capital account surpluses showed an upward trend, increasing

[3] This was chiefly driven by Vietnam's trade deficit as the country accumulated a large amount of capital to equip its industrialisation process.

dramatically from $US350 million during 1988-89 to $US8.6 billion during 2005-09 and $US6 billion during 2010-11.[4]

2.2.6 Fiscal Balance, External Debt and ODA Funds[5]

Vietnam's budget deficits tended to increase steadily, from $US621 million a year during 1988-89 to $US2.59 billion a year during 2010-11 (Table 2.3). Its external debt increased by three-fold from an annual average of $US10.7 billion during 1988-89 to an annual average of $US35.1 billion during 2010-11, in order to accumulate capital and machinery resulting in strong economic growth in the mid-1990s. Likewise, the official development assistance (ODA) funds allocated to Vietnam were small in the periods 1988-89 and 1990-94, but increased sharply to an annual average of $US1.08 billion during 1995-99 and continued to increase to an annual average of $US2.94 billion during 2010-11.

2.2.7 Foreign Direct Investment (FDI) and Debt Burden

During 1988-89, registered FDI remained low at of $US433.6 million, on average (Table 2.3). The figure increased steadily to the annual average of $US27 billion during 2005-09 and $US19.88 billion during 2010-11. Nevertheless, FDI that was actually implemented in Vietnam was much lower than registered FDI.[6] During 2005-09, implemented FDI was recorded at the average of $US7.39 billion per year, which then increased remarkably to the average of $US11 billion per year during 2010-11. The average debt burden (measured by external debt plus implemented FDI divided by nominal GDP) was extremely high during 1990-94 and 1995-99 (233.7 and 103.2 per cent of nominal GDP, respectively), which was reduced substantially to 40.4 per cent during 2005-09 and 43.4 per cent during 2010-11.

[4] This was driven by movements in net foreign investment. In the early stage of openness (1989-93), net foreign investment was quite small, averaging $US200 million per year. In the following period (1994-2006), the figure increased dramatically to an average of $US1.68 billion per year and continued to increase to an average of $US7.44 billion per year during 2008-11 (ADB, Various Issues).

[5] ODA funds took many forms such as grants (or non-repayable loans) and low-interest long-term loans. Major donor agencies included the ADB, Japan, the World Bank and the International Monetary Fund (IMF).

[6] 'Registered FDI' refers to the total value of investment recorded in foreign investors' investment registration certificates. 'Implemented FDI' refers to the actual value of capital resources transferred to Vietnam for implementing foreign investment projects.

Table 2.3- Vietnam's Economic Performance, 1988-2011 ($US million) (continued)

	Performance Indicators	1988-89	1990-94	1995-99	2000-04	2005-09	2010-11
8	BOPs	-271.0	-318.2	33.0	621.6	1,650.0	-307.0
	Current Account	-667.0	-466.6	-1,062.6	-340.4	-4,924.6	-2,008.5
	Capital Account	350.0	210.0	1,527.2	1,500.8	8,600.4	6,009.5
	Errors & Omissions	46.0	-61.6	-431.6	-538.8	-2,025.8	-4,308.0
9	Fiscal Balance	-621.0	-282.3	-586.1	-818.3	-1,243.5	-2,590.1
10	External Debt	10,661.4	23,992.8	23,825.3	14,510.6	22,790.8	35,139.4
11	ODA Funds	132.8	425.6	1,075.0	1,602.4	2,510.5	2,940.1
12	FDI inflows						
	Registered FDI	433.6	2,292.2	6,071.5	3,343.9	27,005.0	19,886.1
	Implemented FDI	N/A	990.5	2,617.5	2,591.5	7,387.8	11,000.0
13	Nominal GDP	15,858.6	10,688.7	25,626.1	36,780.5	74,624.1	106,426.8
14	Debt burden (% GDP)	N/A	233.7	103.2	46.5	40.4	43.4

Source: Indicators (8) and (9) are sourced from ADB (Various Issues); indicators (10) and (11) from World Bank (Various Issues); indicators (12) and (13) from GSO (Various Issues). Indicator (14) is measured by external debt plus implemented FDI divided by nominal GDP.

2.3 Industrial Policy

Since 1986, Vietnam has created and implemented many policy changes to transform from a centrally planned economy (CPE) towards a socialist-oriented market economy.[7] This increased the need to choose an appropriate development strategy for sustaining growth, thereby eradicating hunger and reducing poverty. The government asserted that these objectives could be achieved through industrialisation and modernisation of the Vietnamese economy.

In relation to industrialisation, there are two well known, commonly adopted industrialisation strategies: (i) the import-substitution industrialisation (ISI) strategy, and (ii) the export-oriented industrialisation (EOI) strategy. First, the ISI strategy mainly involves developing the capability of domestic industries in producing goods that are substitutes for imported goods. In so doing, a country can reduce imports of foreign goods, thereby improving its trade balance and current account balance. As a result, the host country can lower its external debt and accumulate savings for domestic investment and growth. Second, the EOI strategy involves developing the capability and competitiveness of domestic industries in producing goods that have

[7] The term 'socialist-oriented market economy' is commonly used by political leaders in Vietnam. It simply reflects their political and economic ideology in an attempt to orientate the country towards a socialist market economy.

competitive advantages over foreign goods. Hence, exports of domestic goods will increase, contributing positively to the trade balance and current account balance. The country can then re-invest its export earnings (in foreign currencies) to accelerate growth.

Vietnam's industrialisation strategy has combined features of the ISI and EOI strategies. Therefore, it can be considered as a dual industrialisation strategy. On the one hand, Vietnam wishes to establish industries that can sufficiently supply both intermediate inputs and final goods to domestic markets. This requires the government to erect high barriers to protect domestic industries. These barriers may include high import tariff rates applied to imported goods, and other non-tariff barriers (NTBs) such as import licenses, quotas, custom surcharges and prohibitions of some imported goods. On the other hand, Vietnam wishes to promote exports of manufactured goods to accelerate growth (also known as an export-led growth strategy). This requires domestic industries to be able to compete with foreign companies, but they are generally too weak to do so. Their production technologies are almost outdated and managerial skills lag behind their foreign counterparts. Hence, the government deliberately established several general corporations (GCs), consisting of many SOEs and economic conglomerates to be able to compete equally with multinational corporations (MNCs). This represents another type of protection provided for domestic industries.

This combined ISI-EOI strategy has its own limitations and is not necessarily superior to the ISI or EOI strategy alone. Manzur and Subramaniam (1995) argue that, in the case of Malaysia, the protection structure associated with the implementation of the ISI strategy remains unchanged for years, which is incompatible with the country's current EOI strategy. Although some export incentives and assistance schemes have been given to encourage export expansion and they indeed have a compensatory effect, the net results are distortions and misallocations of resources caused by the existing tariff structure. In other words, import protection involves transfers of income (which is a zero-sum game) and if deadweight losses are taken into account, the net effect is negative. Therefore, instead of raising an import tariff to increase employment in the import-competing sector, the authors suggest using other alternatives such as wage cuts or employment subsidies.

On theoretical grounds, import protection has been proved to impose harmful effects on the export sector. Lerner (1936) develops a model with two countries, two goods (assuming perfect competition, full employment, zero transport costs and no capital movement between two countries), and demonstrates that a tariff on the imported good is equivalent to a tax on the exported good in terms of their effects on output decisions and resources allocation. That is, exporters are the victims of the government import protection policy. Lerner's symmetry theorem also holds in cases with more than two goods as shown in McKinnon's (1966) model with two countries and three goods (two importables and one exportable) taking account of trade in intermediate products. It is concluded that a tariff on one imported good is equivalent to a tax on the exported good and a subsidy on the other untaxed imported good. However, as argued by Ray (1975), the Lerner-McKinnon theorems do not hold under imperfection competition, which causes factor prices to be non-homogeneous of degree one in output prices, leading tariffs and taxes to have asymmetrical effects on production decisions. That is, the allocative effects under imperfect competition are significantly different from those under perfect competition. As opposed to Ray (1975), Kaempfer and Tower (1982) develops a model incorporating importables, exportables and non-tradables determined by relative prices, and recognises various forms of wealth and the possibility of multiple equilibria. They strongly believe that the Lerner-McKinnon symmetry theorems continue to hold even in the presence of imperfect competition, assuming private reciprocal currency holdings and people flows to be non-existent.[8] Blanchard (2005) continues the debate with a notable conclusion that Lerner's symmetry theorem does not hold in the presence of international investment (or cross-border capital flows). With international investment, both relative and absolute prices affect the real value of remittances paid to foreign investors, resulting in permanent trade imbalances and thereby affecting the real economy. However, she does not blatantly reject the whole symmetry theorem, but suggests imposing a tax on foreign investors' returns as one of the conditions for such theorem to hold.

To date, Lerner's symmetry theorem has been supported by many empirical studies. For instance, Morrison (1976) empirically finds that high levels of protection in developing countries result in an overvalued exchange rate, which likely

[8] See Kaempfer and Tower (1982) for more details.

discourages manufactured exports and reduces their competitiveness in the medium and long runs. Baldwin and Green (1988) use vector auto-regression techniques to investigate the relationship between import protection and the levels of output of five targeted industries producing colour television sets, non-rubber footwear, ceramic tableware, bolts, nuts and large screws, and stainless steel and alloy tool steel. They conclude that protection is not an effective means of stimulating domestic output. Dick (1994) conducts a regression analysis to test the hypothesis that import protection may act as export promotion. He finds that import protection is export deterring rather than promoting. This deterring effect is largest in industries experiencing strongest increasing returns to scale. Tokarick's (2006) empirical results show that import tariffs impose an average implicit tax of 12.5 per cent on exporters among the 26 developing countries under examination. This is because import tariffs not only increase wages and rental rates (which must be absorbed by exporters) but also raise the cost of imported intermediate inputs used by the export sector. As a result, they create an anti-export bias affecting a country's ability to export.

In a general equilibrium context, Lerner's symmetry theorem has also been supported by Clements and Sjaastad (1984) who develop a simple general equilibrium model to quantify the burden of protection being shifted from one sector to another, resulting in inefficient resources allocation and hence a lowering of real income. More specifically, the authors find that protection in several countries acts as a substantial implicit tax on their own exporters. This tax is transmitted to exporters via higher prices of imported goods and higher wages demanded by workers (who are also consumers of such goods), inflating the whole cost structure of the export sector. Choi and Cumming (1986) adopt the Clements-Sjaastad model to measure the transfers resulting from a protection in Australia. They find that import-competing firms gain approximately 0.5 per cent of GDP, consumers experience a net gain of 1 per cent of GDP and exporters lose 1.5 per cent of GDP (equivalent to $AU2.8 billion in 1983-1984 prices). Likewise, Manzur and Subramaniam (1995) also apply the Clements-Sjaastad approach to measure the incentive effects of protection in Malaysia. They find that exporters face a tax of about 9.2 per cent, costing them approximately 2.56 per cent of GDP (equivalent to $AU3.03 billion in 1989 prices).

In general, although Vietnam's growth experience continues to be impressive due to the rapid pace of industrialisation, its industrial and trade policies have been

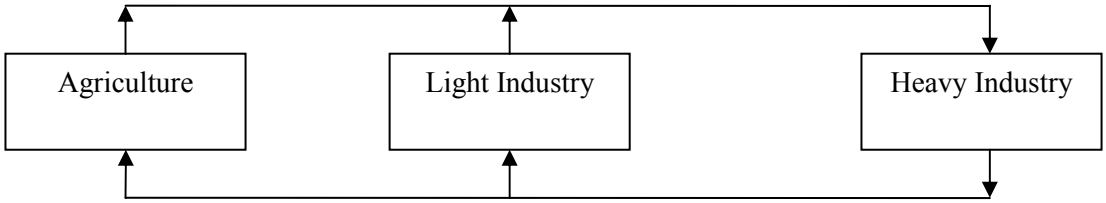
seen to be restrictive, interventionist and protectionist. Based on the balance of evidence, these policies require urgent attention because they may be detrimental to Vietnam's future growth path. The following sections will give more insights into these issues.

2.3.1 Heavy Industry Priority (HIP) Strategy Since 1961

In the period of economic recovery, the Vietnamese Communist Party (VCP) was too ambitious to achieve rapid industrialisation. To do this, the VCP adopted a Soviet-style model that focused on developing heavy industry as a top priority, in order to provide necessary tools and equipment for light industry and agriculture (Beresford and Dang, 2000). This strategy often involved building up large-scale heavy industrial plants using imported material inputs, most of which could not be produced domestically (Beresford, 1988). Clearly, Vietnam jumped to the end of the common process of industrialisation, which usually started with developing agriculture and light industry before heavy industry, and went backwards (Figure 2.1).

Figure 2.1- Two Different Processes of Industrialisation

The common process of industrialisation (from left to right): agriculture and light industry facilitate the growth of heavy industry.



The Soviet-style model (from right to left): heavy industry facilitates the growth of light industry and agriculture.

Note: Author's illustration.

The State Investment Strategies

From 1960 to 1985, Vietnam implemented the heavy industry priority (HIP) strategy in three phases (Vo, 1990). In the period 1960-75 Vietnam concentrated its investment in heavy industry, in order to provide tools needed for the development of agriculture and light industry. Light industry accounted for only 6.7 per cent of total investments during 1960-65, increasing slightly to 8.7 per cent during 1974-75. Agriculture investment exhibited the same pattern as in light industry, increasing

slightly from 14 per cent during 1960-65 to 14.3 per cent during 1974-75. Although the investment share of heavy industry declined from 31.4 per cent during 1960-65 to 27.5 per cent during 1974-75, it still accounted for the largest share of total investments (Table 2. 4).

In the period 1976-80 the VCP started to recognise the importance of agriculture in the early stage of socialist construction. Nevertheless, a large proportion of investment resources still went to industry (35.3 per cent). Within industry itself, heavy industry still dominated light industry (24.4 and 10.9 per cent, respectively).

Similarly, in the period 1981-85 the VCP officially declared that agriculture and light industry played an important role in the early stage of Vietnam's economic reconstruction. However, there were no significant changes in the allocation of state investments. Industry still captured the largest share of state investments in this period (40.1 per cent). Within industry itself, heavy industry continued to dominate light industry (32.0 and 8.1 per cent, respectively).

Table 2.4- The Allocation of State Investments, 1960-1985

	1960-65	1974-75	1976-80	1981-85
Total state investments ($VN million)	814.4	1,936.3	3,688.2	N/A
Industry (% total)	38.1	36.2	35.3	40.1
Heavy industry (% total)	31.4	27.5	24.4	32.0
Light industry (% total)	6.7	8.7	10.9	8.1
Agriculture (% total)	14.0	14.3	21.1	N/A
Forestry (% total)	N/A	N/A	2.9	N/A
Capital construction (% total)	N/A	N/A	5.2	N/A

Notes: Data was re-edited and expressed in annual averages over the relevant period to align with the discussion. N/A = Not Available.
Source: Vo (1990).

Consequences of the HIP Strategy

Nevertheless, the HIP strategy led to numerous unresolved difficulties. First, Vietnam incurred trade deficits over time due to massive imports of material inputs from abroad for developing heavy industry. Second, although large-scale projects might be good for long-run growth, they did not generate any short-run productive capacity. Hence, shortages in production and consumption continued to be a major problem at that time. Third, the consumption goods sector received inadequate

investment since resources were over-invested in heavy industry. In fact, industry accounted for nearly half of total investment, of which more than 70 per cent went to heavy industry. By contrast, less than 25 per cent of total investment was allocated to agriculture and other related sectors (Beresford and Dang, 2000). To increase investment in industry, Vietnam had to sacrifice both current and future consumption, thereby worsening the living standard of the Vietnamese households. In addition, resources were drawn away from the consumption goods sector to industry, leading the former sector to grow slowly or even contract, which in turn might negatively affect the latter sector.

Finally, Vietnam's resulting industrial performance was poor because the VCP set high and unachievable targets in its five-year plans (FYPs). Hence, almost none of the targets were met during the period of implementing the HIP strategy (Annex 2).

2.3.2 Strategic Shift from Heavy to Light Industry Since 1986

Until 1986, the VCP realised that too much concentration on heavy industry was not a good strategy. Hence, *Doi Moi* was introduced in 1986 with a dramatic change in industrial policy from heavy to light industry. This strategic shift resulted in positive performance in the period 1986-88 (Annex 3).

2.3.3 Discussion on Vietnam's Industrial Policy

Vietnam appeared to adopt a dual industrial strategy, which combined the features of both ISI and EOI strategies. However, more emphasis was placed on the ISI strategy and less on the EOI strategy (Perkins, 2001). Overall, Vietnam's industrial policy was weak and inconsistent for three reasons. First, Vietnam's industrial policy was designed with multiple contradictory objectives, which received much criticism because it was inconsistent and created excessive costs to Vietnam (McCarty, 1999). For instance, the country wanted to promote export-oriented industries while, at the same time, protecting the (inefficient) domestic manufacturing sector established in the days of central planning (Auffret, 2003). In the case of the motor vehicle industry, the government wished to develop this industry by imposing high quantitative restrictions (QRs) on imports of motor vehicles while, at the same time, the government discouraged the use of motor

vehicles in Vietnam because of its poor road infrastructure and frequent traffic congestion, according to the Centre for International Economics (CIE, 1999a).

Second, during the implementation process of its industrial policy and strategy, the Vietnamese government usually practiced the picking-winners game (CIE, 1999b). This practice might affect the country's overall economic performance because the chosen industries would win, but at the expense of other industries. Instead of picking winners, the government should give a fair chance to all economic agents and should improve its institutions and infrastructure, such as strengthening private property rights and improving the legal and financial systems, in order to speed up the industrialisation process.

Finally, there are certain limitations in the formulation and implementation of Vietnam's industrial policy. Policy makers did not collaborate with the business community when drafting and implementing such policy. These policy makers often lacked up-to-date information and disregarded the opinions of the business community when designing policies. Therefore, the industrial policy is often developed, reviewed and approved internally, with minimal debates on crucial issues and/or little involvement of outside stakeholders: "…if a domestic or foreign firm wants to raise its voice, it must devise its own way since the current procedure does not allow meaningful involvement of the business community…" (Ohno, 2009, p. 15). This situation is in sharp contrast with that in Malaysia, Thailand and Japan, where private businesses are highly encouraged to participate in the process of policy formulation and implementation. Worse still, the implementation of policy was not well coordinated across ministry lines. For these reasons, most of the time, the approved policies in Vietnam are not effective nor are they implementable (Ohno, 2009). A report by MoIT and UNIDO (2011, p. 21) indicates that "Vietnam does not lack policies for industrial development, but rather lacks an effective implementation plan to incorporate a harmonised approach that takes account of various sectoral needs".

At the moment, Vietnam is in the first stage of industrialisation (developing simple manufacturing under foreign guidance), which is now trying to reach the second stage (having some supporting industries, but still under foreign guidance) like Thailand and Malaysia.[9] However, the real challenge facing Vietnam in the

[9] See Ohno (2010) for more details about the five stages of catching-up industrialisation.

coming years is that it is not fully prepared to switch from labour-cost towards more knowledge-based advantages. As a result, the country appears to have reached the point where further process towards higher income is increasingly difficult. Similarly to Thailand and Malaysia, there is high probability that Vietnam will get stuck in the middle income trap[10] due to failures in upgrading human capital and the inability in moving up the value chain and penetrating fast growing markets with knowledge- and innovation-based goods and services to achieve rapid growth. Therefore, Vietnam needs to radically change its public administration system, as well as changing the overall legal system in order to improve the quality of its industrial policy and escape from such trap (Ohno, 2010).

2.4 Trade Policy

2.4.1 The Open-Door Policy on Trade

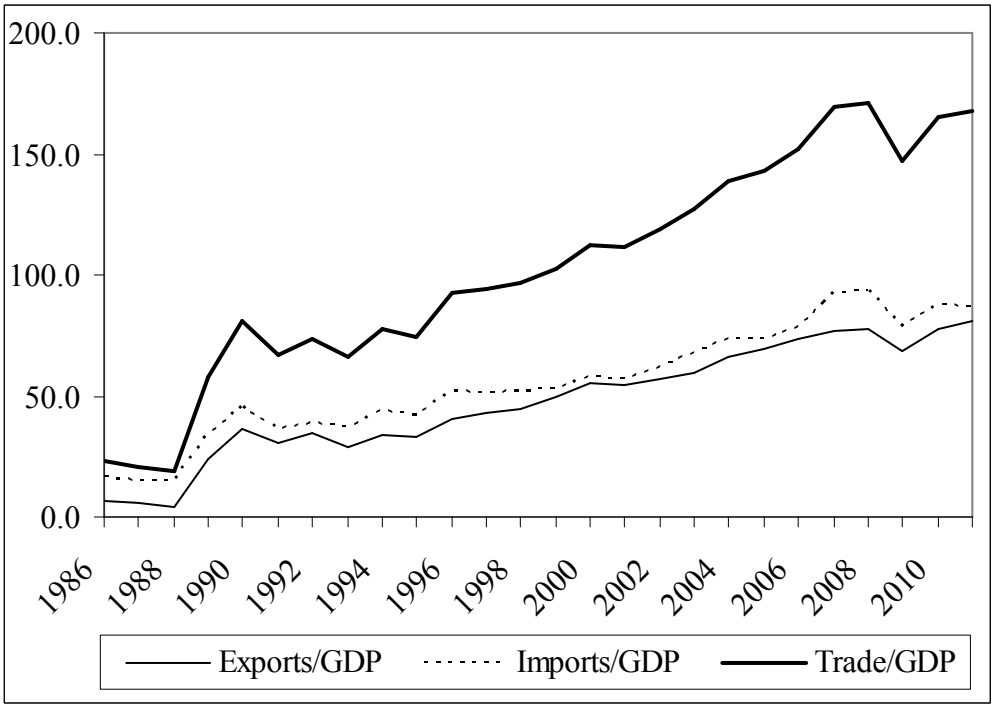
Prior to *Doi Moi*, Vietnam's trade regime was semi-autarkic (or almost isolated). Vietnam only traded with countries within the council for mutual economic assistance (CMEA) bloc, including the Soviet Union, China and other socialist countries. Its exporting activities were strictly regulated by the CMEA's agreement on trade licenses and quotas. Of course, the CMEA bloc was the only destination for Vietnam's exported goods. In return, the country imported basic commodities from the CMEA bloc, such as petroleum products and fertilisers.

In the early 1990s, the CMEA collapsed and so did the Soviet Union. In response to this external shock, Vietnam had to establish new trading relations with other non-CMEA partners and that its trade openness improved significantly.[11] As illustrated in Figure 2.2, in the late 1980s, Vietnam's average trade-to-GDP ratio was recorded at 30.2 per cent (10.1 per cent for exports-to-GDP and 20.1 per cent for imports-to-GDP). In the 2000s, this ratio increased remarkably to an average of 139.1 per cent (65.8 per cent for exports-to-GDP and 73.3 per cent for imports-to-GDP) and continued to increase to an average of 166.6 per cent (79.1 per cent for exports-to-GDP and 87.5 per cent for imports-to-GDP) during 2010-11.

[10] This refers to the inability in breaking through the invisible 'glass ceiling' in manufacturing between the second and the third stage of industrialisation.

[11] One of the most commonly used indicators of trade openness is the trade-to-GDP ratio, which is measured by a vertical summation of the exports-to-GDP and imports-to-GDP ratios.

Figure 2.2- Vietnam's Trade Openness Indicators (%), 1986- 2011



Source: World Bank (Various Issues).

After opening up its domestic economy, Vietnam adopted an export-led growth model to boost manufactured exports. However, manufactured exports did not expand strongly enough to improve its trade balance, which has been in large deficits over time. During 1988-89, trade deficits was recorded at $US1.17 billion per year, which was increased dramatically to $US4.7 billion per year during 2005-06 and $US13.14 billion per year during 2007-11 (Table 2.5). This was because the country's trading activities likely followed a pattern of importing relatively high value-added products (such as processed material inputs, production technologies, machinery and equipment, and other capital-intensive manufactured goods, most of which could not be produced domestically), while exporting relatively low value-added products (such as raw materials, unprocessed and semi-processed primary commodities and natural resources[12], and other labour-intensive manufactured goods) (Le, 1999). As shown in Table 2.5, while food and live animals, mineral fuels and miscellaneous manufactured goods contributed positively to the Vietnamese trade balance, other remaining products (such as chemicals, basic manufactures, and machines and transport equipment) worsened it. This typical trade pattern is also

[12] On average, exports of primary commodities and natural resources accounted for 57.5 per cent of total exports during 1995-99, which declined slightly to 50.5 per cent during 2000-04 and 45.1 per cent during 2005-09 (GSO, Various Issues).

discussed by Anwar and Nguyen (2011) with the same observation that imports have been consistently higher than exports and the gap has been widening in recent years. Therefore, Vietnam's impressive growth in manufactured exports (based on a low initial manufacturing value added) has offered limited benefits due to a simultaneous increase in manufactured imports, leading to a pessimist conclusion that trade liberalisation has failed to stimulate a change in Vietnam's manufactured export pattern and is not a sufficient factor in triggering Vietnam's structural change (MoIT and UNIDO, 2011).

Table 2.5- Vietnam's Net Exports ($US million, Period Average), 1988-2011

	1988-89	1990-94	1995-99	2000-04	2005-06	2007-11
Trade Balance	**-1,169.2**	**-654.1**	**-2,268.3**	**-3,194.5**	**-4,689.5**	**-13,142.3**
Food & Live Animals	382.5	906.6	2,287.2	3,300.2	4,800.2	N/A
Beverage & Tobacco	8.0	-35.6	-69.9	-40.5	-13.4	N/A
Crude Materials (Excluding Fuels)	135.5	226.6	-47.3	-355.4	-316.5	N/A
Mineral Fuels etc.	-435.5	137.6	586.7	1,658.4	3,001.2	N/A
Animal, Vegetable Oil & Fats	8.5	-0.4	-48.4	-99.8	-202.7	N/A
Chemicals	-400.5	-605.2	-1,759.7	-2,947.4	-5,149.4	N/A
Basic Manufactures	-498.5	-555.8	-1,818.4	-4,361.5	-8,622.4	N/A
Machines & Transport Equipment	-625.0	-970.1	-2,614.5	-4,725.0	-6,359.1	N/A
Miscellaneous Manufactured Goods	266.5	251.6	1,225.1	4,527.0	9,515.4	N/A
Unclassified Goods	-10.0	-9.4	-9.0	-150.6	-1,343.3	N/A

Note: Data on the other remaining entries for the period 2007-11 are not available.
Source: ADB (Various Issues).

2.4.2 Trade Reform in the Period 1987-98[13]

In the period 1987-98, Vietnam's trade policy reform was mixed with positive and negative features. On the positive side, the Law on Foreign Investment was introduced in 1987 and was amended three times in 1990, 1992 and 1996, signalling the government's open-door policy. In 1989, the government unified the foreign exchange rate system and removed export subsidies. Most notably, the government started to build up export processing zones (EPZs) in 1991 and offered duty exemptions for imported inputs used for producing exported goods. At the same time, private enterprises were authorised to engage in international trade, thereby increasing competition between the private sector and the SOE sector in the export market. In 1993, Vietnam offered a 90-day duty suspension scheme for inputs used

[13] See Annex 4 for a summary of Vietnam's trade reform in the period 1987-98.

for producing exportables. In 1995, almost all export quotas were removed, except for rice. In 1997, the government authorised the private sector to export rice and, at the same time, rice could be traded freely in domestic markets. In 1998, domestic enterprises were authorised to export freely without trade licenses. With respect to external trading relations, Vietnam actively joined in international and regional organisations by (i) signing a trade agreement with the European Union (EU) in 1992; (ii) gaining an observer status at the General Agreement on Tariffs and Trade (GATT) in 1994 and preparing an application to join the World Trade Organisation (WTO); and (iii) joining the Association of the South East Asian Nations (ASEAN) in 1995 and signing the ASEAN free trade agreement (AFTA).

On the negative side, Vietnam introduced a special sales tax, turnover tax and profit tax in 1990. At the same time, the government granted exporting rights for several commodities to a few enterprises and exporting associations. For instance, export quotas for rice, textiles and garments were strictly regulated by the Ministry of Trade (MoT) and were only allocated to a few SOEs. In 1995, the government increased export tax rates on 11 products. In May 1997, the government banned imports of sugar, and temporarily imposed prohibitions on imports of several consumer goods, such as writing and printing paper, construction steel bars and construction glass, cement, sugar, bicycles, electric fans, sweets, and beer and beverages. In so doing, the authorities asserted that they could dampen the increasing trade deficits, given a belief that domestic supplies of those commodities could equally satisfy domestic demands. In 1998, Vietnam introduced customs tariffs under the Law on Import and Export Duties and restricted imports of alcohol and other dangerous products, such as weapons, narcotics, cigarettes, toxic chemicals and firecrackers, for health and safety reasons.

Tariff Policy in Vietnam

According to Pham (2011), there are three sets of tariff rate in Vietnam: (i) most-favoured-nations (MFN) tariff rates (introduced in 1991 and amended in 2003) applied to countries that had bi-lateral trade agreements (BTAs) with Vietnam; (ii) common effective preferential tariff (CEPT) rates (introduced in 2001) applied to countries within the ASEAN Free Trade Area (AFTA). Under the AFTA agreement, Vietnam committed to reducing tariffs on more than 6,000 product categories for

AFTA members to less than 5 per cent by 2006 and then eliminating tariffs on almost all commodities by 2015; and (iii) normal tariff rates applied in other circumstances.

From 1994 to 1998, the government issued numerous legislative amendments with respect to changes in tariff rates (Annex 5). These rapidly changing tariff rates somewhat reflected Vietnam's commitment to liberalise its trade regime while, at the same time, trying to protect domestic import-substituting industries and promote export-oriented industries. In effect, there were lower cuts in tariffs on consumer goods than on intermediate and investment goods, indicating that Vietnam's tariff policy was particularly aimed at limiting imports of consumer goods and promoting imports of intermediate inputs (Annex 6).

Non-Tariff Barriers (NTBs) in Vietnam

In the process of trade liberalisation, the Vietnamese government was willing to loosen its controls over the economy, but was unwilling to completely remove such controls. This explains why so many NTBs were introduced to regulate trade. One of the most inefficient NTBs was the prohibition of imports of products that could be produced domestically. For instance, the government banned imports of cement, some kinds of steel, cigarettes, second-hand machinery and scrap steel. However, imports of intermediate inputs used for producing these goods were allowed (CIE, 1999b). Another type of NTB was foreign exchange control such that the government created easy access to foreign currency purchases in favour of the domestic industries, such as sugar, cement, steel pipes, fertilisers, motorcycles and cars (Annex 7). Other NTBs included customs surcharges and special sales taxes (or luxury taxes), all of which also served a revenue raising purpose. During economic hardship (such as the 2008 global financial crisis), NTBs were used extensively by the Vietnamese government in an attempt to moderate external shocks to the economy, including the prohibition of rice exports in June 2008 in response to rising food prices, stricter quality checks on some imports to prevent the crisis spread and the restriction of luxury commodities imports to reduce trade deficits (World Bank, 2009). Clearly, these NTBs directly revealed the government's intention to protect the domestic import-substituting industries and the export-oriented industries.

The consequences of NTBs in Vietnam are numerous. First, NTBs might lead to policy inconsistencies and imports of some products encouraged by trade and industrial policies. For instance, there was a ban on imports of normal steel because

it could be produced domestically. However, imports of high-grade steel were allowed at low or even zero rates of duty because it could not be produced domestically. Therefore, most of the time the consumers preferred to import high-grade steel instead of normal steel because the quality was higher but the prices were not significantly higher (CIE, 1999a).

Second, NTBs might create a deadweight loss and reduce the consumer surplus because consumers were forced to use local products with lower quality but higher prices, compared to imported products. In other words, NTBs prevented consumers from consuming as many imported goods as they liked at lower world prices. When domestic supply could not satisfy domestic demand, NTBs often caused high price volatility which negatively affected the well-being of domestic consumers. Likewise, private enterprises were also worse off because most NTBs (such as quotas) were exclusively granted to SOEs. Worse still, the allocation of quota licences resulted in corruption and rent-seeking behaviour by government officials and licensees.

Finally, import and export quotas resulted in misallocation of resources. This was because domestic prices were isolated from, or unaffected by, relative changes in world prices. Hence, even when domestic prices of the protected industries were higher than world prices, resources still concentrated in these industries. In addition, Vietnam's open-door policy attracted large FDI inflows in the form of joint ventures (JVs). However, foreign investors preferred to form JVs within highly protected industries (such as cement, petroleum, motor vehicles, wearing apparel and plastics) to overcome high tariffs or NTBs. Likewise, they also preferred to do business with SOEs, which received favourable treatment from the government, as opposed to private enterprises (Auffret, 2003). Consequently, there were limited prospects for achieving high sustainable growth because the FDI resource was misallocated to, or over-invested in, those protected industries and SOEs, most of which had relatively low productivity and profitability (Leung, 2009).

2.4.3 Trade Reform in the Period 1999-2009[14]

In the period 1999-2009, Vietnam's trade regime was liberalised with many dramatic changes. For instance, in 1999, the government extended the duty suspension period from 90 days to 275 days. The foreign exchange surrender

[14] See Annex 8 for a summary of Vietnam's trade reform in the period 1999-2009.

requirement was reduced from 80 to 50 per cent in the same year, and was further reduced to 40 per cent in 2001.

Most notably, many significant changes were introduced in 2001. For instance, Vietnam signed a bilateral trade agreement with the U.S. (known as USBTA), opening up new opportunities to trade with the world's largest market. In addition, all enterprises were authorised to export almost all legitimate goods without licenses. Moreover, some of the NTBs imposed on steel products, construction glass and vegetable oil were replaced by tariffs, which significantly removed distortions in resources allocation and other related consequences of NTBs. Besides, the government removed the dual pricing system previously applied to foreign investors, thus providing equal treatment of Vietnamese citizens and foreigners.

In 2002, the foreign-invested enterprises (FIEs) were authorised to export all legitimate commodities, including those not listed in their business licenses. In 2003, Vietnam announced its tariff schedule for the period 2003-06 in accordance with the ASEAN's CEPT program. In 2004, to commit to the AFTA agreement and WTO membership negotiations, almost all import quotas were eliminated, except raw tobacco, salt, cotton, condensed and non-condensed milk, maize, seed and chicken eggs. In late 2005, to speed up its WTO membership negotiation process, Vietnam passed 29 new or amended Laws on Commerce and Trade aimed at creating a market economy, protecting free trade, ensuring legal transparency and harmonisation with international legal standards. In 2007, Vietnam officially became a member of the WTO, thereby improving its trading relations with about 150 WTO members. Accordingly, the effective rate of protection decreased from 59.5 per cent in 1997 to 26.2 per cent in 2001 and further decreased to 20.43 per cent in 2006 and 16.93 per cent at the time of WTO accession (Pham, 2011).

In March 2008, Vietnam (together with other ASEAN members) signed a less expansive free trade agreement (FTA) with Japan, which committed to eliminate tariffs on 93 per cent of goods exported from ASEAN. On the other hand, Vietnam signed a preferential trading deal with Laos People's Democratic Republic focusing on import tariff reductions. In December 2008, Vietnam signed an Economic Partnership Agreement with Japan on trade, financial services, and migration. In February 2009, Vietnam and other ASEAN members signed a comprehensive free trade deal (implemented by the end of 2009) with Australia and New Zealand. In

August 2009, ASEAN also signed a FTA (implemented in January 1, 2010) with India (World Bank, 2009).

2.4.4 Discussion on Vietnam's Trade Policy

Overall, Vietnam was said to have a dualistic trade regime reflecting a "legacy from the days of central planning" with many protection barriers (CIE, 1998, p. 73). This trade regime was established in an attempt to achieve two different objectives simultaneously: (i) developing the domestic import-substituting industries, and (ii) promoting the domestic export-oriented industries (Athukorala, 2006). As a result, there were high barriers on imports of some commodities such as prohibitions, taxes, quotas, trade licenses and regulatory controls. At the same time, the government provided export incentives, such as tax exemptions and EPZs, to promote exporting industries. Nevertheless, the persistent trade deficits imply that the domestic import-substituting industries were unable to fully replace the imported inputs, while the export-oriented industries were unable to lead the economy. These industries altogether failed to help the economy improve its trade balance as expected.

On the other hand, Vietnam's trade regime has been characterised as restrictive, protectionist and interventionist. The government was often said to take "two steps forward and one step back" when designing and implementing its policy changes (McCarty, 1999, p. 32). Over the past decades, its trade policy was changed through a learning-by-doing process. That is, policy makers implemented the trade reform, learned from past experiences and modified the policy to fit into current economic conditions. This practice resulted in many rapidly changing laws and regulations for fine-tuning purposes, creating confusion and policy uncertainty for the future (APEC, 2005).

In this regard, Vietnam's protectionist policy often created favourable treatment for SOEs, but discriminated against private enterprises. Therefore, many SOEs were profitable simply because of high walls of government protection from imports, as well as protection from competition with private enterprises (Perkins, 2001). In principle, all firms were authorised to trade regardless of their ownership status. In practice, the government favoured SOEs by creating administrative barriers to prevent private enterprises from trading, as in the cases of rice exports and fertiliser imports. With generous government support, many industries did not even

have incentives to improve their performance (Auffret, 2003). According to Vanzetti (2006), most of the protected industries did not operate efficiently as expected. Some of the inefficient agricultural industries included sugar, cotton, tobacco, soybeans and pork, which had relatively low labour productivity. Other inefficient industries included seaports, airports, railways, power and telecommunication.

Finally, Vietnam's protectionist policy was aimed at building comparative advantages for medium- and high-tech export-oriented industries, such as electronics, automobiles, information technology, telecommunications and ship building. However, this objective could hardly be fulfilled because Vietnam's existing comparative advantages were found only in primary commodities (such as coffee, rubber, seafood, coal, wood and crude oil) and in some labour-intensive manufactured goods (such as textiles, clothing, footwear and furniture) (Nguyen, 2002). It means the government sometimes picked the wrong winners because these chosen winners were not suitable in the existing economic settings and they had limited capacities to deliver the expected performance.

Boxes 2.1 and 2.2 provide two related examples of the government's picking two wrong winners in the steel and cement industries.

Box 2.1- Vietnam's steel industry: an underdeveloped sector with high levels of government protection

The Vietnamese steel market has been underdeveloped in terms of both quality and quantity while, at the same time, domestic enterprises have been weak and fragile. State enterprises, especially the Vietnam Steel Corporation (VSC), dominated the market due to high levels of government protection (Kawataba, 2007).

From 2000 onwards, more private steel companies, such as Hoa Phat Steel, Lotus Steel (or Hoa Sen Corporation), Sun Steel (or Sunsco), were authorised to supply steel to the domestic market. However, these firms possessed poor facilities and outdated technologies. Hence, they could only produce normal steel products while high-grade steel was largely imported because domestic steel producers were not able to supply such products. Even though the VSC lost some of its market share to private producers, its dominant position remained because it still had superior knowledge and experience in the steel business and still maintained a good relationship with the government.

There have been two types of government protection for the steel industry: (i) the government's protection of normal steel products; and (ii) no protection of high-grade steel (CIE, 1999a). This led to two unexpected outcomes. First, domestic producers had no incentives to improve their technology to be capable of producing high-grade steel. Second, there might have been a wasteful use of high-grade steel since domestic steel users preferred it to normal steel due to higher quality and insignificant price differences.

Box 2.2- Vietnam's cement industry: high prices, poor quality, but no incentives to improve performance

According to the CIE (1999a), there were about 70 cement plants operating in Vietnam by 1999. The Vietnam Cement Corporation (VNCC) plants accounted for 55 per cent of total production, JVs 20-25 per cent, with the remaining produced by small-scale vertical shaft kilns. High-performance plants included Hoang Thach and Ha Tien I and II, while medium-performance plants were Hai Phong and Bim Son, and low-performance plants were the vertical shaft kiln plants.

The domestic price of cement ($55 per tonne) was higher than those of Singapore, South Korea and Thailand ($38.8, $29.2 and $46, respectively). In addition, the quality of most domestically produced cement was lower, compared to foreign products, except for two private foreign companies (namely, Chin Fong and Sao Mai) whose products were said to be comparable with the Japanese cement. This explained why a majority of large-scale construction projects in Vietnam used cement supplied by Chin Fong.

The CIE (1999a) concluded that, domestic cement plants were not able to compete successfully with foreign producers in the absence of government protection. Under government protection, domestic producers were so profitable that they had no incentives to improve their competitiveness in the cement market.

2.5 Monetary Policy[15]

2.5.1 History of Inflation in Vietnam (1986-2011)

The history of inflation in Vietnam in the period 1986-2011 can be divided into four distinct phases: (i) during 1986-88, Vietnam experienced hyperinflation (or three-digit inflation), averaging 390.6 per cent per annum; (ii) during 1989-95, the inflation rate was reduced sharply to a two-digit number, averaging 38.3 per cent per annum; (iii) during 1996-2007, both the GDP deflator and the consumer price index (CPI) measures indicated that inflation remained stable and manageable at a single-digit number; and (iv) during 2008-11, inflation increased to a two-digit number again (15.2 per cent for GDP delator measure and 14.4 per cent for CPI measure) (Table 2.6).

The yearly data on CPI inflation (not reported in Table 2.6), shows that Vietnam experienced slight deflation in 2000 and 2001 (-1.7 and -0.4 per cent, respectively). However, in 2008, inflation started to rise again and increased up to 23.1 per cent. According to the Development Bank of Singapore (DBS, 2008), in February 2008, Vietnam's inflation rose to 15.8 per cent due to rising food and

[15] To assist the discussion in this section, Annex 9 provides useful information about the development and characteristics of Vietnam's banking sector.

energy prices, strong GDP growth rate (8.5 per cent) and increasing FDI inflows. More clearly, food prices in Vietnam increased dramatically from 7.4 per cent in 2007 to 22 per cent in January 2008. Likewise, economic expansion in the real estate sector led to substantial price increases in the construction materials, transport and communication, and medical products and health care sectors (16.9, 7.2 and 7.5 per cent, respectively) (Auster and Rabinov, 2008). In 2011, inflation continued to increase to 18.7 per cent, similarly to the year 2008.

Table 2.6- History of Inflation in Vietnam (%, Period Average), 1986-2011

	1986-88	1989-95	1996-2007	2008-11
GDP Deflator (% Change)*	390.6	38.3	6.5	15.2
CPI (% Change)**	N/A	N/A	4.7	14.4

Note: N/A = Not Available.
Source: * from World Bank (Various Issues); and ** from IMF (Various Issues).

2.5.2 Monetary Policy Stance

From 1986 to the 1990s, Vietnam tightened its monetary policy to combat high levels of inflation, which was largely caused by changes in the exchange rate and excess money.[16] From 1999 onwards, the State Bank of Vietnam (SBV) changed its monetary stance from tightening to prudential loosening (Nguyen, 2000). Nevertheless, Vietnam's monetary policy was said to be very passive because the SBV did not have a strict inflation targeting regime (Nguyen, 1999). In other words, the SBV had little autonomy in controlling inflation because the inflation targets were often determined by the National Assembly (NA), but they were not prioritised over other development objectives such as rapid and sustainable growth (Le, 2009).

2.5.3 Monetary Policy Instruments[17]

The central bank had both direct and indirect monetary policy instruments. Direct instruments included interest rate control and credit ceilings. Indirect instruments included reserve requirements, refinancing and open market operations (OMOs). The SBV decided to target the money supply (M2) as an intermediate objective while its ultimate objectives were to stabilise domestic currency and the exchange rate, combat inflation and sustain economic growth (Table 2.7).

[16] According to Goujon (2006), management of exchange rate movements, coupled with restrictive monetary policy, were necessary to fight inflation in a dollarised country like Vietnam.
[17] The discussion in this section is largely based on Nguyen (2000), with up-to-date financial data on reserve requirement ratios, interest rates and exchange rates.

Table 2.7- Monetary Policy Instruments in Vietnam

Instruments	Operating Objectives	Intermediate Objectives	Ultimate Objectives
Reserve requirement	Reserve money (MB)	Total liquidity (M2)	Stabilise currency and foreign exchange market
Interest rate control	N/A	N/A	Economic growth
Refinancing	N/A	N/A	Inflation
Exchange rate	N/A	N/A	N/A
Issuance of State Bank bills	N/A	N/A	N/A
Credit Ceiling	N/A	N/A	N/A

Note: N/A = Not Available.
Source: Nguyen (2000, p. 187).

Reserve Requirement

In September 1992, Decision No.18/QD-NH5 was issued to apply a reserve requirement of 10 per cent on all deposits with credit institutions. These required reserves were held in separate accounts. In 1995, Decisions No.260/QD-NH1 and 261/QD-NH1 were issued to adjust the requirement of reserve. Following these decisions, the required reserves were held in one account only. The reserve ratio remained at 10 per cent for deposits of less than one year, of which 70 per cent of required reserves was held at the SBV and 30 per cent held at credit institutions. In 1999 the coverage of the reserve requirement was extended to include cooperative banks, people's credit funds and credit cooperatives, and the required reserves must be held at the SBV.

Currently, under Decisions No.74/QD-NHNN and 379/QD-NHNN, the reserve requirement ratios have been lowered with various rates applied to different types of banks, types of currency held at banks, and duration of deposits (Table 2.8). For instance, Group 1 banks, such as state-owned commercial banks (SOCBs) excluding Agribank and urban joint-stock banks (JSBs), faced relatively-high reserve requirements: (i) 3 per cent for short-term deposits in domestic currency and 8 per cent for short-term deposits in foreign currency; and (ii) 1 per cent for long-term deposits in domestic currency and 6 per cent for long-term deposits in foreign currency. Groups 2 and 3 face the same relatively lower requirement ratios as a necessary condition to utilise a bank's capital for developing the agricultural and rural sectors: (i) 1 per cent for short- and long-term deposits in domestic currency;

(ii) 7 per cent for short-term deposits in foreign currency; and (iii) 5 per cent for long-term deposits in foreign currency. Finally, there was no reserve requirement for Group 4 (including local credit funds and Vietnam Banks for Social Policies). Although this instrument helped reduce excess reserves and strengthen the SBV's capability to control M1, excess reserves remained large and the SBV had limited ability to control M2.

Table 2.8- Reserve Requirement Ratios (% Deposits) on 01 September, 2011

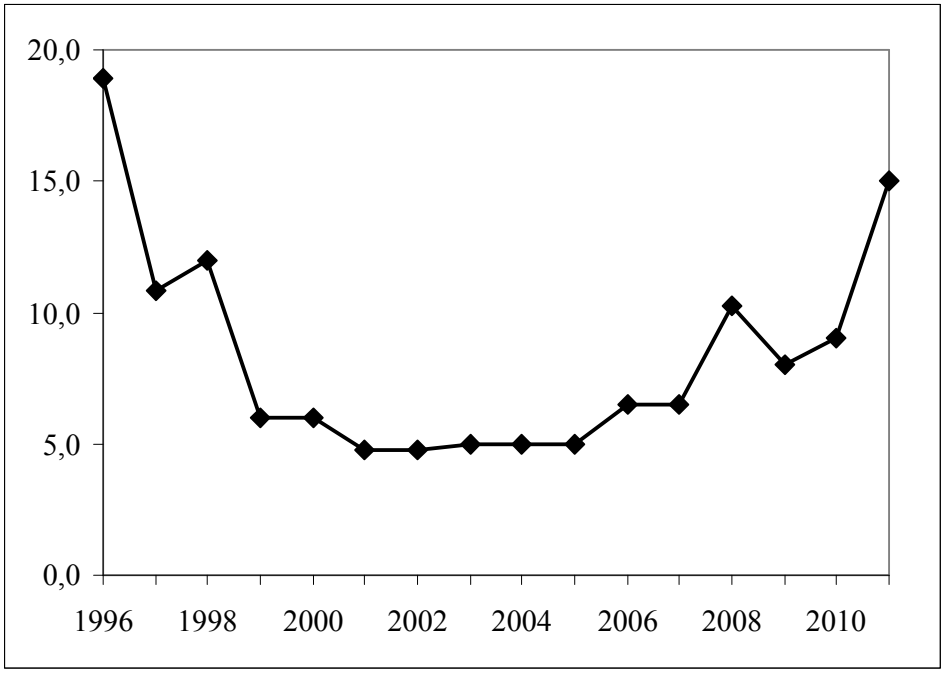
	Deposit in Domestic Currency		**Deposit in Foreign Currency**	
	< 12 Months	> 12 Months	< 12 Months	> 12 Months
Group 1	3.0	1.0	8.0	6.0
Group 2	1.0	1.0	7.0	5.0
Group 3	1.0	1.0	7.0	5.0
Group 4	0.0	0.0	0.0	0.0

Note: Group 1 includes SOCBs (excluding Agribank) and urban JSBs (including foreign bank branches, JVBs, finance companies and financial leasing companies).
Group 2 includes Agribank only.
Group 3 includes rural JSBs, cooperative banks and central people's credit funds.
Group 4 includes credit institutions (with deposit balance subject to reserve requirement below $VN500 million), local credit funds and Vietnam Bank for Social Policies.
Source: SBV (Various Issues).

Refinancing Facility

In November 1994, Decision No.285/QD-NH14 was issued to guide the conduct of refinance lending. In order to acquire refinancing loans, credit institutions must participate in the inter-bank market, make profits, comply with the SBV's regulations and have sufficient required reserves. The refinancing rates were reduced sharply from 18.9 per cent in 1996 to 6.5 per cent in 2007. However, to deal with inflationary pressures in recent years, the rates were increased to 10.25 per cent in 2008 and continued to increase to 15 per cent in 2011 (Figure 2.3).

Figure 2.3- Vietnam's Refinancing Rates (%), 1996-2011



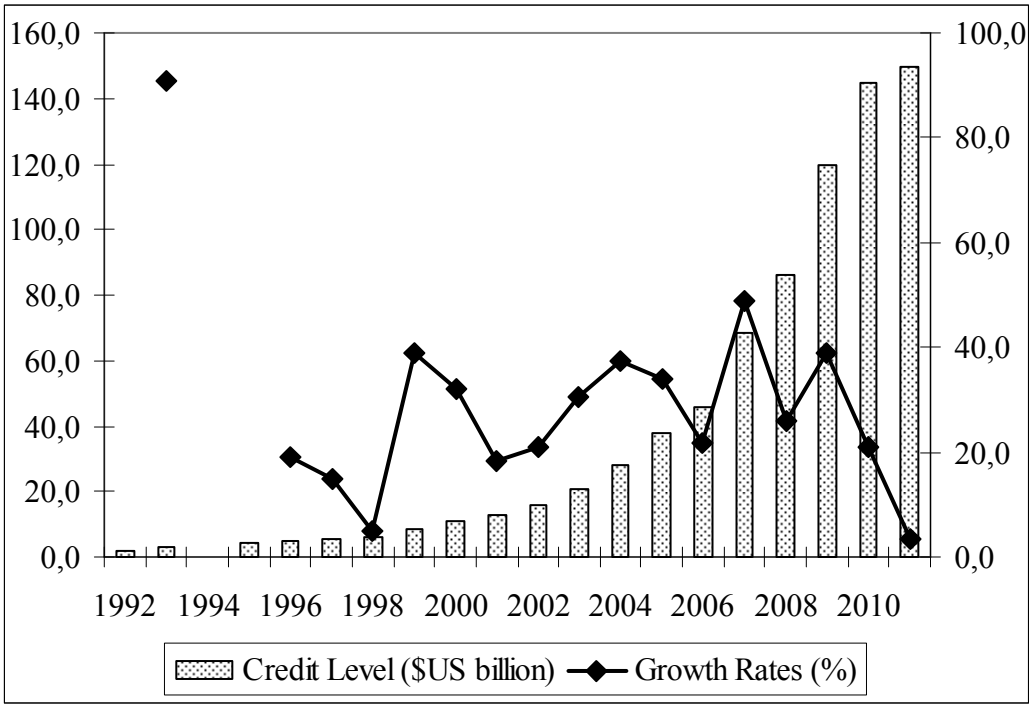
Source: IMF (Various Issues).

Credit Ceiling

The credit ceiling instrument was adopted in the period 1994-97 in order to restrain total liquidity growth, improve credit quality and lower the inflation rates. Nevertheless, this direct instrument had two major limitations: (i) it was only applied to some commercial banks, thereby creating unequal competition among banks; and (ii) due to increasing demand for capital investment in Vietnam, a credit ceiling limited the supply of funds and the business activities of commercial banks. For these reasons, since 1998 the SBV has removed the credit ceiling and only used this instrument when it needed to restrain rapid credit growth.

Regardless of the SBV's credit control, credit continued to expand quickly and excessively. For instance, the credit level in Vietnam increased dramatically from $US1.55 billion in 1992 to $US149.39 billion in 2011 (Figure 2.4). The credit growth rate also exhibited an upward trend, increasing from 19.2 per cent in 1996 to 38.8 per cent in 2009. In 2010 and 2011, the figure was reduced to 20.9 and 3.4 per cent, respectively, in an attempt to mitigate the existing inflationary pressures.

Figure 2.4- Domestic Credit in Vietnam, 1992-2011



Note: The left-hand side vertical axis measures the credit level and the right-hand side vertical axis measures the credit growth rate. The credit level for 1994 was missing from the data series. Hence, the credit growth rates for 1994 and 1995 were also missing due to calculation problem.
Source: IMF (Various Issues).

Interest Rate Control

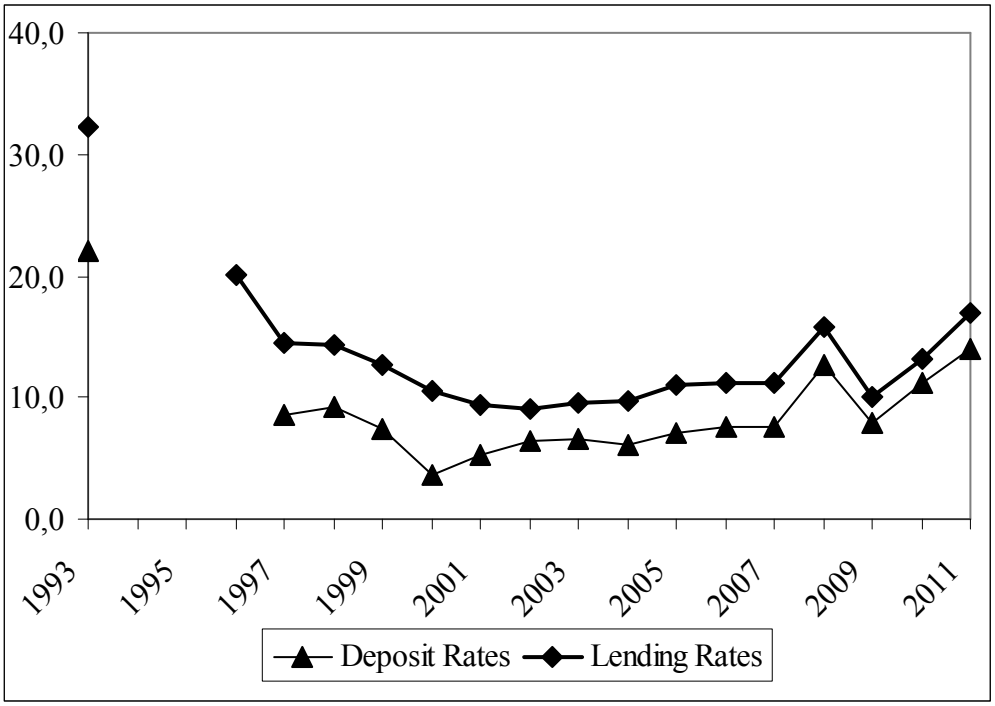
In 1992, the SBV started to liberalise its management of interest rates, allowing nominal interest rates to increase such that real interest rates became positive, which in turn enabled banks to earn profits from their commercial banking services. In January 1996, the interest rate on deposits was liberalised and the lending rate was controlled by a maximum lending interest rate mechanism. This mechanism allowed commercial banks to earn a margin of 0.35 per cent per month including fees, taxes and interest. At that time, there were four sub-ceiling interest rates applicable to short-term and long-term loans, loans in urban and rural areas, and loans made by local people's credit funds. In 1998 the SBV equalised lending rates between rural and urban areas and reduced the four sub-ceilings down to three sub-ceilings.

In August 2000, Decision No.241/2000/QD-NHNN1 was issued to change the SBV's interest rate control regime. Particularly, the SBV changed from a ceiling interest rate to a basic interest rate on lending in domestic currency (VND) and a managed market interest rate on lending in foreign currencies. After that, credit

institutions determined their own lending rates based on the basic rate announced by the SBV, provided that the lending rates did not exceed the basic rate.

Figure 2.5 illustrates the movement of interest rates in Vietnam from 1993 to 2011. In 1993, both deposit and lending rates remained high (22 and 32.2 per cent, respectively). In 2009, the deposit and lending rates decreased sharply to 7.9 and 10.1 per cent, respectively, but started to increase to 14 and 17 per cent, respectively, in 2011. Figure 2.5 also shows that bank's annual profit margins (or interest rate spread), measured by the differences between annual deposit and lending rates, were suppressed from 10.1 per cent in 1993 to 3 per cent in 2011. These were equivalent to declines in monthly margins from 0.85 per cent in 1993 to 0.25 per cent in 2011.

Figure 2.5- Deposit and Lending Rates (%) in Vietnam, 1993-2011



Note: Deposit rates were missing for the period 1994-96, while lending rates were missing for the period 1994-95.
Source: IMF (Various Issues).

In general, Vietnam's interest rate control had its own limitation, largely because of too many administrative interventions by the SBV. As a result, interest rates did not necessarily reflect the market forces of demand and supply. For instance, the basic interest rate was arbitrarily determined by the SBV based on the selected credit institutions rather than market demand and supply. Consequently, interest rate control is likely to have distorted the allocation of credit, thereby preventing Vietnam from developing to its full potential.

Open Market Operations (OMOs)

The OMOs were officially put into operation in July 2000. Goods traded in the open market included Treasury bills (T-bills) and other short-term valuable papers. The SBV determined the volume of valuable papers for sale or purchase, interest rates and trading maturity, based on its liquidity forecast and monetary objectives. However, several problems remained in the open market including: (i) the SBV was weak in forecasting liquidity, making it difficult to conduct the OMOs; (ii) there were not many participants in the open market other than the SOCBs; and (iii) few financial instruments, such as T-bills and SBV's bills, were available for sale or purchase.

Exchange Rate Control

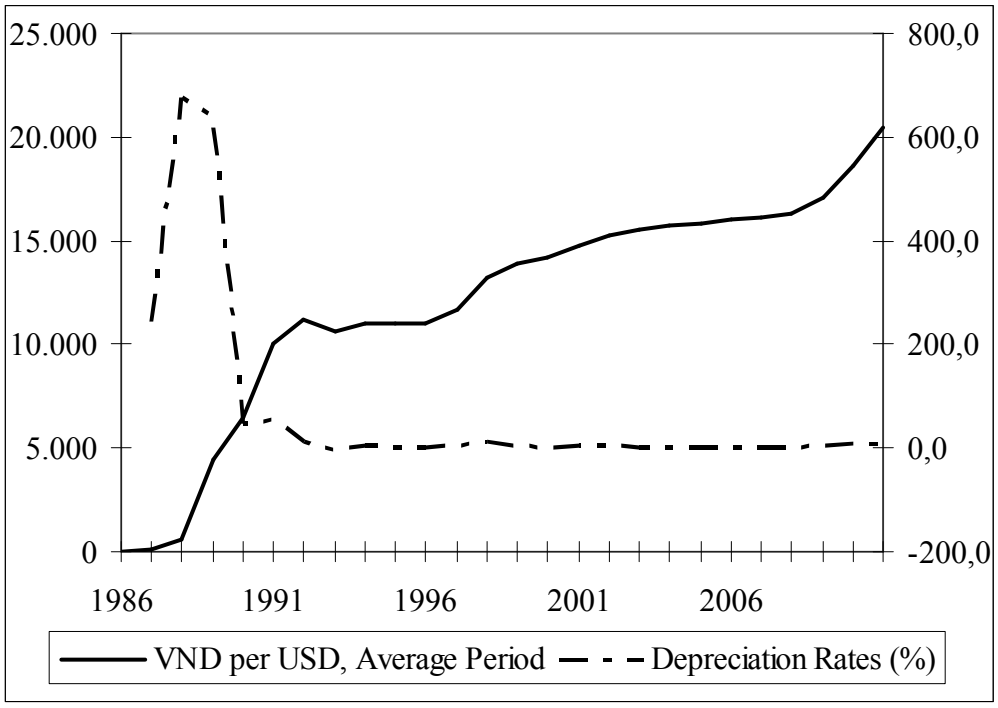
Vietnam has long been controlling (or fixing) the foreign exchange rate in order to stimulate export and accumulate foreign currency reserves, thereby contributing positively to economic growth.[18] The SBV announced the official exchange rate, which was based on the trading exchange rate in the inter-bank foreign exchange market, and managed the trading band of foreign exchange. In February 1999, the SBV changed its exchange rate control regime by unifying two types of exchange rates (the official rate and the real average trading rate in the inter-bank foreign exchange market) into one exchange rate, which was determined daily by the average trading exchange rate in the inter-bank foreign exchange market (referred to as the reference rate). Over time, the SBV's fixed (or crawling peg) exchange rate regime allows the VND to fluctuate within +/- 1 per cent of the reference rate against foreign currencies, especially against the USD (Nguyen, 2011).

Figure 2.6 illustrates the movement in the Vietnamese exchange rate. In the late 1980s (the period of hyperinflation), the VND was depreciated substantially by 244.2 per cent in 1987, 674.7 per cent in 1988 and 636 per cent in 1989. During 1990-92, the VND continued to depreciate, but at a much lower rate (37.2 per cent, on average). Following the 1997 Asian financial crisis, large capital outflows from Vietnam caused the VND to depreciate by 13.6 per cent in 1998. In this period (1997-98), Vietnam strategically devaluated its domestic currency, in order to promote exports, reduce imports, moderate the inflation level and achieve strong

[18] Nevertheless, Vietnam needs to be cautious with such practice because many theoretical and empirical works pioneered by Mundell (1963) have shown that tight monetary policy would be less effective or even ineffective under a fixed (or crawling peg) exchange rate regime.

economic growth. During 1999-2009, the VND was slightly depreciated at an annual average rate of 2.3 per cent and continued to depreciate at an annual average rate of 9.6 per cent during 2010-11.

Figure 2.6- Exchange Rate Movement in Vietnam, 1986-2011



Note: The left-hand side vertical axis measures the exchange values. Because the exchange values in 1986 and 1987 were quite small (23 VND/USD and 78 VND/USD, respectively), they looked very close to zero (or the origin) on the graph. The right-hand side vertical axis measures the depreciation rates.
Source: IMF (Various Issues).

Other Administrative Measures

The SBV's weak institutional capacity has impeded the use of more incentive or market-friendly instruments to implement its monetary policy (Leung, 2009). Therefore, the SBV frequently uses 'window guidance' to communicate its objectives, concerns and motivations to other banks and financial institutions through the issuance of circulars and holding of meetings. This has been considered as the SBV's most powerful monetary instrument in regulating banking activities in Vietnam, but the distortion effects of such practice on bankers' decisions are significantly large (Nguyen, 2011).

2.6 Conclusion

Vietnam's economic performance has been very impressive since *Doi Moi*. The country experienced strong output growth, especially in the mid-1990s, and became more open to the rest of the world. High output growth translated into increasing labour incomes and high employment growth, which in turn reduced the unemployment rates to a favourably low level. However, Vietnam is still considered as a low-income country with considerable income gaps between urban and rural areas, and between rich and poor regions. Besides, there has been an improvement in the Vietnamese BOPs, but the country becomes more dependent on external debt, ODA funds, overseas remittances and FDI, to finance its industrialisation process.

In the period 1960-85, Vietnam implemented the heavy industry priority (HIP) strategy to develop heavy industry as a leading sector in Vietnam. This strategy was unsuccessful because of the inefficient allocation of investment resources to heavy industry and away from light industry and agriculture. Since 1986, Vietnam has switched to developing light industry. Nevertheless, trade deficits continued to rise over time due to Vietnam's over-reliance on imported material inputs to accelerate its industrialisation process.

After the collapse of the CMEA bloc in the early 1990s, Vietnam opened up its domestic economy to the rest of the world. The country adopted a dualistic trade regime in which it erected high walls of protection for both domestic import-substituting and export-oriented industries. Although Vietnam's trade regime has been more liberalised than before, it is still characterised as restrictive, protectionist and interventionist with favourable treatment given to domestic industries (especially domestic SOEs). Nevertheless, both domestic import-substituting and export-oriented industries did not expand strongly enough to lead the economy nor could they help reduce the persistent trade deficits.

Regarding the monetary policy, the SBV has been somewhat successful in controlling inflation due to its tight and/or prudential loosening monetary policy stance since *Doi Moi*. In effect, the inflation level was brought down from a three-digit number during 1986-88 to less than 8 per cent in the 2000s (except for the year 2008), but started to increase to a two-digit number again during 2010-11. Overall, the financial market as a whole has been hampered by too many administrative

interventions by the SBV such that the distortion effects of such practice on bankers' decisions are significantly large.

Vietnam's protectionist policies were also reflected in high protective barriers favouring domestic producers, especially domestic SOEs. Regardless of being granted many privileges, these SOEs could not lead the economy as expected. Therefore, the next chapter discusses Vietnam's microeconomic reform of domestic enterprises (including state and non-state enterprises).

Chapter 3
Microeconomic Reform of Domestic Enterprises

3.1 Introduction

As discussed in Chapter 2, in general Vietnam's macroeconomic policies were seen to be restrictive, interventionist and protectionist. In principle, Vietnam always wished to progress towards a market economy. In practice, the influence from the central planning days slowed down this progress and even pushed it backwards. This was reflected in high protective barriers erected for domestic producers, especially domestic SOEs. Regardless of being granted many privileges, these SOEs could not lead the economy as expected. In this respect, this current chapter discusses Vietnam's microeconomic reform of domestic enterprises to describe the overall SOE sector and its reform process since *Doi Moi*. To achieve greater reform outcomes, the private sector needs to be developed to its full potential. Ideally, the private sector should replace the SOE sector in leading the economy, creating more employment opportunities and sustaining growth in the future.

This current chapter is organised as follows. Section 3.2 discusses SOE reforms by briefly introducing the SOE sector, which has long been enjoying preferential treatment from the government, explaining the reasons for reforming this sector, and evaluating the overall SOE reform process over the past decades. In this respect, the equitisation program and the competition policy are important for promoting the economic efficiency and competitiveness of SOEs and other enterprises in Vietnam. Section 3.3 discusses the private sector development (PSD) policy, starting with a discussion on the private sector, which faces many ongoing obstacles. This section also discusses the benefits of developing the private sector and proposes ways to develop this sector as a leading economic force in Vietnam. Section 3.4 summarises key findings and provides conclusion of the chapter.

3.2 Vietnam's SOE Reforms

3.2.1 The SOE Sector

Over time, the state government has continued to maintain its expectation of the SOE sector as an engine of growth, thereby implementing policies to support and protect it. In effect, the SOE sector has become administratively dominant (in terms of influencing policy settings and access to funding and permit allocation) in the strategic and capital-intensive industries such as telecommunications, electronics, electrical engineering and cement. Other areas of SOE dominance include oil, gas and petroleum (OGP), steel, non-ferrous metals, chemicals and fertilisers. During 2003-05, there were 3,035 SOEs. Of this, the government determined to restructure 2,075 SOEs through equitisation, merger and consolidation, and maintained full government control of the remaining 960 SOEs. These government-controlled SOEs are relatively large in size and located in large cities and provinces, especially in Ho Chi Minh City and Hanoi (Ishizuka, 2009). In 2007, there were 120 SOEs being nominated to the top 200 domestic enterprises. Almost all of these SOEs were members of general corporations (GCs) and economic conglomerates (Cheshier and Penrose, 2007). As mentioned in sub-section 2.3 of Chapter 2, the formation of many large GCs and economic conglomerates was primarily aimed at benefiting from scale economies and competing equally with MNCs.

Preferential Treatment

To maintain the SOE sector's dominant role in the economy, preferential treatment in access to land, export quotas, credit and government procurement contracts including favourable tax rates, was granted. First, SOEs pay significantly lower profit tax rates, compared with other private firms: "profit tax rates on domestic private enterprises are twice as high as tax rates lived on foreign-invested projects and SOEs" (Hakkala et al., 2001, p. 29). Second, the process of acquiring land-use rights, especially long-term land-use rights in urban areas, has been streamlined particularly for SOEs while many private enterprises, including domestic and foreign firms, have difficulties in obtaining land-use rights certificates due to cumbersome procedures and problems associated with the valuation method of land-use rights.

Third, SOEs have no difficulties in acquiring credit due to their long-standing relationships with the banking system.[19] To some extent, the government's announcement in 1997 explicitly exempts SOEs from the banks' strict collateral requirements, usually in the form of land-use rights certificates. However, such requirements are still applied to private enterprises, thereby indirectly preventing them from acquiring banks' credit. Indeed, private enterprises are more likely to be rejected than are SOEs when applying for both short- and long-term loans. Only large private enterprises, especially those that have close political contacts, can get bank loan approvals more easily.

In principle, private enterprises can apply for export quotas, but getting approvals is rather difficult because the procedures are cumbersome and costly, similar to those for land and credit acquisition. For instance, foreign enterprises pay the highest quota fees (as a percentage of production cost), followed by domestic private enterprises and SOEs (5.6, 3.3 and 2.2 per cent, respectively). In practice, private enterprises can only obtain export quotas through informal channels, such as resale and transfer of export quotas from SOEs, even though such activities are prohibited (Knutsen and Nguyen, 2004).

Finally, private enterprises can hardly win procurement contracts directly from the government since such contracts are implicitly saved for SOEs. The public bidding processes are structured in ways that implicitly prevent private enterprises from winning bids. Such practices may include (i) creating one big contract with bundled services to deter participation of small (private) firms; (ii) setting too short submission dates; (iii) asking private firms to provide sensitive information; and (iv) allowing the government or SOEs to adjust their bids after private firms have submitted theirs (Hakkala and Kokko, 2007).

Consequences of Preferential Treatment

The above preferential treatment indeed creates unfair competition, which impedes the growth of private enterprises.[20] First, the formation of many large GCs administratively gives them monopoly power in the input and output markets. Therefore, SOEs' pricing does not necessarily reflect the forces of supply and

[19] See Annex 9 for more details about the close relationships between SOEs and the banking system.
[20] A study by Nguyen and Freeman (2009) confirms that SOEs are indeed crowding out other private enterprises due to the long-standing problem of lacking a level-playing field, which may lead to inefficient resources allocation and under-utilisation of Vietnam's growth potential.

demand. Even though many SOEs are more profitable and have superior performance compared with private enterprises, this mostly comes from their secured monopoly positions rather than from efficiency gains (Kokko and Sojholm, 2000). Historically, profitable SOEs can take advantage of cheap credit to expand further while loss-making SOEs still survive at the expense of the private sector facing capital shortages and foregone business opportunities. Even though private enterprises have sufficient investment capital, they are extremely reluctant to undertake long-term investment projects due to Vietnam's uncertain business environment caused by rapidly changing laws and regulations, as mentioned in sub-section 2.4.4 of Chapter 2.

Second, the SOE sector still accounts for a significantly large share in total investment, compared with the private sector. During 1997-99, SOEs absorbed approximately 2.2 per cent of GDP in various forms of subsidies (Hakkala et al., 2001). Most notably, in November 2005, Vinashin− a ship building SOE− was subsidised through government bonds worth $US750 million such that no private firms were able to compete with this giant in the short and medium terms (Hakkala and Kokko, 2007). These scarce investment resources could have been directed towards other more productive areas which needed them the most.

With respect to foreign investment, a majority of foreign investors reveal strong preferences towards forming JVs with SOEs chiefly because they can easily get government approvals and business licenses and have ready-to-use resources, especially land-use rights (Nguyen and Meyer, 2004). In addition, foreign investors can solve any disputes more easily with SOEs than with private enterprises: "if there is a problem, they would contact the ministry and the problem is solved… with the private companies, they would have to go to court, which is a long and difficult process" (Knutsen and Nguyen, 2004, p. 132). Consequently, private enterprises will have fewer opportunities to collaborate with foreign enterprises or learn and upgrade from foreign technologies. Worse still, foreign investment may be misallocated into inefficient sectors and away from productive ones (Leung, 2009).

3.2.2 Reasons for Reforms

SOEs Contributed Less to the Economy

Over the past decades, the SOE sector was arbitrarily chosen to play a leading role in Vietnam, thereby absorbing a very large share in aggregate investment during

1995-2011. Ironically, its contribution to real GDP and aggregate employment was much lower than that of the private sector (including the non-state enterprises and foreign-invested enterprises) during the same period (Table 3.1).

Table 3.1- Ownership Shares in Real GDP, Aggregate Investment and Employment (%), 1995-2011

		1995-99	2000-04	2005-09	2010-11
Investment	State	50.9	58.1	46.8	44.5
	Non-state (Domestic)	24.6	24.6	28.2	26.9
	Foreign-invested (including JVs)	24.5	17.3	25.0	28.6
Real GDP	State	40.8	41.0	39.1	36.7
	Non-State (Domestic)	50.8	48.0	47.9	49.6
	Foreign-invested (including JVs)	8.4	11.1	13.0	13.6
Employment	State	N/A	9.6	11.1	10.4
	Non-state (Domestic)	N/A	88.8	85.7	86.1
	Foreign-invested (including JVs)	N/A	1.6	3.2	3.4

Note: These shares are expressed in period-average percentages.
Source: GSO (Various Issues).

In addition, the SOE sector's leading role was not supported much by the fact that the total number of private enterprises far exceeded the total number of SOEs by the end of 2008 (202,402 and 3,287 enterprises, respectively). Of this, small and medium private enterprises outnumbered small and medium SOEs both in terms of number of employees and capitalisation. Likewise, large private enterprises also outnumbered large SOEs (Table 3.2). This partly explains the SOE sector's smaller contribution to total government tax revenues in recent years, compared to the private sector. During 2000-02, the SOE sector accounted for more than half of total government tax revenues, but its share declined sharply to 34.3 per cent during 2006-08. By contrast, the non-state enterprises (NSEs), including domestic enterprises and foreign-invested enterprises (FIEs), accounted for 45.4 per cent of total government tax revenues during 2000-02 and increased considerably to 65.7 per cent during 2006-08 (Table 3.3). In general, it can be said that the SOE sector was less efficient than the private sector in utilising investment capital for output and employment expansion such that, in recent years, its dominant position has been replaced by the increasing importance of the private sector.

Table 3.2- Firm Size by Number of Employees and Capitalisation (31 December, 2008)

		Number of Employees		Capitalisation ($VN billion)	
	Total	**1- 999**	**1000- 5000**	**1- 199**	**200- 500**
Total	205,689	204,642	1,047	202,794	2,895
SOEs	3,287	2,951	336	2,469	818
NSEs	202,402	201,691	711	200,325	2,077
Domestic	196,776	196,448	328	195,488	1,288
Foreign	5,626	5,243	383	4,837	789

Note: Small and medium enterprises are those operating with less than 1,000 employees or less than $VN200 billion. By contrast, large enterprises are those operating with more than 1,000 employees or more than $VN200 billion.
Source: GSO (Various Issues).

Table 3.3- Ownership Shares in Government Tax Revenues (%), 2000-08

	2000-02	**2003-05**	**2006-08**
SOEs	54.6	43.3	34.3
NSEs	45.4	56.7	65.7
Domestic enterprises	9.8	16.5	25.2
Foreign-invested enterprises	35.6	40.2	40.6

Note: These numbers are expressed in period-average percentages.
Source: GSO (Various Issues).

SOEs Operated Inefficiently

Over time, a majority of SOEs operated inefficiently. First, there existed many problems associated with the formation of GCs in Vietnam, such as conflicting interests among GC members and inflexibility in decision making. Member enterprises were often forced to join GCs without a clear knowledge of their roles and benefits. They were required to follow a common business plan and were restrained from signing independent business contracts or pursuing their own investment strategies. Worse still, profitable members were usually forced to rescue other inefficient, loss-making members instead of shutting them down (refer to the case study in Box 3.2). This type of cross-subsidisation was often not economically viable and often created tensions among member enterprises (Malesky et al., 1998).

Second, most SOEs operated wastefully, with more than 30 per cent of the capital stock being under-utilised (Kokko and Sjoholm, 2000). Besides, most SOEs were over-staffed and, if they were to operate at an optimal employment level, more than half of their workforce would become redundant (Mekong Economics, 2002).

Third, SOEs captured a larger share in investment capital but generated less output than private enterprises, as mentioned previously. However, SOEs were not penalised seriously for their failures nor were they following market disciplines (Arkadie and Mallon, 2003). Hence, they did not really care much for their successes or failures. This was manifested by the fact that most SOEs were given monopoly power, soft budget constraint and preferential treatment.

Fourth, most SOEs lacked essential managerial skills largely because of the state's managerial appointment practice. More clearly, SOE managers were often appointed based on their party membership status instead of educational qualifications. Sometimes, they were transferred to other SOEs (either promoted or demoted) suddenly at the government's discretion. The problem was, these SOE managers often had lower skills and received lower salaries than private managers. Under state policies, they had little autonomy in deciding on their business activities and other related issues. Thus, SOE managers were either lacking incentives or unable to perform well (Fforde, 2004).

Finally, SOEs operated inefficiently because they often pursued multiple conflicting objectives, in order to fulfil various interests of the state and other SOE stakeholders (including the board of management and employees). In reality, profit maximisation was not necessarily an ultimate goal of SOEs. Instead, job security for workers appeared to be their most important objective. As a result, most SOEs were obliged to operate in their core businesses in order to secure jobs, even though many core businesses were not profitable (Cheshier and Penrose, 2007).

The case study in Box 3.1 discusses the economic efficiency of the SOE sector in Vietnam in late 2008. Similarly, the case study in Box 3.2 provides the most recent example of failure in an industrial ship building SOE known as Vinashin− one of the leading economic conglomerates in Vietnam.

Box 3.1- Many GCs and economic conglomerates in Vietnam failed to utilise their advantages to perform better

According to Song Linh (2009), GCs and economic conglomerates in Vietnam were characterised as a giant standing on his bare feet. These agents have had many advantages over other private enterprises. By 2008, their investment capital amounted to $VN1,241,000 billion (or $US60 billion), accounting for nearly half of aggregate investment capital. In addition, their land usage amounted to 366,000 hectare, most of which were highly valued in the property market. In some areas, monopoly power has given these GCs great advantages in competing with other firms.

However, these agents have not fully utilised their valuable resources. Instead, they even wasted such resources, leading to poor economic performance, losses of investment capital and erosion of state assets. By 31 December 2008, nearly half of the total number of GCs operated inefficiently for three reasons. First, these inefficient GCs often had total debt-to-asset ratios exceeding 10:1, indicating that debt was more than 10 times the level of assets. These GCs were the Transportation Construction GCs No.1 and No.4 (21.6:1 and 14:1, respectively), Mechanical Installation GC (17.4:1), Industrial Construction GC (12.9:1) and Industrial Ship Building GC (Vinashin, 10.9:1).

Second, they often incurred huge debt, including overdue debt. The total debt of seven Vietnamese conglomerates, including Petroleum and Gas, Coal and Minerals, Rubber, Textile and Clothing, Ship Building, Electricity, and Post and Telecommunication, amounted to $VN128,786 billion (or $US6.5 billion) in 2008, having increased by 20.54 per cent from 2007. The overdue debt of these conglomerates amounted to $VN4,168 billion (or $US208 million), accounting for 3.24 per cent of all conglomerates' total outstanding debt.

Finally, those inefficient GCs often got involved in cross-industry investments in areas with low (or even negative) rates of return. Ironically, they were racing to make cross-industry investments even though they seriously lacked funds to invest in their core businesses. There were 47 GCs and conglomerates making cross-industry investments in such areas as banking, the stock exchange, insurance, and investment funds. Total investment in these areas amounted to $VN6,400 billion (or $US320 million) by the end of 2006, increasing dramatically to $VN16,200 billion (or $US810 million) by 2007 and $VN21,164 billion (or $US1.06 billion) by 2008. However, returns on investment in such areas were very low, compared to investment returns in their core businesses. In 2008, the stock exchange market and investment funds industry contracted, leading almost all GCs and conglomerates to make losses (Hong Anh, 2009a).

Note: This article was archived from Vietnam's well known online news website (http://vnexpress.net/GL/Home/) and was translated into English by the author.

Box 3.2- Failed Vinashin was rescued by the government through restructuring

After a series of investigation, it was concluded that Vinashin failed to report its financial difficulties to the government. Due to its ambition to expand business quickly, Vinashin established about 200 child (or smaller) companies, which were managed loosely and incapable of continuing their operations. Vinashin also made cross-industry investments in areas with low (or even negative) rates of return and bought too many old ships, creating heavy burdens on the government budget (Hong Anh and Hoang Lan, 2010). For these reasons, Vinashin is now on the brink of bankruptcy. Almost all key members of the board of management, especially chairman Thanh Binh Pham, were arrested and faced charges for ruining the largest ship building conglomerate of the nation (Viet Anh et al., 2010).

Vinashin's current total assets are worth $VN90,000 billion (or $US4.5 billion) and working capital worth $VN9,000 billion (or $US450 million). However, its total outstanding debt amounted to $VN80,000 billion (or $US4 billion). Part of the debt came from the government's international securities worth $US750 million in November, 2005 (Hoang Lan, 2010). Due to its huge debt level and incapability of continuing operation, Vinashin needed to be restructured immediately.

According to the restructuring plan, the Petroleum and Gas conglomerate (PVN) and the Marine GC (Vinalines) were assigned to undertake Vinashin's ongoing investment projects, but they had to bear part of the debt burdens left by Vinashin ($VN20,000 billion or $US1 billion, approximately). The government announced that the restructuring of Vinashin was not aimed at reducing its debt level, but fulfilling four main objectives: (i) to continue and develop the ship building and repairing industry; (ii) to use resources more efficiently for developing this industry; (iii) to not adversely affect the operations of other credit institutions; and (iv) to provide job security for workers in this industry. The government continued to subsidise Vinashin to resolve its debt and acquire new funds to finance its operations. In so doing, the SBV was directed to negotiate with other credit institutions to provide new loans for Vinashin and re-examine its debt structure.

Note: This article was archived from Vietnam's well known online news website (http://vnexpress.net/GL/Home/) and was translated into English by the author.

3.2.3 Reforms of SOEs

In 1989, the government started to reform the SOE sector, aiming at dissolving unprofitable SOEs and improving their competitiveness. In effect, the number of SOEs declined remarkably from 6,545 in 1992 to 3,324 in the period 2009-10 (Table 3.4). The yearly data (unreported in Table 3.4) shows that there were approximately 225 SOEs, on average, being reformed each year during 2000-10.

Table 3.4- Number of SOEs and NSEs in Vietnam (Period Average), 1992-2010

	1992	1992-98	2000-02	2003-05	2006-08	2009-10
Total	N/A	N/A	52,292	92,239	164,259	270,752
SOEs	6,545	5,873	5,492	4,509	3,496	3,324
NSEs (including FIEs)	N/A	N/A	46,800	87,730	160,764	267,428

Note: N/A = Not Available.
Source: Data for 1992-98 is sourced from Vu (2005, p. 8) and data for 2000-10 is sourced from the GSO (Various Issues).

Regardless of the reduced number of SOEs, the SOE reform process has been slow and incomplete. First, SOE managers and even labourers are resistant to the reform process, regardless of its social benefits, in order to protect their status quo (Hakkala et al., 2001). Second, weak governmental management of SOEs also explains the slow SOE reform process: "there are many weaknesses and bottlenecks in the state administration of SOEs" (Mekong Economics, 2002, p. 33). Most notably, the government's reluctance to reform large SOEs is the main contributor to slow down the entire reform process. Understandably, because most SOEs are over-staffed, SOE reforms would cause massive job losses. Hence, the government prefers slow reforms in order to minimise this employment shock and secure jobs. Overall, the Vietnamese SOE reforms have been best characterised as "keeping the big and releasing the small" (UNDP, 2006, p. 23). It means the government takes dramatic steps in freeing up loss-making SOEs of small and medium size, while retaining full control over strategic and profitable SOEs of larger size. Such a reform approach is problematic because not all large SOEs are efficient, as previously illustrated in Boxes 3.1 and 3.2.

The Equitisation Program

Equitisation has been one of the most commonly used methods of reform in Vietnam. According to Vu (2006), the government classifies three groups of SOEs: (i) Group 1 consists of strategic SOEs which are kept by the state; (ii) Group 2 consists of medium SOEs which will be equitised partially; and (iii) Group 3 consists of small and unprofitable SOEs which are ready for either partial or full equitisation. More specifically, there are 19 sectors[21] in which existing SOEs will remain 100 per

[21] Such as (i) explosives, toxic chemicals, weapons and ammunition; (ii) electricity transmission and large-scale electricity production with special social-economic importance; (iii) management and operation of national and urban railways, airports and large-scale seaports; (iv) radio, television, publishing and press; and (v) credit institutions serving socio-economic development.

cent state-owned and 27 sectors[22] in which the state will continue to hold more than 50 per cent of ownership share (UNCTAD, 2008). Obviously, SOEs in the strategic (or very important) industries are not in the equitisation agenda because they represent the images of the state such that the equitisation program is only applied to small and medium SOEs, aiming at improving their efficiency and competitiveness.[23]

In the initial stage (1992-96), there were only five equitised SOEs in the pilot program, which involved significantly large insider buyouts. These equitised SOEs were of small and medium size with market capitalisation under $US1 million, operating in the transportation, shoes, machinery and food processing industries. The government's shares in these enterprises were reduced to 18-30 per cent. Outsiders' shares were between 5 and 35 per cent with employees accounting for the lion's share of between 35 and 77 per cent (Table 3.5).

Table 3.5- The Pilot Equitisation Program, 1992-96

Firm Name	Capital ($US)	Ownership Structure (%)		
		State	Employees	Outsiders
Transportation Service Co	394,603	18.0	77.0	5.0
Refrigeration & Electrical Engineering Co	1,018,330	30.0	50.0	20.0
Hiep An Shoes Co	305,053	30.0	35.2	34.8
Animal Food Processing Co	503,564	30.0	50.0	20.0
Longan Export Product Processing Co	225,305	30.2	48.6	21.2

Note: Capital was primarily expressed in VND, which was then converted into $US by the author.
Source: Truong et al. (2006, p. 352).

Among different reform measures, SOE reforms have been done largely through equitisation, followed by merger or consolidation and assignment of sales. For instance, the accumulated number of reformed SOEs was 4,091 in the period 1992-2008. Of this, 3,279 SOEs were equitised, 362 merged or consolidated and 185 assigned of sales (Table 3.6).

[22] Such as (i) maintenance of the national railway system; (ii) management and operations of seaports (other than large-scale); (iii) electricity production with output capacity of 100 megawatts (MW) or more; (iv) mining of various minerals, petroleum and natural gas; (v) supply of information, communication and technology (ICT) network infrastructure; (vi) wholesale of food; (vii) currency trading; and (viii) insurance.

[23] Over time, equitising only small to medium SOEs has offered limited benefits. By contrast, equitising large SOEs is believed to maximise the potential benefits for Vietnam in terms of improvements in productivity and export performance (Anwar and Nguyen, 2011).

With respect to equitisation, the number of equitised SOEs increased steadily from 1992 to 2008. More specifically, equitisation was accelerated to 123 cases during 1992-98 and continued to accelerate to 833 cases during 1999-2002 (Table 3.6). During 2003-05, equitisation was accelerated most rapidly to a record high of 2,009 cases (or 669 cases per year, on average). However, the process suddenly slowed down to 314 cases during 2006-08 (or 104 cases per year, on average).

Table 3.6- Vietnam's SOE Reform Measures, 1992-2008

	1992-98	1999-2002	2003-05	2006-08	Accumulated
Total cases	**123**	**1,145**	**2,509**	**314**	**4,091**
Equitisation	123	833	2,009	314	3,279
Assignment of sales	N/A	99	86	N/A	185
Contract or lease	N/A	9	5	N/A	14
Merger or consolidation	N/A	127	235	N/A	362
Divesture	N/A	29	73	N/A	102
Bankruptcy	N/A	0	0	N/A	0
Other Measures	N/A	48	101	N/A	149

Note: Data for the equitisation entry (from 1992 to 2008) is sourced from Nguyen (2010, p. 70). Data for other remaining entries is sourced from Vu (2005, p. 8). N/A = Not Available.

Current Equitisation Issues

As the government continues equitising SOEs, there are at least three worrying issues worth considering. First, regardless of the increasing number of equitised SOEs, the overall equitisation process has been seen to be slow and incomplete, similar to the overall SOE reform process. The government is reluctant to equitise SOEs more aggressively because of many concerns such as job losses, SOE asset valuation and conflicting ownership claims against SOE assets (O'Connor, 1996).[24] Therefore, equitisation has been implemented in a lengthy and cumbersome procedure. Initially, it took three years to equitise a single firm. The equitisation process was then reduced to 13 months by 2006 and was further reduced to nine months in compliance with Decree 109 in 2007 (ADB, 2009).

Second, the equitisation process is not transparent and only benefits the political elites, indicating that private participants do not benefit much from the equitisation process. In some cases, private investors simply have no interest in small and unprofitable SOEs because it is not economically viable for them to participate.

[24] To some extent, most government authorities are often reluctant to promote equitisation for fear of receiving criticism for deviating from socialism and/or communism (Altenburg, 2011).

In other cases, private investors are just too small to buy shares (Vu, 2005). This gives rise to the next and last issue regarding the ownership structure of equitised SOEs.

Finally, equitisation cannot completely solve the ownership issues. One legal entity could buy up to 20 per cent of shares, for individuals 10 per cent and for foreign investors 30 per cent, in a particular equitised SOE. The remaining shares belong to the state, managers and employees (Tran and CIEM, 2002). As a result, there are virtually no major changes in the ownership structure of the equitised enterprises (Table 3.7). The labourers' shares accounted for 43.5 per cent, but there were too many labourers in the equitised enterprises. Hence, each individual labourer had little influence on such enterprises. Instead, the power is concentrated in a small group of managers even though they only accounted for 18.6 per cent of the total share. Other government agencies, including central and provincial governments, state GCs and other SOEs, altogether accounted for 28.1 per cent of shares. They also had great influence on the equitised SOEs. By contrast, the private participants, including the Vietnamese individuals, enterprises and organisations, and foreigners, had little role in the equitisation process, altogether accounting for less than 10 per cent of shares.

Table 3.7- Ownership Structure of Equitised Enterprises (%), 2004

Shareholders	Structure in Equitisation Year	Structure in 2004	Changes
Total	100.0	100.0	
1. Managers	17.2	18.6	1.4
2. Labourers	44.6	43.5	-1.1
3. Central government	2.2	2.0	-0.2
4. Provincial governments	14.5	12.4	-2.1
5. State GCs	11.0	10.7	-0.3
6. Other SOEs	2.5	3.0	0.5
7. Other Vietnamese individuals	6.4	7.9	1.5
8. Vietnamese enterprises & organisations	1.5	1.6	0.1
9. Foreigners	0.1	0.3	0.2

Source: Tran et al. (2007, p. 48).

Over time, insiders' shares in the equitised enterprises declined slightly and those of outsiders increased since the introduction of Decree 187 in 2004 requiring shares to be auctioned off publicly (ADB, 2009). In effect, shares retained by managers and employees were reduced sharply from 26 per cent in late 2005 to 12 per cent in mid 2008 (Table 3.8). By contrast, outside investors' shares increased considerably from 25 per cent in late 2005 to 38 per cent in mid 2008. Yet, the government still retained half of the total shares, indicating that its influence on equitised SOEs remained significantly large.

Table 3.8- Ownership Structure (%) during 2005-08

Shareholders	End 2005	Mid 2008	Changes
Total capital shares	100.0	100.0	
1. Managers & employees	26.0	12.0	-14.0
2. Outside investors	25.0	38.0	13.0
3. State shares	49.0	50.0	1.0

Source: Nguyen (2010, p. 71).

Vietnam's Competition Policy[25]

Overall, the long-standing problem of unfair competition among SOEs, equitised SOEs and private enterprises, has never been solved. In practice, SOEs and equitised SOEs still have close political contacts with the government. Therefore, they can go through "the maze of regulations" and obtain permits and licenses more easily than private enterprises (Griffin, 1998, p. 44). In recent years, the military has been authorised to engage in profit-making businesses, putting private enterprises at a competitive disadvantage (EAAU, 1997). As mentioned previously, most SOEs have either monopoly or oligopoly powers, making it difficult for private enterprises to compete with them equally. For these reasons, Vu (2006, p. 3) strongly argued that "merely counting the number of SOEs subject to privatisation… do[es] not tell us much about the effectiveness of privatisation and competition policies. The methods used and the context in which these policies are implemented matter greatly".

Therefore, it can be said that while equitisation does enhance the efficiency of SOEs, it is not sufficient to ensure all SOEs become efficient and competitive. Hence, equitisation must be complemented by a competition law, aiming at creating

[25] 'Competition policy' is used interchangeably with 'anti-trust policy'.

fair and equal competition among all types of enterprises. According to Rey (1997), fair and equal competition has favourable impacts on research and development (R&D) because it induces firms to become more innovative, in order to maximise profits and survive. Hence, an effective competition policy will help promote and protect the competition process, which in turn promotes innovation and growth (Le et al., 2003).

On 3 December 2004, the National Assembly (NA) passed the Competition Law (No. 27/2004/QH11), which came into effect on 1 July, 2005. The law was written in six Chapters with 123 Articles and was applied to two major groups: (i) business organisations and (ii) individuals (including all types of enterprises). Essentially, the law prohibits three competition-restrictive acts, including competition-restriction agreement, abuse of dominant position and economic concentration. It also prohibits 10 unfair-competition acts, such as misleading indications, infringement upon business secrets, constraint in business and discrediting other enterprises. By January 2007, the government had introduced six implementation guidelines to enforce the law effectively. Among these, two important Decrees (namely, Decrees No.05/2006/ND-CP and No.06/2006/ND-CP) were introduced to establish the Competition Council (VCC) and the Competition Administration Department (VCAD), respectively, to handle disputes related to unhealthy competition (VCAD, Various Issues).

To date, there is very limited information about the implementation of the 2004 Competition Law and its effects on the economy. As argued by the United Nations Conference on Trade and Development (UNCTAD, 2008, p. 77), "insufficient time has elapsed to assess the impact of the law and the effectiveness of the institutional mechanism established to enforce it".

3.3 Private Sector Development[26]

3.3.1 The Private Sector

It is important to note that the author considers the private sector to consist of private domestic enterprises, foreign-invested enterprises (FIEs) and joint ventures (JVs). Generally, these economic agents do not enjoy preferential treatment as much as SOEs do. Among these, private domestic enterprises are the most vulnerable

[26] The term 'private sector' is used interchangeably with 'NSE sector'.

group of enterprises in Vietnam. Therefore, the discussion in this sub-section largely refers to private domestic enterprises rather than FIEs and JVs.

It can be said that the Vietnamese private sector as a whole has been constrained with many administrative barriers. As a result, many private enterprises, especially private domestic enterprises, remain small and vulnerable. Normally, these enterprises are of small and medium size, operating in non-strategic industries and producing relatively low value-added goods and services such as retail trade, garments and footwear. Similarly, they are concentrated in a few locations, especially in the Southern regions and large cities. According to Webster and Taussig (1999), most private domestic enterprises are small to medium because: (i) they have low resource endowment; (ii) they operate in a high-risk environment; and (iii) they lack investment capital. In addition, many private small and medium enterprises (SMEs) do not have large-scale operations because they lack adequate skills, and because they are crowded-out by SOEs. Worse still, there are a vast number of micro-sized enterprises, most of which have low productivity and engage in labour-intensive industries (ADB, 2005). These micro-enterprises produce and sell even lower value-added goods and services to local markets such as small-scale manufacturing, construction, repairing, retail trade, garments and footwear, and handicrafts.

Due to its fragile structure, the private sector has the highest level of business informality.[27] Several factors contributing to such informality include excessive laws and regulations, cumbersome administrative procedures, discretionary behaviour of government officials, and Vietnam being a largely cash economy where transactions cannot be properly monitored. Yet, the consequences of informality are ambiguous since it may be either good or bad. For instance, informality gives unfair competitive advantage to noncompliant firms and distorts resource allocation. However, informality can be viewed as a defensive, socially-efficient response by disadvantaged firms to excessive regulations and an uneven playing field (Tenev et al., 2003).

[27] 'Business informality' is defined by the GSO as informal activities including: (i) household production in rural areas; (ii) unregistered business activities in urban areas; (iii) not reporting income so as to evade taxes; (iv) domestic service; (v) smuggling; (vi) renting of houses or furniture; (vii) secondary and unreported activities of administrative offices, army offices, prisons, re-education camps, and orphanages; and (viii) operations of non-profit institutions, charitable associations, and the Red Cross (Tenev et al., 2003).

3.3.2 Benefits of Private Sector Development (PSD)

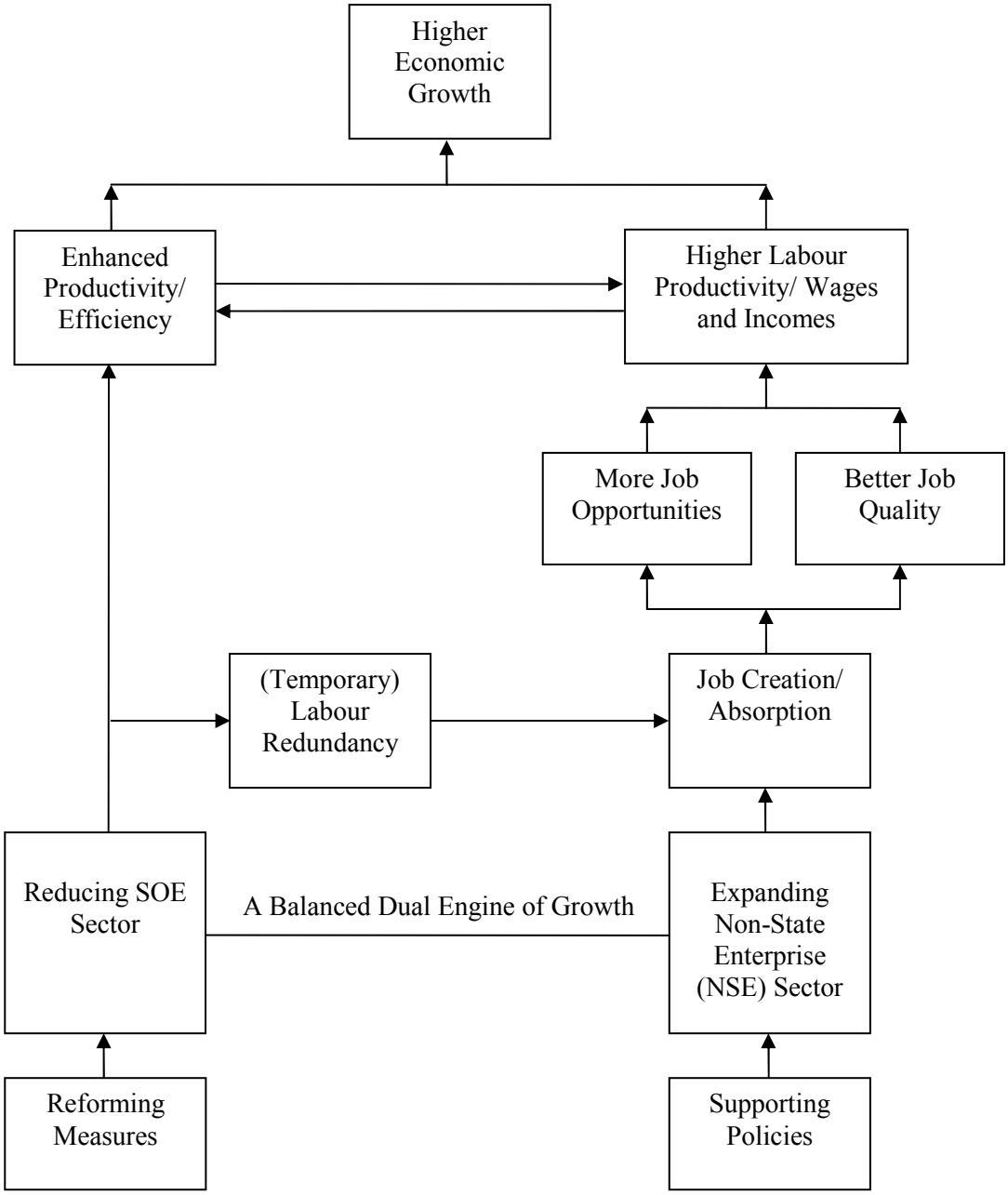
Many advocates of PSD argue that the state sector can no longer be an engine of growth in the future because it will no longer be able to generate enough jobs for the rapidly growing labour force. According to Webster (1999), there are about 1 million people entering the labour force each year, but there are not many job opportunities available to them. At the same time, the ongoing SOE reforms inevitably lead to labour redundancies. These twin pressures on employment have been the most challenging issue facing the government.

This employment problem can be solved by promoting the non-state enterprise (NSE) sector while gradually reducing the SOE sector (Wright and Nguyen, 2000). If implemented effectively, Vietnam will be able to establish a balanced dual growth engine in the future (Figure 3.1). The term 'balanced' used in this context does not literally mean equal contribution to economic growth by both sectors. Instead, it refers to a sound competitive environment, which enables both sectors to compete fairly and equally with each other.

Basically, developing the private sector offers three main benefits. First, an expanding NSE sector will absorb any labour redundancies from the SOE sector. The available evidence shows that the transition between jobs in Vietnam has been smooth and that relatively few SOE employees have suffered from prolonged unemployment (O'Connor, 1996). Second, because most private enterprises in Vietnam are labour-intensive, promoting the NSE sector would create more job opportunities[28], which would reduce poverty, especially poverty in rural areas (Hansen et al., 2004). Finally, the NSE sector has been proven to be more efficient than the SOE sector (referred to sub-section 3.2.2 of this chapter). Hence, developing the NSE sector would lead to greater productivity improvement, which in turn would contribute greatly to economic growth (Schaumburg-Muller, 2005).

[28] To some extent, because PSD creates more jobs and raises the aggregate income level, an expanding private sector will create more buyers and increase the overall purchasing power for the economy.

Figure 3.1- An Illustration of Vietnam's Balanced Dual Growth Engine



Note: Author's illustration. PSD will provide a good source of job creation. With the PSD policy alongside SOE reforms, Vietnam can establish a balanced dual engine of growth in the future.

3.3.3 Obstacles to Private Sector Development

From 2000 to 2008, the PSD policy produced some quantity effects in increasing the number of private enterprises. As seen in Table 3.4 of sub-section 3.2.3 of this chapter, the average number of NSEs (including FIEs) increased rapidly and sharply from 46,800 during 2000-02 to 267,428 during 2009-10. Nevertheless, the PSD policy lacked some quality effects in not promoting these newly established NSEs to grow to their full potential.

Overall, the private sector has not been officially recognised by the government to lead the economy since many obstacles (including administrative barriers) still remain. First, most private domestic SMEs are dispersed across the country with obsolete technology and a low-quality workforce. Second, almost all private enterprises have limited access to scarce resources, such as land, credit and information on market opportunities, since these are implicitly saved for SOEs. Consequently, many private domestic enterprises, especially micro-enterprises, must obtain credit from informal channels including family and friends. Most notably, the private sector's growth potential remains underdeveloped since a majority of micro-sized enterprises still operate in informal or shadow economy, which accounts for 16 to 50 per cent of formal economy. This restricts their ability to sign business contracts with foreign firms and obtain credit from formal banking channels (ADB, 2005). Finally, the current business environment is not supportive of PSD, including bureaucracy and red tape, unequal competition, imperfect market regulation and unclear property rights.

3.3.4 Proposals for Private Sector Development (PSD)

According to Webster (1999), the traditional growth strategy, in which the state leads the economy, will become inappropriate in the future. Instead, a new growth strategy should be adopted, in which the government should free up and support the private sector to sustain high quality jobs, as well as high economic growth rates. Although the benefits of PSD are well recognised, there have been few legal frameworks and/or proposals for promoting the private sector more effectively.

To date, the Sakai-Takada proposals represent one of the most comprehensive frameworks for PSD (Sakai and Takada, 2000). They called for a sound legal framework and suggested the emphasis should be to build up supportive agencies that help private enterprises in vocational training and promoting export. In addition, the government should build up effective supporting infrastructure, such as financial transparency, contract law and elimination of burdensome regulations (Wright and Nguyen, 2000). Further, because 90 per cent of the poor in Vietnam live in rural areas, policy proposals should be directed towards developing labour-intensive and export-oriented manufacturing, in order to eliminate rural poverty and create more urban employment opportunities (Livingstone, 2000). Equally important is the need to reduce informality and to make rules binding as a top priority for PSD (Tenev et

al., 2003). At present, most private domestic enterprises in Vietnam are still in their infancy stages, facing many barriers and obstacles. Hence, it is urgent to introduce non-discriminatory policies that treat all types of companies equally regardless of their ownership structures. In the longer term, institutional changes are seen as an essential condition for private enterprises to grow and for competitive markets to function properly (Schaumburg-Muller, 2005).

So far, PSD in Vietnam has been implemented with limited successes because it has been directed towards increasing the number of SMEs rather than improving their performance and competitiveness. Therefore, the government should place more emphasis on improving the quality of PSD rather than on quantity (Nguyen et al., 2008). On the other hand, Vietnam needs to ensure an effective implementation of the 2004 Competition Law. To do this, the country needs to develop the new legal framework with strong, impartial and competent regulatory institutions, placing high priority on building capacity at the VCC and VCAD, establishing their credibility as independent regulators, and educating the public, particularly SOEs and private companies. More specifically, Vietnam should consider making the VCAD a fully independent competition authority with its own enforcement powers, similarly to the approach adopted by most OECD countries, in order to put the private sector on a level competitive field with the public sector and to achieve the government's vision of a private sector-led economy with sound, well-governed and efficient SOEs in strategic sectors (UNCTAD, 2008).

In general, to achieve greater economic growth in the future, the government must officially confirm the important role of the private sector as the leading force of production and investment (Ohno, 2010). Then, the government should have meaningful actions to promote this sector, starting with the strengthening of Vietnam's current legal environment (Pham, 2012). This enables private enterprises to compete equally with SOEs and have equal opportunities in acquiring necessary resources (such as credit and land) for business expansion.

The case study in Box 3.3 provides a recent example of a failure in Indochina Airlines (IA)− a privately-owned airline. Unlike Vinashin, which was rescued by the government and continued to receive government subsidies, the infant IA was not adequately supported by the government, thereby facing many difficulties in gaining access to the aviation industry, and ceasing to exist in less than two years.

Box 3.3- Indochina Airlines− a privately-owned airline with short survival duration

By 2008, Vietnam had six airlines companies including Vietnam Airlines, Jetstar Pacific Airlines, Vasco, Vietjet Air, Mekong Air and IA. IA was among a few privately-owned airlines operating in Vietnam. It was previously named Air Speed Up, which was granted a business license in May 2007, after satisfying all of the strict financial and safety conditions set by the government. The owner of IA− Ha Dung, a famous music composer− was said to be trying to fulfil his dream of owning and operating an airline.

IA's business plan appeared to be very well prepared. The airline rented all of its aircraft, cabin crew (with experienced foreign captain pilots) and customer service personnel needed for operation. It also had supplementary aircraft to reduce the number of delayed or cancelled flights. In the initial stage, IA had only two aircrafts to make four flights per day. It had two main routes between HCMC and Hanoi, and between HCMC and Da Nang. Tickets were sold via two channels: a company website and retail outlets across the nation. Punctuality and competitive prices were two top-priority objectives of IA.

On 25 November 2008, IA's first flight carried all of its management board members from HCMC to Hanoi. Interestingly, IA was the first privately-owned airlines to officially operate passenger flights in Vietnam. On the same day, all flights were fully occupied. As part of its promotion, free tickets were granted to some travel companies, restaurants and hotels (Hong Anh, 2008).

However, after less than seven months of operation, IA cut costs by returning one of its aircraft. After that, it had only one aircraft left to fly. In early September 2009, IA stopped operating the route between HCMC and Da Nang, and focused on the remaining route between HCMC and Hanoi. By early 2010, IA had no aircraft to fly at all.

One of the factors contributing to IA's failure was timing. The airline started its operation in the context of a deep global financial crisis, which caused stagnation in almost all industries including aviation. A lack of working capital largely explained IA's closure. More clearly, IA's shareholders did not contribute $VN400 billion (or $US20 million) to finance its operation as promised, due to pessimism about IA's future and the future of the overall Vietnamese aviation industry (Hong Anh, 2009b). Consequently, on 26 January 2010, IA was banned from making any passenger flights (Kien Cuong, 2010). Since then, IA has been incapable of paying salaries to employees and repaying debt to its suppliers. Its accumulated debt was recorded at $VN60 billion (or $US3 million). The government authorities said a decision to terminate IA's business license would be announced some time in December, 2010 (Nhu Quynh, 2010).

Note: This article was retrieved from Vietnam's well known online news website (http://vnexpress.net/GL/Home/) and was translated into English by the author.

3.4 Conclusion

The SOE sector has long been receiving government preferential treatment in access to land, credit, export quotas and government procurement contracts. This resulted in unfair competition such that the SOE sector seriously crowded-out the

NSE sector. Evidence suggested that investment capital has been inefficiently allocated to the SOE sector and away from the NSE sector. Surprisingly, the SOE sector had lower contribution to aggregate output and employment, compared with the private sector. Likewise, a majority of SOEs operated inefficiently because: (i) they did not follow market disciplines and were not seriously penalised for their failures; (ii) they were guided by multiple conflicting objectives which prioritised job security over profit maximisation. Overall, these SOEs were inefficient in both managerial and productive areas. Therefore, the government decided to reform the SOE sector largely through equitisation aimed at improving SOEs' efficiency and competitiveness. However, regardless of the reduced number of SOEs, the overall SOE reform and equitisation processes have been seen to be slow and incomplete.

On the other hand, the NSE sector has not been adequately promoted by the government's policy settings. In fact, this sector is generally more efficient than the SOE sector. Therefore, developing the private sector, alongside SOE reforms, will be of particular importance in the future. This strategy offers three main benefits including (i) job creation; (ii) productivity improvement, which in turn increases labour incomes and reduces poverty, especially poverty in rural areas; and (iii) absorption of labour redundancies resulting from SOE reforms. There are many proposals for an effective implementation of the PSD policy. However, the PSD process has been slow because many obstacles still remain, especially the unfavourable government treatment of this sector.

It is important to note that, evaluating the impacts of Vietnam's microeconomic reform, particularly focussed on the privatisation program and the PSD policy, is one of the main objectives in this thesis. Therefore, the next chapter reviews all relevant theoretical and empirical literature of privatisation in Vietnam and in other countries since Vietnam's equitisation program, which is commonly known as privatisation internationally, is an integral part of SOE reforms.

Chapter 4
Literature Review on Privatisation

4.1 Introduction

Chapter 3 showed that reforming the SOE sector and developing the private sector are essential if Vietnam wishes to sustain greater economic growth in the future. If these reform programs are implemented effectively, the domestic enterprises across all industries should be able to improve their competitiveness and efficiency as expected. Unarguably, Vietnam's equitisation program, which is commonly known as privatisation internationally, is an integral part of SOE reforms. Therefore, this chapter reviews all relevant theoretical and empirical literature of privatisation in Vietnam and in other countries.

This chapter is structured as follows. In Section 4.2, the theory of privatisation is discussed, including a brief definition of privatisation, the types of privatisation, and the objectives and benefits of privatisation. Soft budget constraints and multiple conflicting objectives largely explain why most SOEs are inefficient, compared with private enterprises. Hence, privatisation of SOEs is believed to improve their efficiency and profitability. Section 4.3 analyses several empirical studies, both internationally and domestically, regarding the economic impacts of privatisation at the micro and macro levels. Due to differences in research methodologies, sample sizes and study periods, there are mixed results found in the empirical literature of privatisation. This section also provides criticism on some of the reviewed studies, followed by the concluding Section 4.4.

4.2 The Theory of Privatisation[29]

According to Boycko et al. (1996, p. 310), privatisation is referred to as "a combination of the reallocation of control rights over employment from politicians to managers and the increase in cash flow ownership of managers and private investors". In general, privatisation of SOEs has four main objectives: (i) to achieve higher allocative and productive efficiency; (ii) to strengthen the role of the private sector in the economy; (iii) to improve the public sector's financial health; and (iv) to

[29] As a reminder, 'privatisation' is used interchangeably with 'equitisation' throughout this thesis.

free resources for allocation in other important areas of government activity (Sheshinski and Lopez-Calva, 2003). There are many types of privatisation such as (i) selling off public assets; (ii) outsourcing services; and (iii) privatising public enterprises (Wood, 2004). Many other types of privatisation may include outright sale of government's entire stake, partial sale, concessions, leases and management contracts, hiving off and sale of non-core business activities, and the opening of previously restricted sectors to new private entrants and competitors: "each of these approaches has been carried out in a variety of ways; the forms of privatisation are numerous" (Nellis, 2007, p. 4). Since the 1990s, privatisation worldwide has gained its momentum, with several thousands of SOEs being privatised in Central Eastern Europe, India, Russia, China, Vietnam, Laos and Cambodia. From 1990 to 2003, the volume or total number of privatisations worldwide amounted to nearly 9,000 cases, with total proceeds exceeding $US410 billion (Nellis, 2007).

Given its popularity, one may ask why privatisation has been commonly used as a means to reform SOEs. Basically, governments privatise SOEs because of their well-documented poor performance (or inefficiency). As argued by Boycko et al. (1996), SOEs are inefficient because they usually serve the politicians' interests (such as job creation and job protection) rather than maximising efficiency, leading to excess employment in SOEs. Besides, soft budget constraints (together with the incentive and contracting problems) are the major causes of inefficiency of SOEs. In this regard, bankruptcy is not a credible threat to public managers because it is the central government's interest to bail them out by taxpayers' money in case of financial distress: "as long as the political cost incurred by the central government by closing the firm is higher than the cost of giving a subsidy and bail it out, the manager will always make the investment, regardless of the probability of failure" (Sheshinski and Lopez-Calva, 2003, p. 435). In addition, it is widely accepted that private firms are more efficient than SOEs. In the presence of market failure, it is good to have public ownership, but in relatively competitive markets private ownership may be more desirable, indicating that switching to the private ownership structure may improve firms' efficiency (Sheshinski and Lopez-Calva, 2003). Finally, SOEs need to be privatised largely because most SOEs create large financial burdens on government budgets, and because they have multiple, ambiguous and conflicting objectives: "the mixing of social and political with economic objectives

weakened managerial autonomy, commercial performance, and efficiency" (Nellis, 2007, p. 6).

Accordingly, privatising SOEs offer three main benefits. First, privatisation injects new value into public assets and increases the private capital base of a country. Second, privatisation is also a means of achieving economic efficiency gains, improving the fiscal position, and developing domestic capital markets. Finally, in most cases, privatisation can lead to greater factor productivity, which in turn leads to higher economic growth. Evidence from Argentina and China shows that privatisation indeed reduces the financial burden to the government (Wood, 2004). However, it is important to note that, although privatisation is believed to generate positive benefits for society, some groups of people like it and some do not. One of the reasons why privatisation has been disliked is that privatisation's benefits are dispersed (benefits are shared among a vast number of recipients) while its costs are concentrated (costs are imposed on a small number of people) (Nellis, 2007).

On theoretical grounds, privatisation has been proved beneficial in many studies. For instance, Boycko et al. (1996) develop a model of privatisation, which explains the relative inefficiency of SOEs and efficiency improvements after privatisation. The authors conclude that, with a tight monetary policy, which makes subsidies costly to politicians, privatisation may be the best available strategy for reducing inefficiency of SOEs and stimulating the restructuring of SOEs. Their findings imply that the restructuring of SOEs is unlikely to happen if shareholders have similar preferences with politicians (for instance, having the same employment objective) indicating that worker control is bad for restructuring. Instead, control by large outside investors may deliver better performance because they care more about maximising profits rather than employment. Further, political influence may be detrimental to the restructuring process if large shareholders are politicised in ways that bring their objectives in line with those of politicians.

Schusselbauer (1999) concludes that privatisation is Pareto-improving through efficiency-enhancing ownership transformation. The Pareto-improving privatisation process may promote either static efficiency gains (as a result of a more productive use of production resources) or dynamic efficiency gains (due to the application of more effective means of organisation and the invention and introduction of new products and processes through technological progress over time) or both. The author draws the production possibility frontier (PPF), with public

production on the horizontal axis and private production on the vertical axis, to illustrate the inefficiency of SOEs (such as capital wasting and labour hoarding) and the efficiency improvements after privatisation. Initially, SOEs are assumed to operate at some suboptimal points on the horizontal axis, which are far below the efficient points on the PPF. At these points, SOEs' production is characterised by non-cost-minimising employment of factors and a suboptimal supply of goods and services. Privatisation of SOEs will lead the economy to increase private production and reduce public production until it reaches the optimal level of production on the PPF. The author argues that there are trade-offs between efficiency gains through radical adjustment and social costs of transformation. For instance, a full reform (big-bang approach) provides faster and higher allocative efficiency gains, but also higher transformation costs. By contrast, a partial reform (gradualist approach) will lead to moderate efficiency gains and lower transformation costs because financial compensation through the state budget will be lower. In some circumstances, a gradualist approach is more desirable since a big-bang approach involves high financial risks for a government.

Sheshinski and Lopez-Calva (2003) draw a similar conclusion that privatisation increases profitability and efficiency in both competitive and monopolistic sectors. Further, full privatisation is said to generate greater impact than partial privatisation. At the macro level, privatisation will lead to lower budget deficits as the government can raise funds in the short term and eliminate subsidies to SOEs. If the proceeds from privatisation are used to reduce public debt, the effect will be lower interest rates which foster investment, growth and lower inflation. Another important macroeconomic impact of privatisation, through public offerings and mixed sales, is the increase in the level of stock market capitalisation and the overall development of the financial sector because privatisation mobilises resources in the financial sector and reallocates credit to more productive uses. Further, privatisation may lead to short-run unemployment due to the elimination of worker redundancy in SOEs, but in the long run unemployment may decrease due to positive growth as a result of the efficiency gains at the micro level and the increasing stability at the macro level.

Wood (2004) also shares the same view that well managed privatisation leads to efficiency improvement in competitive environments, but the case for natural monopolies is ambiguous. At the macro level, the impact of privatisation on GDP is

either neutral in some cases or positive in other cases. Such impact differs significantly according to the project and the method by which it is privatised. In addition, privatisation can increase government revenue through the initial sale of public assets and the subsequent revenue possibly earned from taxing the same entity. Ideally, the government should spend privatisation proceeds on growth sectors. Further, privatisation can lead to nearly immediate job losses as the new owner improves the efficiency of the production process, but aggregate unemployment decreases in the long term following privatisation.

It is widely accepted that efficiency gains can be realised only under perfectly competitive environments, but not under non-competitive environments. Fraja (1991) develops the slack-ridden imperfect competition model to analyse the impact of privatisation on firm efficiency in imperfectly competitive environments. The author refers to the case of oligopolistic competition and concludes that privatisation of public enterprises reduces rather than increases efficiency. She explains that a privatised oligopolistic firm will pursue the goal of profit maximisation, leading to an improvement in its efficiency and a reduction in its output. The output reduction then reduces the competitive pressure on the managers of private firms, resulting in inefficiency in these firms. The net effect of the privatisation is a reduction of the total efficiency in that industry and of social welfare. Nellis (2007) also believes that privatisation does not work well especially in non-competitive environments and in developing countries. For instance, privatisation does not work well in developing countries because these countries lack competition and the regulation of competition. It appears that the role of economic institutions (such as well defined and protected property rights, contract enforcement and commercial dispute settlement, and functioning bankruptcy regimes) is important for markets to function in an efficient, productive and socially acceptable manner.

From these studies, several policy implications and/or suggestions are drawn in order to achieve better privatisation outcomes. For instance, Schusselbauer (1999) suggests many ways to speed up the privatisation process including: (i) strengthening the legal and institutional framework, and reducing the government intervention; (ii) tightening the budget constraints and promoting a competitive environment; (iii) establishing government credibility and commitment to its privatisation programs; (iv) ensuring the transparency and consistency of privatisation objectives; and (v) speeding up the structural reform in banking and financial markets to eliminate the

non-performing loan (NPL) problem. Likewise, Wood (2004) suggests some enabling conditions for achieving economic gains including: (i) unitary rights being granted to privatised firms; (ii) privatised firms facing budget constraints; (iii) strengthening the judicial system and transparency, and promoting competition; (iv) providing transitional schemes for laid-off workers including training and development opportunities; and (v) improving corporate governance in privatised firms.

4.3 The Empirical Evidence of Privatisation

There are indeed numerous empirical studies on the impacts of privatisation on firms' performance. Some studies are country-specific (focusing on one country), some are industry-specific (focusing on one industry), and some are cross-sectional (dealing with multiple industries in multiple countries). As shown in the following sub-sections, privatisation produces mixed results mainly because the reviewed studies adopt different research methods (each has certain methodological limitations) and choose different study periods and sample sizes, as well as different degrees and types of privatisation (for instance, partial and/or mass privatisations). Likewise, data constraints and the potential selection bias also lead to mixed results among these studies, some of which cannot be generalised to represent the whole economy.

4.3.1 International Empirical Studies

This sub-section provides more insights into the international empirical investigation of the impacts of privatisation at both micro and macro levels. It is therefore categorised into two broad groups: one group deals with the microeconomic impacts of privatisation (on firms' performance), and the other deals with the macroeconomic impacts of privatisation (such as on employment and GDP growth).

Microeconomic Impacts of Privatisation

First, studies showing positive effects of privatisation on firms' performance include the followings: D'Souza and Megginson (1999) compare the pre- and post-privatisation financial and operating performance of 85 enterprises from 28 countries, which were privatised during 1990-1996. They conclude that privatisation yields significant performance improvements in terms of increases in profitability,

output, operating efficiency, dividend payments, and significant decreases in leverage ratios.[30]

Pollitt and Smith (2002) conduct a social cost-benefit analysis to assess whether the British rail privatisation during 1999-2000 has produced operating cost reductions. The authors find that privatisation of the British rail industry has led to significant operating efficiency improvements and lower prices, which benefited consumers considerably: (i) industry outputs have risen sharply, ranging from 13 to 21 per cent, while operating costs have been reduced by 6 per cent after privatisation; (ii) the rail industry has achieved efficiency savings of 13 per cent since privatisation. In monetary terms, the total savings (after restructuring costs) over 15 years rise to £1.1 billion; (iii) the benefits to consumers through lower prices are equivalent to £1.2 billion, implying that producers and government together lose £100 million (with the government losing £300 million and producers gaining £200 million); and (iv) the quality of output is found to be better than before privatisation. This study, however, has one major limitation of selecting a very short study period (1999-2000), casting doubt on the accuracy and reliability of such results.

Brainerd (2002) investigates the impact of privatisation on the wage distribution in Russia during 1993-98. She finds that, in some phases of the privatisation program, workers in privatised enterprises earned higher wages than SOEs' workers. This wage differential was associated with the rent sharing within insider-owned firms in which workers were paid to collude with managers to maximise their own benefits.

Ho et al. (2002) examine the impacts of privatisation on the wage structure of rural industries by surveying 45 rural enterprises (privatised in the 1990s) in Jiangsu and Shandong provinces. The authors find that privatisation is associated with increased wage and earnings inequality. These results, however, cannot be generalised for the whole Chinese economy due to small sample size and the potential selection bias.

Wei et al. (2003) also examine the pre- and post-privatisation financial and operating performance of 208 Chinese firms privatised during 1990-97. They find significant improvements in real output, real assets, and sales efficiency, and significant declines in leverage after privatisation, but no significant change in

[30] These leverage ratios refer to the total debt to total assets ratios.

profitability. In addition, privatised firms experience significant improvements in profitability compared with SOEs' profitability in the same period. Liu et al. (2007) continues investigating the impacts of privatisation on the performance of 1,184 Chinese firms during 1997-2004, using a panel data technique. They find significant performance improvements in privatised Chinese firms, with the most influencing factor on their performance being the political regime and context. Such finding is consistent with the conventional view internationally that privatisation stimulates firms' performance.

Monteiro (2003) uses a longitudinal individual-level data set and employs a difference-in-differences estimator to evaluate the impact of privatisation on wages in the Portuguese banking industry during 1989-97. She finds in privatised firms a U-shaped relationship between wage variation and time period of restructuring. It means the sample groups experienced wage losses after one or two years of privatisation, but wage increases from the third year onwards. These results are also confirmed in her recent study in 2010 using a different econometric technique, that is, the propensity matching estimators (Monteiro, 2010).

Qudah (2011) conducts a panel data analysis to examine the impact of privatisation on 23 privatised Jordanian firms during 1992-2005, which accounted for about 70 per cent of the total privatisation proceeds. It is found that privatisation has a positive and significant impact on privatised firms' operating efficiency and performance as measured by market value ratios. The results in this study may be subject to selection bias such that 23 sample firms are not fully representative of the whole economy. Worse still, the unbalanced panel data used in this study may lead to potential errors in the outcomes.

Second, studies showing negative effects of privatisation on firms' performance include the followings: Perevalov et al. (2000) conduct econometric estimates of several firm-level performance indicators, using a panel data from 189 industrial enterprises during 1992-96. They find that, on average, privatisation produces little improvement in the performance of Russian enterprises. Such finding is largely based on the assumption that privatisation is exogenous, which is likely endogenous in reality. The selection bias problem likely exists because the sample firms came from only one region (Sverdlovsk). Hence, the results could not be generalised for the whole Russian economy.

Villalonga (2000) examines the political, organisational, and transitional effects of privatisation on efficiency using data from 24 Spanish firms privatised during 1985-93. Three hypotheses are to be tested including: (i) privatisation increases firm efficiency; (ii) the observed effect of privatisation on efficiency is influenced by political and organisational factors; and (iii) the observed effect of privatisation on efficiency is contingent upon the time period considered. The first hypothesis is rejected, while the other two hypotheses are supported. It means there are factors (such as political, organisational and transitional factors) other than the private-public ownership factor, influencing the estimated effects of privatisation on efficiency. However, this study also faces the common problems of data constraints and selection bias, as mentioned previously.

Harper (2002) examines the impact of privatisation on firm performance using data from about 450 firms in the first and second waves of Czech voucher privatisation. The author finds that the overall effects from privatisation are positive, but such effects vary by privatisation wave, size and industry. In particular, firms privatised in the first wave had poorer performance than firms privatised in the second wave. This finding is consistent with a hypothesis that economic and political structure surrounding the privatisation waves is important for privatisation to succeed. It is also consistent with a hypothesis that firms with a longer preparation period for privatisation improve performance after privatisation. Nevertheless, some of these findings are not necessarily consistent with existing findings in the literature mainly because most studies in the literature often examine small-scale privatisations while Harper examines the Czech's large-scale (or mass) privatisations over a short period of time (1992-94).[31] The lack of post-privatisation data prevents the author from taking a more in-depth analysis of the Czech voucher privatisation program in the sample period.

Omran (2004) examines the performance of 54 newly-privatised Egyptian firms against a matching number of SOEs during 1994-98. He finds that privatised firms do not exhibit significant improvement in their performance changes relative to SOEs. There are two main factors attributing to this abnormal finding: (i) the sample size is small and the study period is quite short; and (ii) the author's unusual approach (comparing the performance of privatised firms with that of SOEs of the

[31] Small-scale privatisations involve a small number of privatised firms, while large-scale privatisations involve a larger number of firms.

same size in the same industry) may be problematic. Data limitations indeed prevent him from pursuing a traditional approach, which focuses on the sample firms and compares their pre- with post-privatisation performance.

Bachiller (2009) conducts the data envelopment analysis and Tobit analysis to analyse the impact of privatisation on the efficiency of five of the biggest Spanish SOEs in such sectors as energy, telecommunications and air transport during the 1990s. She finds that the improvements in efficiency are not related to the Spanish privatisation program, indicating that a change of ownership *per se* is not sufficient to bring about the effects forecasted by privatisation advocators. Data constraints and the small number of sample firms are the main weaknesses of this study such that the results are not sufficient in reflecting the overall Spanish privatisation experience.

Macroeconomic Impacts of Privatisation[32]

First, studies showing positive macroeconomic impacts of privatisation include the followings: Boubakri and Cosset (1998) examine the change in the financial and operating performance of 79 companies from 21 developing countries privatised fully or partially during 1980-1992. They find significant increases in efficiency and capital investment after privatisation, which in turn result in higher output and employment growth rates.

Chisari et al. (1999) develop a general equilibrium model of Argentina to assess both the efficiency and distributional impacts of privatisations of SOEs in such industries as electricity, gas, water and sanitation, and telecommunications services.[33] They find that privatisations in Argentina generated some significant gains for the economy and for all income groups such that most sectors are better off with greater involvement of private operators. In monetary terms, these gains are estimated to be $US2.3 billion (equivalent to 0.9 per cent of GDP). This study is limited for using the Cobb-Douglas functional forms. To produce better results, it should have used the CES (constant elasticity of substitution) functional forms, which are more generalised than the Cobb-Douglas ones.

Barnett (2000) investigates the relationship between privatisation and measures of fiscal and macroeconomic performance in 18 countries (data was

[32] Scale of privatisation, structural adjustment and macroeconomic policy settings are critical for having any macro level effect.

[33] Their model consists of 21 sectors, three primary factors (labour, physical capital and financial capital) and five income groups, using the 1993 social accounting matrix (SAM) to compare the Argentine economy in 1993 with that in 1995.

adopted from another study).[34] He finds that privatisation proceeds transferred to the budget are saved and mostly used to reduce domestic financing. In addition, privatisation improves most countries' macroeconomic performance in terms of higher real GDP growth and lower unemployment. However, the unbalanced, inconsistent panel data in this study may reduce the accuracy of the results and their interpretation.

Belke et al. (2005) empirically investigate the differences in the motives of raising privatisation proceeds (due to differences in the unemployment rate, government financial balance and the degree of integration) among 14 EU countries during 1990-2000, using the Feasible Generalised Least Squares technique with a heteroskedastically consistent covariance matrix. They find a positive relationship between unemployment and privatisation proceeds, which means privatisation raised privatisation proceeds at the expense of increased unemployment. Likewise, GDP growth is also positively related to privatisation proceeds, indicating that higher privatisation proceeds contributed positively to higher GDP growth.

Kilicaslan et al. (2008) examine the impacts of privatisation on labour productivity in such sectors as electricity and gas, post and telecommunication, inland transport, and health and social work from six countries including Austria, Belgium, Germany, Poland, Sweden and the UK during 1970-2004. Their econometric estimates show that all sample industries experience increases in labour productivity, but at the expense of increased unemployment. In addition, high capital-intensive industries experience greater productivity growth than low and medium capital-intensive industries.

Broadman et al. (2009) conduct a cost-benefit analysis to estimate the welfare gains from the privatisation of Canadian National Railway (CN) in November 1995. They estimate that CN's privatisation generated welfare gains of 4-5 billion Canadian dollars (at 1992 prices). Half of these gains were distributed to the government while CN shareholders captured the remaining gains. While it is commonly accepted that privatisation leads to welfare improvements under competitive environments, the evidence of such gains under non-competitive environments is mixed.

[34] These countries are Argentina, Bolivia, Cote d'Ivoire, Czech Republic, Egypt, Estonia, Hungary, Kazakhstan, Mexico, Mongolia, Morocco, Mozambique, Peru, Philippines, Russia, Uganda, Ukraine and Vietnam.

Boubakri et al. (2009) examine whether privatisation has an impact on economic growth, using the generalised method of moments estimation technique and data from 56 developed and developing countries during 1980-2004. The authors find that privatisation has a robust systematic positive effect on economic growth. The method of privatisation is also positively related to economic growth, indicating that it is beneficial to divest SOEs via the stock market channel.

Second, there exist a number of studies having opposite conclusions, including the followings: Tansel (1998) examines the impact of privatisation on 1,248 dismissed workers in the Turkish cement and petrochemicals sectors privatised in 1995. The author finds that dismissed workers suffered significant earnings and welfare losses upon re-employment, averaging at 66 per cent of their state earnings, due to public sector rents and the poor quality of jobs in the informal sector.[35]

Katsoulakos and Likoyanni (2002) examine the impacts of privatisation on public deficit, public debt and other macroeconomic variables such as unemployment and growth, using data from 23 OECD countries during 1990-2000. The authors find that privatisation proceeds have a statistically insignificant relationship with budget deficit and GDP growth, but are negatively related to public debt. In addition, current privatisation proceeds have a negative effect on the current unemployment rate, but a positive effect on the previous period's unemployment rate.[36]

Cook and Uchida (2003) investigate the relation between privatisation and economic growth, based on a regression analysis and data for 63 developing countries during 1988-97. The authors find that privatisation has contributed negatively to economic growth due to lacking of competition and weak regulation of competition. They argue that the ownership changes alone are not sufficient to improve firms' efficiency. To create a positive impact on economic growth, privatisation needs to be complemented by an effective competition and regulation of competition regulation.

Gong et al. (2006) adopt a propensity score matching and difference-in-differences techniques to investigate the impacts of domestic privatisation and foreign acquisition of Chinese SOEs on employment growth during 1999-2003. The

[35] Due to lacking of formal arrangements and social benefits, most of the laid-off workers tended to work in the informal sector, with relatively poor job quality and/or working conditions.
[36] When privatisation is announced, restructuring pressures firms to operate more efficiently, causing temporary job losses and hence higher unemployment rate. Eventually, new firm entries occur, increasing the demand for labour and hence decreasing the unemployment rate.

authors find that domestic privatisation leads to contemporaneous reductions in employment growth due to an increased efficiency of labour usage right after privatisation. By contrast, foreign acquisitions result in higher employment growth because: (i) foreign-acquired firms anticipate an increase in output and hence demand for more labour; (ii) there may be some binding agreements on the workforce level prior to the acquisitions; and (iii) foreign investment results in technology transfer, contributing to employment growth. Therefore, privatisation to foreign owners may lead to significantly fewer layoffs as compared with state firms.

Stuckler and King (2007) empirically test the welfare implications of privatisation policies in 25 transition countries during 1989-2002, using cross-national panel mortality data as an indicator of social costs. The authors find that rapid privatisation results in life expectancy losses and, if privatisation policies are reversed, life expectancy may improve. This study contains several methodological limitations because: (i) the comparative privatisation rate data is unavailable; (ii) the potential bias exists due to time-varying surveillance changes within countries; and (iii) there is potential ecologic fallacy; and (iv) using mortality data as an indicator of social costs may not always be the best strategy, making such finding less convincing or hardly acceptable.

Moshiri and Abdou (2008) investigate the impacts of privatisation, competition and regulation on economic growth based on the two-stage least squares and ordinary least squares techniques and data for 117 developing and transition economies during 1988-2003. They find that privatisation has a neutral effect on economic growth, while a competitive regulatory environment has a positive effect on growth, indicating that improving the regulatory environment is more important than facilitating the dominance of private ownership structure.

4.3.2 Vietnamese Empirical Studies

While international studies provide mixed results regarding the impacts of privatisation (either positive, negative or neutral) at the micro and macro levels, most of the Vietnamese empirical studies, which are largely conducted at the micro level, show positive effects of privatisation on firms' performance. For instance, Webster and Amin (1998) survey 17 equitised enterprises to measure their performance, and to evaluate the equitisation process. They find that all enterprises were profitable at the time of equitisation and also experienced high growth in revenues and profits in

subsequent periods. On average, the labour force in these enterprises increased by 39 per cent after equitisation. In addition, it took an average of 13 months to equitise a single firm, and the state ownership and insider ownership remained large in the post-equitisation period.

Vu (2002) analyses the impacts of SOE reforms on the industrial SOEs' performance by using the Cobb-Douglas and Translog production functions to estimate the change in TFP growth during 1976-1998. He finds that the reform measures result in significant improvements in the productivity of industrial SOEs in Vietnam. The pre-reform TFP growth rate was negative (-1.97 per cent), but the partial-reform and full-reform TFP growth rates were significantly higher (6.08 and 5.37 per cent, respectively).

CIEM (2003) conducts a survey of 877 enterprises in 2001 to examine their post-equitisation performance. Two observations are reported. First, the direct impact of equitisation was negligible. Second, the indirect impact was substantial for three reasons: (i) equitisation of unprofitable SOEs helped reduce the government fiscal burden; (ii) equitisation promoted the private sector; and (iii) equitisation created more jobs and investment activities.

Truong et al. (2006) measure the impacts of equitisation on firms' performance by comparing pre- and post-equitisation financial and operating results of 121 SOEs during 1993-2002. They find significant increases in profitability, sales revenues, efficiency, and employee income. Truong et al. (2007) use the same approach to continue investigating the effects of privatisation on the financial and operating performance of 147 equitised firms and 92 SOEs completely equitised during 2000-01. They also find that these firms experience increases in sales and profitability and decreases in leverage (measured by the total debt/total asset ratios). These studies, however, have several limitations, including: (i) it less convincing to conclude on the effects of privatisation by comparing the performance of the same firms before and after equitisation. To demonstrate the effectiveness of the equitisation program, it is more meaningful to compare the performance of equitised firms with that of fully private firms; (ii) there is biased selection of the sample data because firms are not chosen randomly (bad firms are not considered and only good firms are chosen, most of which come from the South of Vietnam); and (iii) these studies do not incorporate such factors as inside ownership, ownership concentration,

foreign investors' participation in equitised firms and management turnover, which also have significant impacts on firms' performance.

Ha (2007) examines the effects of private ownership and competition on the productive efficiency of 1,117 firms with various ownership structures during 2000-05. He finds that SOEs were less efficient than NSEs in terms of having relatively higher capital intensity, but lower labour productivity and technical efficiency. The results suggest that competition and private ownership would contribute positively to the efficiency improvement of SOEs.

Recently, Pham and Mohnen (2012) develop a general equilibrium model featuring the closed economy of Vietnam to examine the impacts of privatisation on economic growth and poverty alleviation in Vietnam.[37] The authors find that privatisation does not contribute to job creation and welfare improvement. This study focuses on the short run such that the long-run analysis of the impacts of privatisation on GDP and employment growth is lacking. In addition, the authors do not explain how the model is closed and simulated and/or how welfare is measured, making it difficult to understand the results. Worse still, the simulation results are somewhat biased due to the weird model specification assuming the closed Vietnamese economy, which is a small open economy in reality.

4.4 Conclusion

Privatisation has been a common practice aimed at improving firms' efficiency and profitability. During 1990-2003, about 9,000 privatisations worldwide were recorded, with total proceeds exceeding $US410 billion. The types of privatisations are numerous (each has been implemented in many different ways). Governments around the world privatise SOEs because of their poor performance (or inefficiency). Overall, SOEs are less inefficient than private enterprises because they often pursue multiple conflicting objectives and face soft budget constraints. One of the main benefits offered by privatisation is to achieve efficiency gains. This argument has been supported by many theoretical works. However, it is noticed that efficiency gains can be achieved under competitive, but not under non-competitive, environments. Besides, privatisation and unemployment is said to have a U-shaped

[37] This model consists of 69 sectors/commodities, four groups of labour, and five types of ownership of capital and labour.

relationship[38] as privatisation increases unemployment in the short run, but decreases it in the medium and long runs. Likewise, optimistic theorists believe that privatisation contributes to greater GDP growth, through productivity improvements.

The literature review above has shown that privatisation produces mixed results due to differences in research methods (each has certain methodological limitations), study periods, sample sizes, and degrees and types of privatisation (for instance, partial and/or mass privatisations). Likewise, data constraints and the potential selection bias partly explain why some results cannot be generalised for the economies under examination.

Based on the balance of evidence, the impacts of privatisation on such macroeconomic variables as the trade balance and consumption have not been investigated seriously. In addition, there have been many CGE models being applied to Vietnam to investigate many issues related to trade liberalisation, tax reform, poverty, labour mobility and economic growth (see Annex 10). However, research into SOE reforms, particularly focused on the equitisation program and the PSD policy in Vietnam at the macro level remains underdone. These reasons provide the basis for this thesis to develop VNGEM, which is discussed in detail in the next chapter.

[38] See Monteiro (2003) and Monteiro (2010) in the sub-section titled Microeconomic Impacts of Privatisation.

Chapter 5
Methodology and Data

5.1 Introduction

Chapter 4 reviewed several theoretical and empirical studies on privatisation and its impacts at the micro and macro levels. On theoretical grounds, privatisation is believed to result in efficiency gains to state-owned enterprises (SOEs) as well as privatised enterprises. However, the empirical literature on the impacts of privatisation on firms' performance and on other macroeconomic variables such as unemployment and GDP growth, shows mixed results due to differences in research methodologies, study periods, sample sizes, and degrees and types of privatisation. Despite such controversies, based on the balance of evidence, this thesis adopts an optimistic view regarding the positive impacts of privatisation on the Vietnamese economy at the micro and macro levels. As discussed in Chapter 3, SOE reforms and the private sector development (PSD) policy were said to contribute greatly to Vietnam's economic growth in the future. If these reform programs are implemented effectively, the domestic Vietnamese enterprises across all industries should be able to improve their competitiveness and efficiency as expected. Therefore, this current chapter is built upon this productivity improvement issue to examine the likely impacts of those continuing policies on Vietnam's national economic outcomes and industries. The objective of this current chapter is to discuss the methodology and data used to generate simulation results.

The organisation of this chapter is as follows. Section 5.2 discusses the detailed specification of the computable general equilibrium model developed for Vietnam (referred to as VNGEM), which is a comparative-static model, used to quantify the economy-wide impacts of SOE reforms and the PSD policy on Vietnam's national outcomes and industries. Section 5.3 describes the model database, especially the schematic input-output (I-O) table, sources of data and data treatment. Section 5.4 briefly explains the model equations, model closures and simulation design, which altogether are very important for generating simulation results, and Section 5.5 provides a brief summary of key findings and arguments.

5.2 Model Specification

The key objective of this thesis is to develop a computable general equilibrium (CGE) model of Vietnam (known as VNGEM) to assess the likely effects of SOE reforms and the PSD policy on Vietnam's national economic outcomes and industries. VNGEM is a comparative-static model, largely based on ORANI-G (Horridge, 2000) and ORANI (Dixon et al., 1982). In essence, VNGEM represents the Vietnamese economy with twenty four industries producing twenty four commodities, which can be produced domestically or imported from abroad. There are four margin commodities, six labour groups by educational qualifications and one representative household.

More specifically, the six labour qualifications include university degree (UniDegree), college degree (CollegeDeg), professional secondary (ProfSecond), vocational training (VocTraining), elementary (Elementary) and unskilled (NoSkill), which are ranked from highest to lowest skilled, respectively. There are certain differences among these qualifications. For instance, on average, it takes 4-5 years to complete a university degree (UniDegree) and 2-3 years to complete a college degree (CollegeDeg) in Vietnam. To study these courses, students are required to have completed high school at least, and those already have a CollegeDeg are allowed to upgrade to a UniDegree. The teaching curricula designed for UniDegree are more advanced than those for CollegeDeg. Hence, graduates with a UniDegree tend to have relatively higher skills than those with a CollegeDeg. In addition, workers with ProfSecond qualifications are those who may have completed high school and are professionally trained to perform some specific and/or complex tasks. By contrast, workers with VocTraining qualifications are those who may have completed secondary school and acquired basic vocational training. Likewise, workers with Elementary and NoSkill qualifications are those who have not received much education or training and often work as general labourers (known as *Lao Dong Pho Thong*) who perform very basic and easy tasks.

Both short-run and long-run simulations are conducted by hypothetically increasing the across-the-board primary factor productivity by 5 per cent. In so doing, this thesis provides a framework for investigating the direct and indirect effects, as well as identifying the winners and losers from these reform programs. Accordingly, this thesis attempts to answer the following research questions:

i. How does Vietnam's microeconomic reform contribute to the national output and employment growth?
ii. How does such reform affect different industry groups across the nation?
iii. What is the effect on the labour market in both short and long run?
iv. Does the reform generate any positive welfare effects? How?
v. What can be done to further improve the reform outcomes?

Overall, this thesis (using VNGEM) attempts to close the current literature gaps and contribute to the following five areas. First, this thesis contributes to the literature of privatisation in a context of a transition economy like Vietnam, which has not been investigated at the macro level in any great detail. As discussed in Chapter 4, most studies are conducted at the micro level to examine the relation between privatisation and firms' performance. These studies have limited scope of analysis because they largely adopt firm-level survey methods, which tend to generate biased results due to low response rates and unreliable information reported by interviewees. Hence, some results cannot be generalised for the economies under examination due to data constraints and the potential selection bias.

Second, although some studies are conducted at the macro level to examine the impacts of privatisation on unemployment and GDP growth, they have neglected investigating the impacts on such macroeconomic variables as the trade balance, exports, imports and consumption. This thesis extends the current literature by investigating the impacts of Vietnam's reform programs not only on GDP growth and employment, but also on many other macroeconomic variables mentioned above in a general equilibrium context.

Third, while previous studies investigate whether or not privatisation, as part of the reform packages, generates positive, negative, or neutral effects on productivity, this thesis deliberately assumes the positive impacts of Vietnam's reform programs not only on firms' efficiency, but also on industries' efficiency. It then investigates the likely impacts of these efficiency gains on industries, and on the macro-economy of Vietnam.

Fourth, although there are many CGE models applied to Vietnam (see Annex 10), research into SOE reforms, particularly focused on the equitisation program and the PSD policy in Vietnam at the macro level remains underdone. This thesis extends

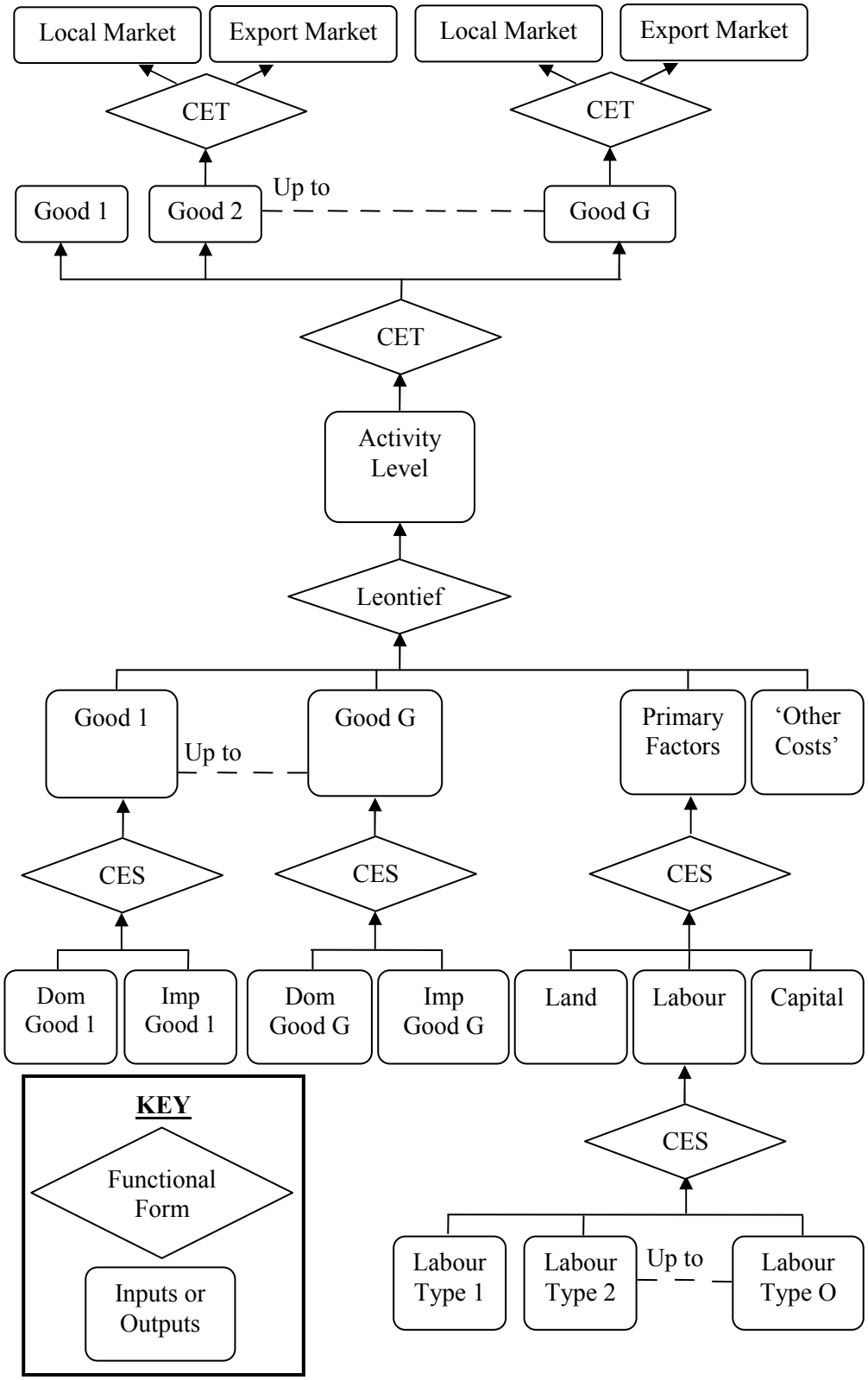
the work of Chisari et al. (1999) by using more generalised CES (constant elasticity of substitution) functional forms in replacement of the Cobb-Douglas ones. It also extends the work of Pham and Mohnen (2012) by adopting a more realistic assumption of a small open economy of Vietnam.

Finally, the use of VNGEM could generate simulation results for both short-run and long-run effects of SOE reforms on the Vietnamese economy. In addition, VNGEM identifies winners and losers from such reforms, and quantifies the general welfare effects on the overall Vietnamese economy. The decomposition technique in VNGEM provides detailed expositions of the sources of output growth such as an output expansion through the export channel, or the local market and domestic share channels.

5.2.1 The Production Technology

In VNGEM, producers within each industry are assumed to be competitive and efficient. They are price takers in both input and output markets. Producers choose input and output levels in ways that minimise costs and maximise revenues, respectively. On the other hand, each industry can produce several commodities and one commodity can be produced by several industries. The input-output production specification is kept manageable by a number of separability assumptions (Figure 5.1). First, the input-activity function exhibits constant returns to scale (CRS) and is of three-level nested form. At the top level, the effective inputs are combined in fixed proportion, implying that there are no substitution possibilities among effective intermediate inputs and primary factors. At the second level, there are CES functions describing substitution possibilities between imported and domestic intermediate inputs. Similarly, substitution is allowed among primary factors such as labour, capital and land. At the third level, the CES function is applied to labour input, allowing for substitution among labour of different skill groups, which are reflected by different educational qualifications. Note that no transition is allowed for one still category to another through trainings and development opportunities. Second, the output-activity function also exhibits CRS and is of two-level nested form. At the top level, the CET (constant elasticity of transformation) function describes transformation possibilities among composite commodities. At the second level, the composite commodities can be sold in the domestic market or export market.

Figure 5.1- Structure of Production



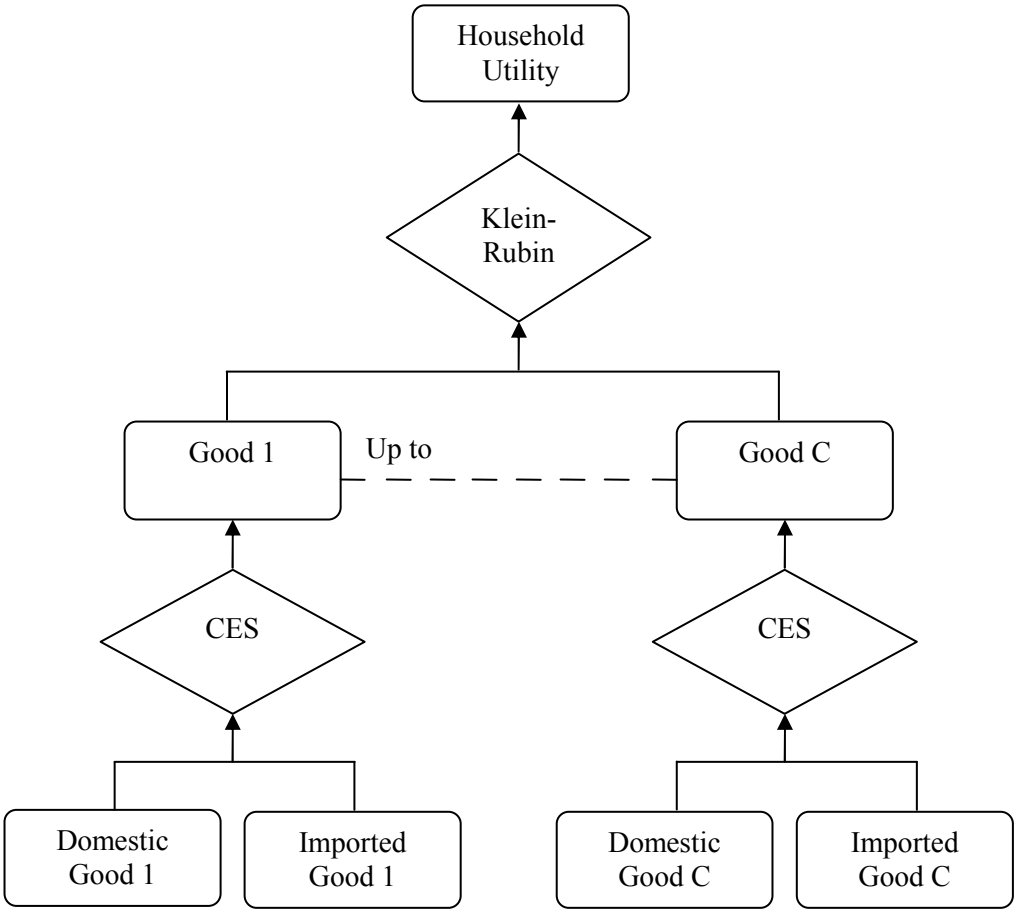
Source: Horridge (2000).

5.2.2 Household Utility and Investment Functions

The representative household is assumed to consume goods and services in ways that maximise its utility, subject to an aggregate budget constraint. In this case, the structure of household demand has a two-level nested form (Figure 5.2). At the first level, the composite commodities are aggregated by a Klein-Rubin utility function[39], leading to a linear expenditure system (LES). At the second level, the CES functions allow these composite commodities to be substitutable between domestic and imported sources, in response to changes in relative prices.

Finally, the nested structure of investment follows a pattern similar to Figure 5.2, except that the Klein-Rubin nest is replaced by a Leontief function.

Figure 5.2- Structure of Consumer Demand



Source: Horridge (2000).

[39] The 'Klein-Rubin utility function' is used interchangeably with the 'Stone-Geary utility function'.

5.3 Model Database

5.3.1 The Input-Output Database

VNGEM generates simulation results based on an input-output (I-O) database. This I-O database represents the basic structure of VNGEM. From this, various sales and costs shares are calculated which are then used in the model.

Table 5.1 illustrates a schematic I-O database. The absorption matrix consists of six columns representing different uses including:

- (1) = current production with I industries.
- (2) = capital creation (or investment) with I industries.
- (3) = household consumption.
- (4) = export demands (or foreign purchasers).
- (5) = government demands.
- (6) = inventories.

The data flows in the first row, from $V_{BAS}^{(1)}$ to $V_{BAS}^{(6)}$, represent the basic values of commodities C from source S assigned to different user groups. For example, $V_{BAS}^{(1)}$ represents the basic value of commodities C that are used in current production. Commodities C can be obtained either from domestic or imported sources. The same explanation can be applied to the remaining entries in the first row, except for $V_{BAS}^{(4)}$ which does not have an import source. By assumption, only domestically-produced goods can be exported, indicating that there is no re-export of imported goods.

In the second row, there are M commodities that can be used as margin services, such as wholesale trade, retail trade and transport. These M commodities are assumed to be domestically-produced, and are used to transfer commodities from their sources to their final users. For instance, $V_{MAR}^{(1)}$ represents the basic value of commodities M used as margins for facilitating the flow of commodities C from source S into current production. In this case, M can be considered as a subset of C.

The entries in the third row represent the commodity taxes payable on the purchases. For example, $V_{TAX}^{(1)}$ represents the commodity taxes levied on the purchase of commodities C from source S used by industries I for current production.

Industries use not only intermediate inputs but also primary factors (namely, capital, labour and land) for current production. It must be noticed that labour input

can be divided into O skill groups. By assumption, only current production requires the use of primary factors. Other user groups, such as investment, exports, government demands and inventories, do not involve any use of primary factors at all. The industries must pay the production taxes ($V_{PTX}^{(1)}$), which include output taxes or subsidies that are not user-specific. Similarly, the 'other costs' entry ($V_{OCT}^{(1)}$) represents miscellaneous taxes on firms, such as municipal taxes or charges.

At the bottom-left of Table 5.1, the MAKE matrix shows the value of output for each commodity produced by each industry. Finally, the tariffs on imports are assumed to be levied at rates which vary by commodity, but not by user. The corresponding import duty revenue is represented by the tariff vector ($V_{TAR}^{(0)}$) at the bottom-right of Table 5.1.

Table 5.1- The Schematic I-O Database

		Absorption Matrix					
		1	2	3	4	5	6
		Producers	Investors	Household	Export	Other	Change in Inventories
	Size	← I →	← I →	← 1 →	← 1 →	← 1 →	← 1 →
Basic Flows	↑ CxS ↓	$V_{BAS}^{(1)}$	$V_{BAS}^{(2)}$	$V_{BAS}^{(3)}$	$V_{BAS}^{(4)}$	$V_{BAS}^{(5)}$	$V_{BAS}^{(6)}$
Margins	↑ CxSxM ↓	$V_{MAR}^{(1)}$	$V_{MAR}^{(2)}$	$V_{MAR}^{(3)}$	$V_{MAR}^{(4)}$	$V_{MAR}^{(5)}$	n/a
Taxes	↑ CxS ↓	$V_{TAX}^{(1)}$	$V_{TAX}^{(2)}$	$V_{TAX}^{(3)}$	$V_{TAX}^{(4)}$	$V_{TAX}^{(5)}$	n/a
Labour	↑ O ↓	$V_{LAB}^{(1)}$					
Capital	↑ 1 ↓	$V_{CAP}^{(1)}$					
Land	↑ 1 ↓	$V_{LND}^{(1)}$					
Prod Tax	↑ 1 ↓	$V_{PTX}^{(1)}$					
Other Costs	↑ 1 ↓	$V_{OCT}^{(1)}$					

C = Number of Commodities

I = Number of Industries

S = 1: Domestic, 2: Imported

O = Number of Educational Qualifications

M = Number of Commodities used as Margins

	Joint Production Matrix
Size	← I →
↑ C ↓	MAKE

	Import Duty
Size	← 1 →
↑ C ↓	$V_{TAR}^{(0)}$

Source: Horridge (2000).

5.3.2 Sources of Data

The Vietnamese I-O database used in this thesis is the 2005 I-O table. A number of behavioural parameters including intermediate substitution elasticities, household substitution elasticities, household expenditure elasticities and investment elasticities, were obtained from the GTAP database version 7.0 (Badri-Nareyanan and Walmsley, 2008) and ORANI-G (Horridge, 2000).

Some of the key data entries and parameters extracted from VNGEM's 2005 base-year database are reported in Annex 11. This sub-section provides a brief

discussion on the Vietnamese industrial structure based on the 2005 I-O database as follows. First, the top five aggregated industries in Vietnam account for approximately 45 per cent of total industrial production. Among these, textile, clothing and footwear (TCF), construction (Construct) and services (Services) are the three largest industries in Vietnam (accounting for 9.88, 9.46 and 9.05 per cent of total industrial production, respectively).

Second, exports and consumption capture the largest shares in GDP on the expenditure side, followed by investment (62.56 and 60.35 and 31.88 per cent, respectively). Most notably, trade deficits in Vietnam remain high and are equivalent to 7.55 per cent of GDP. Regarding Vietnam's GDP on the income side, labour receipts and payments to capital are two largest components of GDP (44.42 and 33.61 per cent of GDP, respectively), followed by indirect taxes and payments to land (13.23 and 8.74 per cent, respectively).

Third, Vietnam's import tariff accounts for approximately 17 per cent of total indirect tax revenue. More than 80 per cent of the tariff revenue is collected from five industries including TCF, machinery (Machinery), chemicals (Chemicals), other manufacturing (OtherManuf) and electricals (Electrical), indicating that these industries are the major importers of material inputs used in the current production.

Finally, the overall industrial sector in Vietnam is relatively labour intensive (with labour accounting for 51.2 per cent of total primary factor costs, while capital accounting for 38.7 per cent). Especially, only six aggregated industries have access to land and use it as a primary factor input. These industries include rice and paddy (RicePad), agriculture (Agriculture), forestry (Forest), fishery (Fish), mining (Mining) and oil, gas and petroleum (OGP), which altogether account for 10.1 per cent of total primary factor costs.

5.3.3 Data Treatment

The original I-O database contains 113 industries and 113 commodities, which were aggregated to 24 industries and 24 commodities (Annex 12). In addition, there are three types of commodity taxes and nine types of production taxes in the original I-O database. Because VNGEM does not deal with taxation issues, these taxes were aggregated into one commodity tax and one production tax for simplicity purpose.

5.4 Model Equations, Closure and Simulation

5.4.1 Model Equations

A complete set of equations in VNGEM and the technical details of the model are found in Annex 13. In essence, VNGEM's equations are expressed largely in percentage changes, which are derived from optimisation problems facing different users (or economic agents) in the Vietnamese economy.[40] Basically, VNGEM has nine main groups of equations describing:

- demands for intermediate and primary inputs into current production;
- supply of commodities;
- demands for input into capital creation;
- household demands;
- export demands;
- government demands;
- price equations;
- market clearing equations for commodities and primary factors; and
- miscellaneous equations defining various macroeconomic variables.

5.4.2 Condensation of Model

In most CGE models, the number of variables and equations is very large. Some large-size models have millions of variables and equations. Other medium- and small-size models, like VNGEM, have thousands of variables and equations. For instance, the uncondensed VNGEM has 38,904 variables and 24,987 equations. As shown in Table 5.2, this requires 13,919 variables to be exogenous (38,904 – 24,987 = 13,917). In practice, such a model is unattractive for running simulations. For this reason, condensation has been a common practice to reduce the model to a manageable size, which in turn helps reduce the computing time and cost significantly. This can be done through a series of condensation instructions, such as omitting, back-solving and substituting variables and equations. In effect, the condensed VNGEM has 2,202 variables and 1,683 equations, and only requires 519 exogenous variables to be solved (2,202 – 1,683 = 519) (Table 5.2).

[40] The solutions to those optimisation problems in both levels and percentage changes are fully documented in Dixon et al. (1982).

Table 5.2- Model Size (of VNGEM) Before and After Condensation

	Before	Condensation	After
Total Variables	38,904	-36,702	2,202
Total Equations	24,987	-23,304	1,683
Exogenous Variables	13,917	-13,398	519

Note: Author's estimates.

5.4.3 Model Closures

Model closures involve setting up the list of exogenous and endogenous variables. Basically, closing the model is equivalent to choosing an environment in which an economy operates. Although VNGEM offers flexibilities in choosing between the exogenous and endogenous variables, not all options are validated without plausible assumptions. To provide a complete projection of the economy-wide impacts of the Vietnamese reforms, VNGEM adopts two different closures: (i) a short-run DPSV[41] closure, and (ii) a long-run closure.

First, the short-run closure will generate simulation results, which show the likely effects of the reforms in a short period of time (for instance, in 2-3 years). A short run is defined to be sufficiently short enough for:

- current capital stock and land to remain unchanged because it takes time for capital to be installed or removed and because land has fixed supply.
- real wages to be fixed or sticky because workers cannot negotiate on wages until the current labour contracts expire, but they can change jobs/employment. Therefore, land and capital rental rates and aggregate employment are determined endogenously.

Additional assumptions in the short-run closure include:

- Rate of technical change terms, shift variables, foreign currency import prices and power of taxes are set exogenously, as are the exchange rate, the number of households and changes in taste.
- Real gross national expenditure (GNE) is fixed, implying fixed real household consumption, real aggregate investment and real aggregate government demand. Hence, any short-run changes in real GDP on the expenditure side can be explained by movements in the real trade balance.

[41] DPSV stands for Dixon, Parmenter, Sutton and Vincent, the authors of ORANI (Dixon et al., 1982).

Second, SOE reforms and the PSD policy are still ongoing, requiring substantial legal and institutional changes that govern the economic activities of SOEs and NSEs across the nation. Likewise, market participants need time to adapt to the newly-regulated environment. Most notably, the Vietnamese government prefers to take a gradualist approach to reform, dividing an entire reform program into many phases. It means, the implementation of these reform programs will probably take a long time to be completed (for instance, 5-10 years or more). Therefore, it is necessary to have a long-run projection of the likely effects of reforms. A long-run is defined to be sufficiently long enough for:

- capital stocks in each industry to adjust such that rates of return on industry capital stocks remain unchanged; and
- for the economy-wide real wage to adjust to achieve full employment.

Additional assumptions in the long-run closure include:

- Because in the long-run a trade deficit is undesirable, the rest of the world will be reluctant to fund any increased trade deficit. Therefore, Vietnam's real balance of trade is assumed to be fixed, with real private consumption expenditure determined endogenously.
- The percentage changes in real investment and government consumption expenditures are indexed to that of real private consumption expenditure, in order to accommodate the balance of trade constraint.
- Aggregate investment follows aggregate capital stock.

5.4.4 Simulation Design

In VNGEM, there are three exogenous public utility industries including electricity and gas (ElecGas), water (Water), and public administration (PubAdmin), whose investment will be exogenous and hence unaffected by the short-run simulation. The choice of variable to shock is based on the fact that, the implementation of SOE reforms and the PSD policy is aimed at improving efficiency and promote competitiveness across all industries. Hence, it is expected that most of the gains from these reform programs will be realised as improvements in primary factor productivity. For this reason, VNGEM is used to hypothetically simulate a 5 per cent across-the-board primary factor productivity improvement and examine its impact on Vietnam's economy.

It is important to note that, this thesis does not suggest that Vietnam's reform programs will lead to an exact 5 per cent improvement in the primary factor productivity.[42] Instead, it provides a numerical benchmark for investigating the direct and indirect effects, as well as identifying the winners and losers from these reform programs. In addition, the short-run and long-run simulation results are expressed largely in percentage changes, which should be interpreted in terms of their impact on the Vietnamese economy relative to the basecase results of no policy implementation.

5.5 Conclusion

The key objective of this thesis is to develop a CGE model of Vietnam (known as VNGEM) to assess the likely effects of the SOE reforms and the PSD policy on Vietnam's national economic outcomes and industries. VNGEM is a comparative-static model, largely based on ORANI-G and ORANI. In essence, VNGEM represents the Vietnamese economy with twenty four industries producing twenty four commodities, which can be produced domestically or imported from abroad. There are four margin commodities, six labour groups by educational qualifications and one representative household. Both short-run and long-run projections are conducted, based on a hypothetical 5 per cent across-the-board primary factor productivity improvement.

The next chapter reports the simulation results and discusses their implications for the macro-economy and industries of Vietnam.

[42] An additional assumption relating to the period during which the 5 per cent primary factor productivity will be realised. Essentially, the one-off increase in productivity is amounted to occurring in the first few years, covering both the short-run and long-run period. In reality, one would assume a dynamic efficiency gain in the long-run, making the total productivity gain greater than what can be achieved in the short-run.

Chapter 6

Analysis of Results

6.1 Introduction

The objective of this chapter is to interpret the short- and long-run results from the simulation, starting with the overall macroeconomic results and then examining industry results. Section 6.2 analyses several important short- and long-run macroeconomic results, such as the percentage changes in real GDP, aggregate employment, price indices, the trade balance and real devaluation. Section 6.3 analyses the short-run and long-run industry results with respect to industry output, employment, exports, imports and investment. From this, some main winning and losing industries are identified, and the employment by occupations and (long-run) welfare effects of efficiency gains on household consumption are examined. In Section 6.4, two sensitivity tests are conducted to see how the dependent variables respond to changes in the model's key parameters as well as changes in the simulated value of the across-the-board primary factor productivity, and Section 6.5 concludes this chapter.

6.2 Macroeconomic Results

Both short-run and long-run macroeconomic results are selectively reported in Table 6.1. Recall that the results are largely expressed in percentage changes. Hence, they should be interpreted as percentage deviations in variables with policy implementation, compared to what they would have been with no policy implementation (baseline). For instance, aggregate employment in the short-run is projected to increase by 2.97 per cent, compared to what it would have been without policy implementation. However, aggregate employment in the long run takes the zero value. It does not mean that aggregate employment will become literally zero in the long run. Instead, it means aggregate employment will be unchanged or unaffected by the policy implementation in the long run, relative to the baseline.

Table 6.1- Short-run and Long-run Macroeconomic Effects of Efficiency Increase (in Percentage Changes from the baseline)

	Description	Short-run	Long-run
1	Real GDP	6.34	7.89
2	Aggregate employment	2.97	0.00
3	Aggregate capital stock	0.00	6.83
4	Real household consumption	0.00	7.49
5	Real investment	0.00	7.49
6	Real government consumption	0.00	7.49
7	Exports (volume)	14.48	7.97
8	Imports (volume)	3.97	7.06
9	Real wage	0.00	6.45
10	Consumer price index	-3.36	-1.48
11	GDP price index	-5.14	-2.20
12	Real trade balance	6.34	0.00
13	Real devaluation	5.41	2.25

Source: VNGEM simulation results.

6.2.1 Short-run Macroeconomic Results

Real GDP at market prices is projected to increase by 6.34 per cent. This increase results from three sources. First, primary factor improvement translates into an improvement in the economy's overall endowment of effective primary factor inputs. From the I-O database, total primary factor inputs account for 86.8 per cent of GDP at factor cost. Hence, the improvement in primary factor productivity increases real GDP at market prices by 4.34 per cent (0.868 x 5.0 = 4.34). Second, real wage is assumed to be fixed and that aggregate employment is projected to increase by 2.97 per cent. From the I-O database, the share of labour income in GDP at factor cost is 44.4 per cent. Hence, the increase in employment contributes to real GDP increase by 1.32 per cent (0.444 x 2.97 = 1.32). This employment increase comes from relatively high output growth in some labour-intensive industries in Vietnam. Finally, the remaining GDP increase of 0.68 per cent is contributed by indirect taxes collected from expanding short-run economic activities.

Because real GNE (gross national expenditure) is held fixed, the increase in real GDP of 6.34 per cent is chiefly caused by improvements in the real trade balance. Due to the overall economic expansion, the volume of imports is projected to increase by 3.97 per cent. This requires the volume of exports to increase at a

faster rate (14.48 per cent) than the volume of imports. Strong export growth can be achieved through short-run reductions in the consumer price index and GDP price deflator (-3.36 and -5.14 per cent, respectively). The reduction in the GDP price deflator implies a real devaluation of 5.41 per cent in the exchange rate. In the short run, this will improve the competitiveness of domestic producers as domestic goods and services become relatively cheaper.

6.2.2 Long-run Macroeconomic Results

Real GDP at market prices is projected to increase by 7.89 per cent. This increase also results from three sources. First, the improvement in primary factor productivity increases real GDP at market prices by 4.34 per cent (0.868 x 5.0 = 4.34), similar to its short-run contribution. Second, aggregate capital stock is projected to increase by 6.83 per cent. From the I-O database, the share of aggregate capital rentals in GDP at factor cost is 33.6 per cent. Hence, the increase in aggregate capital stock contributes 2.29 per cent (0.336 x 6.83 = 2.29) to the real GDP increase. This aggregate capital stock increase comes from relatively high output growth in some capital-intensive industries in Vietnam. Finally, the remaining GDP increase of 1.26 per cent is contributed by indirect taxes collected from expanding long-run economic activities.

The overall economic expansion in Vietnam will drive up demand for labour. However, due to the fixed aggregate employment assumption, the real wage will rise at a projected rate of 6.45 per cent in the long run. Likewise, the volume of imports is projected to increase by 7.06 per cent. To ensure that the real trade balance is held fixed in the long run, it requires the volume of exports to increase at a slightly faster rate (7.97 per cent) than the volume of imports. Strong export growth can be achieved through long-run reductions in the CPI and GDP price deflator (-4.48 and -2.2 per cent, respectively). The reduction in the GDP price deflator implies a real devaluation of 2.25 per cent in the exchange rate. It means, in the long run, domestic producers will also improve their competitiveness in the export markets as prices of domestic goods and services become relatively cheaper.

Three components of real GNE (namely, real household consumption, real investment and real government consumption) are projected to increase at the same rate of 7.49 per cent. This is a reflection of the long-run closure, which indexed real investment and government consumption to real household consumption. In other

words, real investment and government consumption are assumed to change by the same amount as changes in real household consumption (7.49 per cent). On the expenditure side, these GNE components chiefly explain the long-run increase in real GDP of 7.89 per cent. More specifically, from the I-O database, household consumption accounts for 60.6 per cent of GDP, so it contributes 4.54 per cent to the above GDP increase (0.606 x 7.49 = 4.54). By the same reasoning, real investment contributes 2.4 per cent (0.32 x 7.49 = 2.4) while real government consumption contributes 0.96 per cent (0.128 x 7.49 = 0.96).

6.3 Industry Results

6.3.1 Short-run Industry Results

Table 6.2 reports the short-run impacts of Vietnam's reform programs on industry output, employment, exports, imports and investment. Interestingly, the productivity improvement results in short-run output increases in almost all industries, except for Construct. Because the model produces a vast number of results, interpreting all of them is an overwhelming task. Therefore, this sub-section strategically focuses on some important and interesting results for the three best performing (or most favourably affected) industries, two worst performing (or least favourably affected) industries in terms of output and employment growth, and the three largest industries in Vietnam (in terms of percentage of total industrial production).

Table 6.2- Short-run Industry Effects of a 5% Efficiency Increase (in Percentage Changes from the baseline)

		Price[43]	Output	Employment	Exports	Imports	Investment
1	RicePad	-2.26	7.97	4.71	25.41	-2.05	5.78
2	Agriculture	-2.54	6.94	2.95	15.93	1.27	5.62
3	Forest	-0.30	8.65	5.14	2.11	8.54	13.53
4	Fish	-5.35	5.31	0.10	14.73	1.24	-3.53
5	Mining	-1.69	5.99	2.32	5.60	3.75	4.88
6	OGP	-0.97	5.88	2.25	5.85	6.17	4.75
7	FoodBev	-3.67	8.47	5.59	19.24	-1.01	-0.26
8	ConsMat	-3.70	5.77	1.60	25.00	-4.07	-2.74
9	OtherManuf	-1.46	11.45	12.98	14.06	4.60	3.12
10	Services	-5.73	6.03	2.22	32.22	-2.55	-1.08
11	Machinery	-1.95	12.41	12.54	18.24	2.08	2.78
12	Electrical	-1.31	13.95	16.29	16.70	7.94	4.20
13	Steel	-2.19	14.50	16.62	16.82	4.74	4.68
14	TCF	-1.21	12.84	15.59	12.56	9.15	4.51
15	Chemicals	-2.20	10.75	9.49	16.90	5.43	1.15
16	ElecGas	-4.66	7.79	4.98	30.60	-4.99	0.00
17	Water	-5.16	7.92	5.72	0.00	0.00	0.00
18	Construct	-4.52	0.20	-9.40	0.00	0.00	-7.93
19	Trade	-5.40	6.49	2.14	23.49	-2.99	-2.06
20	RdWtrTrans	-4.75	7.29	3.81	20.30	0.23	-1.73
21	RailAirTrans	-4.08	7.06	3.29	17.16	-1.55	-2.23
22	PostTelecom	-4.90	7.45	4.89	21.05	-2.13	0.15
23	FinInsur	-4.94	10.08	8.12	21.24	-0.21	1.29
24	PubAdmin	-6.01	4.20	-1.26	26.58	-1.04	0.00

Source: VNGEM simulation results.

Three Best Performing Industries

Steel (best performer)

The industry that is most favourably affected by the primary productivity improvement is Steel. Its short-run output is projected to increase by 14.5 per cent in response to an output price reduction of 2.19 per cent. Employment in this industry is projected to increase by 16.62 per cent.

[43] This refers to the general output price of locally produced commodity.

According to the I-O database, the Steel industry is highly export-oriented, with approximately 79.6 per cent of its output being exported. The export price of Steel falls by 2.29 per cent, leading Steel exports to increase by 16.82 per cent. Hence, the increase in Steel exports alone contributes 13.38 per cent to its output increase (0.796 x 16.82 = 13.38).

The overall economic expansion in Vietnam will stimulate domestic demand for Steel, thereby contributing 0.98 per cent to the above increase in Steel output. The remaining Steel output increase (0.14 per cent) is contributed by the substitution of domestically-produced Steel for imported Steel. Because the domestic price of Steel now becomes relatively cheaper, coupled with high Armington substitution elasticity, Steel products will be easily substituted away from imported sources towards domestic sources.

Electricals (second best performer)

The short-run output of the electricals (Electrical) industry is projected to increase by 13.95 per cent in response to an output price reduction of 2.19 per cent, which is comparable to the output increase of Steel. Employment in this industry is projected to increase by 16.29 per cent.

The Electrical industry is less export-oriented than the Steel industry because only 46.2 per cent of its output is exported. The export price of Electrical falls by 1.74 per cent, leading Electrical exports to increase by 16.7 per cent. Hence, the increase in Electrical exports alone contributes 7.72 per cent to its output increase (0.462 x 16.7 = 7.72).

The expansion in industries that use Electrical as an intermediate input explains the remaining increase (6.23 per cent) in Electrical output. Three major intermediate input users of Electrical output include Machinery, Electrical and Construct industries. They account for 70.9 per cent of total intermediate usage of Electrical output.

Textile, Clothing and Footwear (third best performer)

The textile, clothing and footwear (TCF) industry is the third best performer. It is also the largest industry in Vietnam in terms of industrial output. From the I-O database, the TCF industry accounts for the largest share of total industrial output

(9.9 per cent). Its output is projected to increase by 12.84 per cent. Employment in this industry is projected to increase by 15.59 per cent.

Similar to Steel, the TCF industry is also export-oriented, with 74 per cent of its output being sold to foreign markets. The export price of TCF falls by 1.54 per cent, leading TCF exports to increase by 12.56 per cent. Hence, the increase in TCF exports alone contributes 9.3 per cent to its output increase (0.74 x 12.56 = 9.3).

The overall economic expansion in Vietnam will stimulate domestic demand for TCF, thereby contributing 2.85 per cent to the above increase in TCF output. The remaining TCF output increase (0.69 per cent) is contributed by the substitution of domestically-produced TCF for imported TCF. Similar to Steel, TCF products will be easily substituted away from imported sources towards domestic sources.

Two Worst Performing (least favourably affected) Industries

Construction (worst affected industry in terms of employment)

The construction (Construct) industry is the worst affected industry. It is also the second largest industry in Vietnam, which accounts for the second largest share of total industrial output (9.5 per cent). Its output increases slightly by 0.2 per cent, which mainly results from increased sales to aggregate investment and intermediate production (0.14 and 0.06 per cent, respectively). The volumes of exports and imports are unchanged chiefly because Construct is a non-traded commodity.

Employment in the Construct industry is projected to fall by 9.4 per cent. This is because wage rate falls by 3.36 per cent, but rental rates fall at a faster rate (9.94 per cent). Hence, capital will become relatively cheaper than labour. As a result, the Construct industry will substitute capital for labour, thereby increasing its capital-to-labour ratio (or conversely, reducing its labour-to-capital ratio). Likewise, investment in the Construct industry falls at a projected rate of 7.93 per cent for two reasons: (i) slow output growth; and (ii) the rate of return in this industry falls by 7.9 per cent.

Public Administration (second least favourably affected industry)

The public administration (PubAdmin) industry is the most labour-intensive industry, in which labour accounts for approximately 82.6 per cent of factor costs. Output in this industry is projected to increase moderately by 4.2 per cent.

The export price of PubAdmin falls by 6.01 per cent, leading PubAdmin exports to increase considerably by 26.58 per cent. However, the PubAdmin industry is not export-oriented, exporting about 13.4 per cent of its output to foreign markets. Hence, the increase in PubAdmin exports alone contributes 3.56 per cent to its output increase (0.134 x 26.58 = 3.56). The remaining increase in PubAdmin output (0.64 per cent) is due to an overall expansion in the economy, which increases the domestic usage of PubAdmin output in intermediate production and household consumption (0.5 and 0.14 per cent, respectively).

Employment in the PubAdmin industry is projected to fall slightly by 1.26 per cent. This is because the wage rate falls by 3.36 per cent, but rental rates fall at a faster rate (4.32 per cent). Hence, capital such as machinery and equipment will become relatively cheaper than labour. As a result, the PubAdmin industry will also substitute capital for labour, thereby increasing its capital-to-labour ratio (or conversely, reducing its labour-to-capital ratio). Recall that investment in the PubAdmin industry is exogenous (refer to sub-section 5.4.4 of Chapter 5). Therefore, it will be unaffected or unchanged by the across-the-board primary productivity improvement.

Three Largest Industries in Vietnam

The three largest industries in Vietnam include TCF, Construct and Services, which altogether account for nearly one-third of total industrial output, according to the 2005 I-O database. Hence, the performance of these industries is worth considering due to their significant contribution to the Vietnamese economy. Because the short-run performance of the largest and second largest industries (namely, TCF and Construct, respectively) has already been discussed, this sub-section merely focuses on the short-run performance of the third largest industry (namely, Services).

Services (third largest industry)

The Services industry consists of 11 sub-industries such as irrigation services (IrrigServ), paper product (PaperProd), printing (Printing), publishing (Publishing), lottery (Lottery), property service (PropertyServ), other business service (OthBusServ), culture and sports (CultureSport), association (Association), dwellings (Dwellings) and other servces (OthServ) (see Annex 12). From the I-O database, this

industry accounts for the third largest share of total industrial output (9 per cent). The Services output is projected to increase by 6.03 per cent and employment in this industry is projected to increase slightly by 2.22 per cent.

The export price of Services falls by 5.73 per cent, leading Services exports to increase sharply by 32.22 per cent. Similar to PubAdmin, the Services industry is very inward-oriented, with only 5.1 per cent of its output being sold to foreign markets. Hence, the increase in Services exports alone contributes 1.64 per cent to its output increase (0.051 x 32.22 = 1.64).

The remaining increase in Services output (4.39 per cent) is due to an overall expansion in the economy, which increases the domestic usage of Services output in intermediate production and household consumption (3.47 and 0.92 per cent, respectively).

6.3.2 Long-run Industry Results

Table 6.3 reports the long-run impact of Vietnam's reform programs on various industries. In particular, output increases are found in all industries, indicating that all industries benefit from the efficiency improvement in the long run. Price reductions in the long run are lower than those in the short run. The long-run trade balance is reflected in an overall increase in imports volume while the overall exports volume tends to fall, relative to their short-run changes. Likewise, industry employment does not change much due to the long-run full employment assumption. By contrast, industry investment activities tend to be higher in the long run than in the short run.

Table 6.3- Long-run Industry Effects of a 5% Efficiency Increase (in Percentage Changes from the baseline)

		Price[44]	Output	Employment	Exports	Imports	Investment
1	RicePad	-0.89	5.56	0.12	9.35	1.78	2.65
2	Agriculture	-0.88	6.10	0.68	5.32	5.32	2.56
3	Forest	-0.95	8.44	2.89	5.04	7.46	4.57
4	Fish	-0.58	6.32	1.01	1.55	5.82	2.71
5	Mining	-0.81	6.55	1.08	2.62	7.01	2.80
6	OGP	-1.00	5.94	0.51	5.87	7.58	2.29
7	FoodBev	-1.36	6.65	-1.49	6.73	5.00	5.48
8	ConsMat	-1.63	8.41	-0.70	10.20	4.43	7.07
9	OtherManuf	-1.21	10.88	1.38	10.76	7.89	9.50
10	Services	-3.41	10.84	0.45	17.80	5.01	9.08
11	Machinery	-1.16	10.08	1.33	9.77	6.69	9.36
12	Electrical	-0.95	11.09	2.11	10.07	8.71	9.98
13	Steel	-1.48	10.95	2.80	10.67	7.95	10.94
14	TCF	-0.99	9.71	0.46	8.70	7.81	8.59
15	Chemicals	-1.15	9.46	0.83	8.30	7.15	8.74
16	ElecGas	-2.46	8.62	-0.68	14.95	1.86	7.49
17	Water	-3.01	8.42	-0.68	0.00	0.00	7.49
18	Construct	-1.43	7.66	-1.64	0.00	0.00	6.98
19	Trade	-2.27	8.26	-1.71	9.11	6.72	9.11
20	RdWtrTrans	-2.13	7.82	-2.47	8.51	5.95	8.15
21	RailAirTrans	-1.83	8.28	-1.70	7.27	6.11	8.53
22	PostTelecom	-2.92	9.45	-0.45	11.90	4.51	8.03
23	FinInsur	-2.57	10.75	1.75	10.38	6.88	10.39
24	PubAdmin	-1.37	7.37	0.55	5.38	7.31	7.49

Source: VNGEM simulation results.

Three Best Performing Industries (in terms of output growth)

Electricals (best performer)

The electricals (Electrical) industry is most favourably affected by the primary productivity improvement in the long run. Its long-run output is projected to increase by 11.09 per cent. Employment in this industry is projected to increase by 2.11 per cent.

[44] This refers to the general output price of locally produced commodity.

According to the I-O database, the Electrical industry is not relatively inward-oriented because only 46.2 per cent of its output is exported. The export price of Electrical falls by 1.08 per cent, leading Electrical exports to increase by 10.07 per cent. Hence, the increase in Electrical exports alone contributes 4.65 per cent to its output increase (0.462 x 10.07 = 4.65).

The expansion in industries that use Electrical as an intermediate input contributes 5.85 per cent to the above Electrical output increase. Three major intermediate input users of Electrical output include Machinery, Electrical and Construct industries. They account for 70.9 per cent of total intermediate usage of Electrical output. The remaining Electrical output increase (0.59 per cent) is contributed by increased sales to household consumption and aggregate investment (0.44 and 0.15 per cent, respectively).

Steel (second best performer)

In the long run, the Steel industry's output is projected to increase by 10.95 per cent, which is pretty close to the Electrical output increase. Employment in this industry is projected to increase by 2.8 per cent.

Unlike Electrical, the Steel industry is highly export-oriented, with approximately 79.6 per cent of its output being exported. The export price of Steel falls by 1.5 per cent, leading Steel exports to increase by 10.67 per cent. Hence, the increase in Steel exports alone contributes 8.5 per cent to its output increase (0.796 x 10.67 = 8.5).

The overall economic expansion in Vietnam will stimulate domestic demand for Steel, thereby contributing 1.7 per cent to the above increase in Steel output. The remaining Steel output increase (0.75 per cent) is contributed by the substitution of domestically produced Steel for imported Steel. Because the domestic price of Steel now becomes relatively cheaper, coupled with high Armington substitution elasticity, Steel products will be easily substituted away from imported sources towards domestic sources.

Other Manufacturing (third best performer)

The other manufacturing (OtherManuf) industry consists of bakery and confectionery (BakeryConf), wood products (WoodProd) and non-ferrous metal (NonFeMetal) (see Annex 12). This industry is third most favourably affected by the

primary productivity improvement in the long run. Its long-run output is projected to increase by 10.88 per cent in response to a price reduction of 1.21 per cent. Employment in this industry is projected to increase by 1.38 per cent.

According to the I-O database, the OtherManuf industry is export-oriented, with 63.6 per cent of its output being exported to foreign markets. The export price of OtherManuf falls by 1.25 per cent, leading OtherManuf exports to increase by 10.76 per cent. Hence, the increase in OtherManuf exports alone contributes 6.84 per cent to its output increase (0.636 x 10.76 = 6.84).

The expansion in industries that use OtherManuf as an intermediate input contributes 2.86 per cent to the above OtherManuf output increase. Three major intermediate input users of OtherManuf output include Construct, OtherManuf and Machinery industries. They account for 70 per cent of total intermediate usage of OtherManuf output. The remaining OtherManuf output increase (1.18 per cent) is contributed by increased sales to household consumption and aggregate investment (0.88 and 0.3 per cent, respectively).

Two Worst Performing Industries

Rice and Paddy (least favourably affected industry)

Recall that the Construct industry is the least favourably affected industry in the short run. However, in the long run, the rice and paddy (RicePad) industry becomes the least favourably affected industry instead of Construct. This industry is relatively labour-intensive, with labour accounting for 55.84 per cent of factor costs. The long-run price of RicePad decreases slightly by 0.89 per cent, explaining for its moderate long-run output increase of 5.56 per cent. At the same time, this industry experiences a rising production cost of 1 per cent. This production cost increase is caused by a rising primary factor cost of 4.41 per cent, which in turn is caused by two factors: (i) an increasing wage rate (4.87 per cent) which implies a rising labour cost; and (ii) an increasing land rental rate (5.25 per cent). Put simply, the RicePad industry experiences a cost-price squeeze in the long-run, which largely explains its moderate long-run output increase.

However, there is no significant change in this industry's employment (0.12 per cent). The substitution of capital for labour is inelastic (0.34), which means even though capital is relatively cheaper than labour, there will be insignificant substitution of capital for labour in the long run.

The export price of RicePad falls by 0.94 per cent, leading RicePad exports to increase by 9.35 per cent. However, the RicePad industry is not export-oriented, exporting about 15.5 per cent of its output to foreign markets. Hence, the increase in RicePad exports alone contributes 1.45 per cent to its output increase (0.155 x 9.35 = 1.45).

The remaining increase in RicePad output (4.11 per cent) is due to an overall expansion in the economy, which increases the domestic usage of RicePad output in intermediate production and household consumption (2.95 and 1.16 per cent, respectively). First, three major intermediate input users of RicePad output include RicePad itself, Agriculture and FoodBev. They account for 98.3 per cent of total intermediate usage of RicePad output. Second, rising labour income translates into an increase in household consumption of RicePad by 3.93 per cent.

Oil, Gas and Petroleum (second least favourably affected industry)

Recall that the PubAdmin industry is the second least favourably affected industry in the short run. However, in the long run the oil, gas and petroleum (OGP) industry becomes the least favourably affected industry instead of PubAdmin. The OGP industry is relatively capital- and land-intensive, with capital and land together accounting for 72.9 per cent of factor costs. The long-run price of OGP decreases slightly by 1 per cent, explaining for its moderate long-run output increase of 5.94 per cent. This industry experiences a rising production cost (2.54 per cent). This production cost increase is caused by a rising primary factor cost of 4.17 per cent, which in turn is caused by two factors: (i) an increasing wage rate (4.87 per cent) which implies a rising labour cost; and (ii) an increasing land rental rate (7.48 per cent). Similar to the RicePad, the OGP industry also experiences a cost-price squeeze in the long-run, which largely explains its moderate long-run output increase.

However, there is also no significant change in this industry's employment (0.54 per cent). The substitution of capital for labour is also inelastic (0.21), which means that even though capital is relatively cheaper than labour, there will be insignificant substitution of capital for labour in the long run.

The export price of OGP falls by 1.01 per cent, leading OGP exports to increase by 5.87 per cent. OGP is the most export-oriented industry in Vietnam, exporting about 98.3 per cent of its output to foreign markets. Hence, the increase in

OGP exports alone contributes 5.77 per cent to its output increase (0.983 x 5.87 = 5.77).

The remaining increase in OGP output (0.17 per cent) is due to an overall expansion in the economy, which increases the domestic usage of OGP output in intermediate production. OGP output is sold to all industries in Vietnam, with the top 10 domestic users accounting for 76.9 per cent of total usage of OGP input.

Three Largest Industries

Textile, Clothing and Footwear (largest industry)

Recall that the TCF industry accounts for the highest share of total industrial output (9.9 per cent). In the long run, this industry loses its third favourable position to the OtherManuf industry. Its long-run output is projected to increase by 9.71 per cent. Employment in this industry is projected to increase slightly by 0.46 per cent.

Similar to Steel, the TCF industry is also export-oriented, with 74 per cent of its output being sold to foreign markets. The export price of TCF falls by 1.09 per cent, leading TCF exports to increase by 8.7 per cent. Hence, the increase in TCF exports alone contributes 6.44 per cent to its output increase (0.74 x 8.7 = 6.44).

The overall economic expansion in Vietnam will stimulate domestic demand for TCF, thereby contributing 2.53 per cent to the above increase in TCF output. The remaining TCF output increase (0.74 per cent) is contributed by the substitution of domestically-produced TCF for imported TCF. Similar to Steel, TCF products will be easily substituted away from imported sources towards domestic sources.

Construction (second largest industry)

As a reminder, the Construct industry accounts for the second largest share of total industrial output (9.5 per cent). Its long-run performance improves significantly, compared to short-run performance. In effect, the long-run output of this industry is projected to increase by 7.66 per cent, which is mainly contributed by increased sales to aggregate investment, government consumption and intermediate production (7.42, 0.14 and 0.1 per cent, respectively). The volumes of exports and imports are unchanged chiefly because Construct is a non-traded commodity.

Employment in the Construct industry is projected to fall by 1.64 per cent. This is because the wage rate increases by 4.87 per cent while rental rates fall by 0.87 per cent. Hence, capital will become relatively cheaper than labour. As a result,

the Construct industry will substitute capital for labour, thereby increasing its capital-to-labour ratio (or conversely, reducing its labour-to-capital ratio). By contrast, investment in the Construct industry increases at a projected rate of 6.98 per cent in response to the overall economic expansion in Vietnam.

Services (third largest industry)

From the I-O database, the Services industry accounts for the third largest share of total industrial output (9 per cent). Demand for Services output is relatively price elastic. Hence, a reduction in its price (-3.41 per cent) will favourably stimulate its output and employment. Indeed, the Services output is projected to increase by 10.84 per cent and its employment is projected to increase slightly by 0.45 per cent.

The export price of Services falls by 3.4 per cent, leading Services exports to increase sharply by 17.8 per cent. However, the Services industry is very inward-oriented, with only 5.1 per cent of its output being sold to foreign markets. Hence, the increase in Services exports alone contributes only 0.91 per cent to its output increase (0.051 x 17.8 = 0.91).

The remaining increase in Services output (9.93 per cent) is contributed by an overall expansion in the economy, which increases the domestic usage of Services output into household consumption, intermediate production and government consumption (6, 3.62 and 0.31 per cent, respectively). Among these, household consumption of Services increases dramatically by 10.59 per cent, making it the largest contributor to the industry's output increase.

6.3.3 Employment by Educational Qualifications

In the short run, the real wage is assumed to be fixed, but nominal labour cost decreases at a uniform rate of 3.36 per cent (same rate as the CPI reduction as nominal wage is indexed with the CPI) due to efficiency gains (Table 6.4). This stimulates higher demand for both low- and high-skilled workers in the short run. However, the short-run demand for VocTraining, Elementary and NoSkill qualifications is projected to increase at a faster rate than that for UniDegree, CollegeDeg and ProfSecond qualifications. Understandably, a majority of workers in Vietnam possess low and medium skills, as reflected in their educational qualifications. According to the I-O database, workers with VocTraining, Elementary and NoSkill qualifications account for 70 per cent of the total wage bill. They usually work in the agriculture and light manufacturing sectors. On the other hand, workers

with UniDegree, CollegeDeg and ProfSecond qualifications account for the remaining 30 per cent of the total wage bill. They usually work in such sectors as OGP, ElecGas, Water, PostTelecom and PubAdmin. Therefore, the short-run changes in employment are quite consistent with the current labour market conditions in Vietnam.

Nevertheless, the real wage will increase in the long run and nominal wages will also increase at a uniform rate of 4.87 per cent adjusted for the reduction in the CPI (Table 6.4). Although the economy is assumed to reach its full employment level, there will be some changes in the composition of occupations in the long run. In particular, there will be reductions in demand for low-skilled workers (-0.1 per cent for NoSkill and -0.07 per cent for Elementary). The skill mix will then be allocated towards medium- and high-skilled workers, especially towards CollegeDeg and ProfSecond qualifications (0.28 and 0.24 per cent, respectively). This is because the expanding industries, especially capital-intensive industries, will also expand their investment activities in accumulating more capital, machinery and equipment in the long run. To work with these newly-invested technologies, machinery and equipment, the economy needs to acquire more medium- and high-skilled workers in the long run.

Table 6.4- Employment by Educational Qualifications (in Percentage Changes from the baseline)

		Short run		**Long-run**	
	Qualifications	Wages	Employment	Wages	Employment
1	UniDegree	-3.36	2.35	4.87	0.19
2	CollegeDeg	-3.36	1.33	4.87	0.28
3	ProfSecond	-3.36	1.89	4.87	0.24
4	VocTraining	-3.36	3.83	4.87	0.06
5	Elementary	-3.36	4.59	4.87	-0.07
6	NoSkill	-3.36	3.25	4.87	-0.10

Source: VNGEM simulation results.

6.3.4 Welfare Effects of Efficiency Gains

According to Fane and Ahammad (2003), there have been two different concepts of equivalent variation (EV) being used to measure the welfare effects of policy changes. The first one is derived from the balance of trade function (referred to as EV^{BOT}), which can be defined as an increase in foreign exchange received from

abroad resulting in the same utility change as the policy change. The second one is derived from the money metric utility function (referred to as EV^{MMU}), which can be defined as an extra amount of income allowing consumers to reach the utility that they actually reach as a result of the policy change (assuming prices faced by consumers are unchanged). This EV^{MMU} is used in VNGEM to estimate changes in household consumption as an indicator of welfare changes.[45]

In the short run, aggregate household consumption is assumed to be unchanged. Therefore, efficiency gains appear to have little short-run welfare impact on the economy. Nevertheless, in the short run, there are some changes in the composition of commodities consumption in response to changes in their relative prices. As mentioned previously, the short-run nominal wages will decline at a uniform rate of 3.36 per cent (negative income effect). However, the short-run consumer prices of commodities Fish, Services, ElecGas, Water, Trade, PostTelecom and PubAdmin in Table 6.5, decline at faster rates than nominal wages (positive substitution effect). In this case, the positive substitution effect dominates the negative income effect and the net effect is positive, thereby explaining the increments in short-run household consumption of these commodities. By contrast, the consumer price reductions for other remaining commodities are lower than the nominal wage reductions. In this case, the negative income effect dominates the positive substitution effect and the net effect is negative, causing consumption of such items to decline.

In the long run, efficiency gains will generate positive welfare effects on the economy since the aggregate long-run household consumption is projected to increase by 7.49 per cent. This is reflected in the increase in consumption of all commodities in the long run. As mentioned previously, the long-run nominal wages will increase at a uniform rate of 4.87 per cent (positive income effect). In addition, the long-run consumer prices of almost all commodities will decline (positive substitution effect), except for the price of Construct which remains unchanged. It means the consumers will enjoy their relative income increases and also enjoy relatively cheaper goods and services. In this case, the net effect is positive, thereby explaining the long-run increases in household consumption. In Vietnam, there are

[45] Despite notable differences between the two measures, decomposing each measure has certain weaknesses such that neither is definitely superior to the other (see Martin (1997) and Fane and Ahammad (2003) for more details). Note that VNGEM does not decompose the measure of welfare changes since it is not the primary objective of this thesis.

eight main consumer goods including commodities RicePad, Agriculture, Fish, FoodBev, Services, TCF, Chemicals and Trade, which altogether account for 83.7 per cent of total household consumption, according to the I-O database.[46]

Table 6.5- Welfare Effects of Efficiency Gains on Household Consumption (in Percentage Changes from the baseline)

		Short-run		Long-run	
		Consumer Prices	Household Consumption	Consumer Prices	Household Consumption
1	RicePad	-2.40	-0.34	-0.96	3.93
2	Agriculture	-2.51	-0.48	-0.91	5.97
3	Forest	-0.81	-1.54	-1.06	7.35
4	Fish	-5.32	1.03	-0.66	6.75
5	Mining	-1.74	-1.03	-0.82	7.28
6	OGP	-0.73	-1.62	-0.33	7.05
7	FoodBev	-3.11	-0.21	-1.17	6.50
8	ConsMat	-3.09	-0.25	-1.34	7.53
9	OtherManuf	-1.38	-1.22	-0.82	7.19
10	Services	-5.27	1.27	-3.12	10.59
11	Machinery	-1.30	-1.26	-0.62	7.06
12	Electrical	-0.85	-1.51	-0.48	6.97
13	Steel	-1.28	-1.27	-0.63	7.07
14	TCF	-1.53	-1.11	-0.84	7.06
15	Chemicals	-2.78	-0.42	-1.26	7.47
16	ElecGas	-4.61	0.66	-2.43	8.34
17	Water	-5.16	0.99	-3.01	8.73
18	Construct	0.00	-2.00	0.00	6.75
19	Trade	-4.44	0.64	-1.86	9.19
20	RdWtrTrans	-2.94	-0.34	-1.31	7.69
21	RailAirTrans	-2.43	-0.64	-1.09	7.55
22	PostTelecom	-4.23	0.44	-2.51	8.50
23	FinInsur	-2.27	-0.94	-1.17	9.78
24	PubAdmin	-4.70	0.82	-1.07	8.59

Note: VNGEM simulation results.

[46] The results are driven by hypothetical closure rules. In reality, the welfare and other economic affects would lie somewhere in between the time set of results: short-run and long-run.

6.4 Sensitivity Analyses

The simulation results above have been generated based on the I-O database and a number of behavioural parameters listed in Annexes 11 and 13. Obviously, any changes in one or all of these parameters, as well as changes in the simulated value of the primary factor productivity, may alter the values of the dependent variables in VNGEM. To test for the robustness of the model's macroeconomic results, two sensitivity analyses are conducted as follows.

The first sensitivity analysis is conducted by doubling and halving each of the following three important parameters: (i) Armington substitution elasticities between domestic and imported sources ($\sigma^{(1)}_{(c)}$); (ii) transformation elasticities of output ($\sigma_O{}^{(1)}_{(i)}$); and (iii) individual export demand elasticities ($\gamma_{(c)}$). The results of the first sensitivity test are reported in Table 6.6, which indicates that the macroeconomic results are sufficiently robust to withstand changes in the above parameters. The welfare effects of changes in $\sigma_O{}^{(1)}_{(i)}$ and $\sigma^{(1)}_{(c)}$ on long-run household consumption are relatively small. For instance, halving the value of $\sigma_O{}^{(1)}_{(i)}$ will lower long-run household consumption by 0.01 per cent compared to the normal case (7.49 - 7.48 = 0.01). Conversely, doubling its value will increase long-run household consumption by 0.01 per cent (7.5 - 7.49 = 0.01). From the I-O database, household consumption accounted for $US33.8 billion.[47] This reduction (increase) is equivalent to a loss (increase) in long-run household consumption of $US3.38 million ($US33.8 billion x 0.0001 = $US3.38 million).

Likewise, halving the values of $\sigma^{(1)}_{(c)}$ will result in a loss in long-run household consumption of $US27 million ($US33.8 billion x (7.49 - 7.41)/100 = $US27 million). Conversely, doubling its value will result in an increase in long-run household consumption of $US50.7 million ($US33.8 billion x (7.64 - 7.49)/100 = $US50.7 million).

However, the welfare effects of changes in $\gamma_{(c)}$ on long-run household consumption are relatively large. Using the same reasoning, halving the value of $\gamma_{(c)}$ will result in a loss in long-run household consumption of $US233.2 million ($US33.8 billion x (7.49 - 6.8)/100 = $US233.2 million). Conversely, doubling its value will result in an increase in long-run household consumption of $US219.7

[47] In Vietnamese currency, household consumption is $VN536,066 billion. Using the IMF's 2005 exchange rate (1 USD = 15,859 VND), this is equivalent to $US33.8 billion.

million ($US 33.8 x (8.14 - 7.49)/100 = $US219.7 million). Understandably, changes in $\gamma_{(c)}$ will result in significant changes in the volume of exports, leading to significant changes in real output and household consumption since exports represent the main channel for output growth.

Table 6.6- Sensitivity Test for Changes in $\sigma^{(1)}_{(c)}$, $\sigma_O{}^{(1)}_{(i)}$ and $\gamma_{(c)}$

	Description	Short-run			Long-run		
	$\sigma^{(1)}_{(c)}$	Half	Normal	Double	Half	Normal	Double
1	Real GDP	6.27	6.34	6.46	7.81	7.89	8.05
2	Aggregate employment	2.79	2.97	3.28	0.00	0.00	0.00
3	Aggregate capital stock	0.00	0.00	0.00	6.57	6.83	7.29
4	Real household consumption	0.00	0.00	0.00	7.41	7.49	7.64
5	Real investment	0.00	0.00	0.00	7.41	7.49	7.64
6	Real government consumption	0.00	0.00	0.00	7.41	7.49	7.64
7	Exports (volume)	15.10	14.48	13.46	8.32	7.97	7.35
8	Imports (volume)	4.65	4.00	2.92	7.38	7.06	6.51
9	Real wage	0.00	0.00	0.00	6.29	6.45	6.74
10	Consumer price index	-3.50	-3.36	-3.12	-1.55	-1.48	-1.36
11	GDP price index	-5.33	-5.14	-4.82	-2.30	-2.20	-2.01
12	Real trade balance	6.27	6.34	6.46	0.00	0.00	0.00
13	Real devaluation	5.62	5.41	5.07	2.36	2.25	2.05

	Description	Short-run			Long-run		
	$\sigma_O{}^{(1)}_{(i)}$	Half	Normal	Double	Half	Normal	Double
1	Real GDP	6.34	6.34	6.35	7.89	7.89	7.91
2	Aggregate employment	2.96	2.97	2.98	0.00	0.00	0.00
3	Aggregate capital stock	0.00	0.00	0.00	6.82	6.83	6.86
4	Real household consumption	0.00	0.00	0.00	7.48	7.49	7.50
5	Real investment	0.00	0.00	0.00	7.48	7.49	7.50
6	Real government consumption	0.00	0.00	0.00	7.48	7.49	7.50
7	Exports (volume)	14.48	14.48	14.49	7.97	7.97	7.96
8	Imports (volume)	4.01	4.00	3.99	7.07	7.06	7.06
9	Real wage	0.00	0.00	0.00	6.45	6.45	6.46
10	Consumer price index	-3.37	-3.36	-3.34	-1.48	-1.48	-1.48
11	GDP price index	-5.14	-5.14	-5.12	-2.20	-2.20	-2.19
12	Real trade balance	6.34	6.34	6.35	0.00	0.00	0.00
13	Real devaluation	5.42	5.41	5.40	2.25	2.25	2.24

	Description	Short-run			Long-run		
	$\gamma_{(c)}$	Half	Normal	Double	Half	Normal	Double
1	Real GDP	5.50	6.34	7.22	7.19	7.89	8.57
2	Aggregate employment	1.30	2.97	4.75	0.00	0.00	0.00
3	Aggregate capital stock	0.00	0.00	0.00	5.07	6.83	8.52
4	Real household consumption	0.00	0.00	0.00	6.80	7.49	8.14
5	Real investment	0.00	0.00	0.00	6.80	7.49	8.14
6	Real government consumption	0.00	0.00	0.00	6.80	7.49	8.14
7	Exports (volume)	11.11	14.48	17.64	6.27	7.97	9.66
8	Imports (volume)	2.18	3.97	5.52	5.54	7.06	8.59
9	Real wage	0.00	0.00	0.00	5.23	6.45	7.58
10	Consumer price index	-4.74	-3.36	-2.22	-2.23	-1.48	-0.94
11	GDP price index	-7.06	-5.14	-3.59	-3.38	-2.20	-1.33
12	Real trade balance	5.50	6.34	7.22	0.00	0.00	0.00
13	Real devaluation	7.59	5.41	3.72	3.49	2.25	1.35

Note: $\sigma^{(1)}_{(c)}$ = Armington substitution elasticities between domestic and imported sources; $\sigma_O{}^{(1)}_{(i)}$ = transformation elasticities of output; and $\gamma_{(c)}$ = individual export demand elasticities.
Source: VNGEM simulation results, which are expressed in percentage changes.

The second sensitivity analysis is conducted by doubling and halving the simulated value the across-the-board primary factor productivity ($a_{PR}{}^{(1)}_{(i)}$). The results of the second sensitivity test are reported in Table 6.7. It can be observed that almost all macroeconomic variables have nearly one-to-one (or symmetric) responses to changes in $a_{PR}{}^{(1)}_{(i)}$. For instance, halving the value of $a_{PR}{}^{(1)}_{(i)}$ will cut both short-run and long-run real GDP growth rates by half while doubling its value will increase such growth rates by twice, similarly for other macroeconomic variables reported in Table 6.7. Therefore, the macroeconomic results are sufficiently robust to withstand changes in $a_{PR}{}^{(1)}_{(i)}$.

In monetary terms, the welfare effects of changes in $a_{PR}{}^{(1)}_{(i)}$ on long-run household consumption are significantly large. As mentioned previously, household consumption accounted for $US33.8 billion according to the I-O database. Hence, halving the value of $a_{PR}{}^{(1)}_{(i)}$ will result in a loss in long-run household consumption of $US1.3 billion ($US33.8 billion x (7.49 - 3.63)/100 = $US1.3 billion) while doubling its value will result in an increase in long-run household consumption of $US2.86 billion ($US 33.8 x (15.94 - 7.49)/100 = $US2.86 billion). Intuitively, the greater the primary factor productivity improvements, the better the results, and vice

versa. This is one of the main policy implications discussed in sub-section 7.3.2 of Chapter 7.

Table 6.7- Sensitivity Test for Changes in $a_{PR}^{(1)}{}_{(i)}$

	Description	Short-run			Long-run		
	$a_{PR}^{(1)}{}_{(i)}$	Half (2.5%)	Normal (5%)	Double (10%)	Half (2.5%)	Normal (5%)	Double (10%)
1	Real GDP	3.06	6.34	13.63	3.82	7.89	16.88
2	Aggregate employment	1.41	2.97	6.54	0.00	0.00	0.00
3	Aggregate capital stock	0.00	0.00	0.00	3.32	6.83	14.52
4	Real household consumption	0.00	0.00	0.00	3.63	7.49	15.94
5	Real investment	0.00	0.00	0.00	3.63	7.49	15.94
6	Real government consumption	0.00	0.00	0.00	3.63	7.49	15.94
7	Exports (volume)	7.00	14.48	31.06	3.85	7.97	17.08
8	Imports (volume)	1.90	3.97	8.65	3.43	7.06	15.05
9	Real wage	0.00	0.00	0.00	3.14	6.45	13.65
10	Consumer price index	-1.71	-3.36	-6.48	-0.73	-1.48	-3.03
11	GDP price index	-2.62	-5.14	-9.88	-1.09	-2.20	-4.49
12	Real trade balance	3.06	6.34	13.63	0.00	0.00	0.00
13	Real devaluation	2.69	5.41	10.96	1.10	2.25	4.70

Note: $a_{PR}^{(1)}{}_{(i)}$ = all factor-augmenting technical change (referred to as primary factor productivity).
Source: VNGEM simulation results, which are expressed in percentage changes.

Overall, the results from VNGEM are relatively consistent with some reviewed studies in Chapter 4, regardless of differences in methodologies and scope of analysis. First, Vu (2002) and Ha (2007) both find that privatisation leads to efficiency gains of SOEs. This validates the assumption adopted in this thesis of the 5 per cent increase in the primary productivity variables. In addition, CIEM (2003) finds that equitisation creates more jobs and investment activities, while Truong et al. (2006) find there are increases in employee income after equitisation. These are relatively consistent with VNGEM's results, which suggest that the increases in investment activities and labour income mostly occur in the long run, not in the short run. Second, VNGEM's results suggest that Vietnam's reform programs are pro-growth as reflected in the increases in real GDP in both short and long runs. This is consistent with the findings of Barnett (2000), Belke et al. (2005) and Boubakri et al. (2009), although these studies do not clearly specify whether such GDP increases are for the short or long runs.

Nevertheless, the findings from the following studies appear to be related to those from VNGEM, but they cannot be comparable directly.[48] For instance, Boubakri and Cosset (1998) find that privatisation increases firms' output and employment. In VNGEM, these increases are referred to as increases in industries' output and employment growth. In addition, Brainerd (2002) and Ho et al. (2002) find wage increases in privatised SOEs. Wage increases found in VNGEM are referred to as aggregate real wages rather than wages in privatised SOEs alone. Further, Monteiro (2003) finds a U-shaped relationship between wage variation and time period of restructuring. In VNGEM, wages are unchanged in the short run (perhaps due to fixed labour contracts), but increase in the long run (due to the long-run full employment assumption). Under this specification, such relationship does not always need to be U-shaped. Similarly, Kikicaslan et al. (2008) find that privatisation results in increased unemployment. VNGEM's results suggest that this is only a short-run phenomenon because in the long run, employment in the private sector increases, offsetting the decreases in employment of SOEs and restoring to the full employment level. In terms of welfare changes, Broadman et al. (2009) find that privatisation leads to welfare improvements in competitive environments, similar to VNGEM's findings, but the authors do not specify the measurement of and duration of welfare.

On the other hand, the results from VNGEM are in contrast with some other reviewed studies in Chapter 4. Differences in methodologies and scope of analysis largely explain these discrepancies. First, VNGEM's results are based on the assumption that Vietnam's reform programs are pro-growth, but Cook and Uchida (2003) find that privatisation has contributed negatively to economic growth. The authors argue that the lack of competition and weak regulation of competition explains their finding. Such argument may be misleading because, based on their reasoning, the causes of negative output growth are the lack of competition and weak regulation of competition rather than privatisation. Similarly, Katsoulakos and Likoyanni (2002) find that privatisation is not related to GDP growth, while Moshiri and Abdou (2008) find a neutral effect of privatisation on economic growth. Second, Gong et al. (2006) find some temporary reductions in employment growth in privatised firms compared with non-privatised firms. VNGEM's results suggest that

[48] First and foremost, this analysis is based on an assumed 5 per cent across-the-board increase in the primary factory productivity, which may or may not occur in reality.

this may be true only in the short run, but not in the long run due to the full employment assumption in the model.

Third, in terms of wages and/or earnings, Tansel (1998) find that privatisation results in earnings losses and welfare reductions partly due to poor quality of jobs in the private sector. His reasoning is not quite convincing because the criteria defining the term 'quality jobs' are unclear, and because a large body of empirical evidence shows that private enterprises are more efficient than SOEs. Hence, it is not always true that the private sector offers low quality jobs relative to the SOE sector.

Finally, in terms of welfare changes, Stuckler and King (2007) find that privatisation results in welfare reductions (measured by life expectancy losses), while Pham and Mohnen (2012) find that privatisation does not contribute to welfare improvement. These are in contrast with VNGEM's finding of welfare gains resulted from Vietnam's reform programs. Understandably, Stuckler and King (2007) use data on mortality and/or life expectancy as an indicator of welfare, while the measurement of welfare in VNGEM is household consumption. Besides, the authors do not specify the duration of these welfare losses, while VNGEM shows that Vietnam's reform programs results in welfare gains in the long run as the aggregate household consumption increases. Likewise, Pham and Mohnen (2012) do not explain how welfare is measured and seriously lack a long-run analysis of the welfare impacts of privatisation. Most notably, their biased conclusion is mainly due to the unrealistic assumption of the closed, rather than open, economy of Vietnam.

6.5 Conclusion

The across-the-board productivity improvement translates into relatively lower prices of domestic goods and services, thereby improving the competitiveness of domestic producers in the export markets. Therefore, Vietnam's ongoing reform programs are simulated to be pro-growth in both the short and long runs. Three major channels of output increases include: (i) export expansion; (ii) increased domestic usage of goods and services, especially in current production, aggregate investment, household consumption and government consumption; and (iii) substitution of goods and services away from imported sources and towards domestic sources in response to relative price changes that favour domestic goods and services.

In the short run, economic expansion will also lead to expansion in aggregate employment. Likewise, export expansion will result in a short-run trade surplus in

Vietnam. Nevertheless, these positive effects on exports and aggregate employment will fade out in the long run when the economy presumably achieves its full employment level and a trade balance. Due to the full employment assumption, the real wage will increase in the long run, leading to increased labour incomes. For this reason, the productivity improvement will generate positive welfare effects as measured by the increases in household consumption in the long run.[49]

With respect to industry employment, the demand for low-skilled workers grows at a faster rate than that for high-skilled workers in the short run. These short-run changes are quite consistent with the current labour market conditions in Vietnam, in which the former account for 70 per cent of total wage bill while the latter account for 30 per cent. However, the demand for medium- and high-skilled workers will increase in the long run, relative to that for low-skilled workers. This is because the expanding industries, especially capital-intensive industries, will also expand their long-run investment activities in accumulating more capital, machinery and equipment. To work with these newly-invested technologies, machinery and equipment, the economy needs to acquire more medium- and high-skilled workers in the long run.

In addition, some of the winners and losers (in terms of output growth rates) from the Vietnamese reform programs have been identified. For instance, the most favourably affected industries in the short run include Steel, Electrical and TCF, while the least favourably affected industries include Construct and PubAdmin. Likewise, the most favourably affected industries in the long run include Electrical, Steel and OtherManuf, while the least favourably affected industries include RicePad and OGP.

Finally, the sensitivity analyses indicate that the projected macroeconomic results are sufficiently robust to changes with a few key model parameters (such as the Armington substitution elasticities, the transformation elasticities of output and individual export demand elasticities) as well as changes in the simulated value the across-the-board primary factor productivity. Overall, the results from VNGEM are consistent with some studies reviewed in Chapter 4, but contrast to or cannot be comparable directly with some other studies, largely because of differences in research methodologies and scope of analysis.

[49] The reality may be somewhere in between the modelled short-run and long-run simulation scenarios.

The next chapter summarises all of the main findings and/or arguments throughout Chapters 2 to 6, and provides several policy suggestions and/or recommendations, at both micro and macro levels, for achieving greater reform outcomes.

Chapter 7
Conclusions

7.1 Introduction

Chapters 2 to 6 examined the Vietnamese economy after *Doi Moi* launched in 1986. In essence, Vietnam's impressive economic performance resulted from a vast number of policy changes implemented since 1986. The important policy changes in Vietnam include the industrial, trade and monetary policies. Most importantly, this study mainly focuses on Vietnam's microeconomic reform of domestic enterprises through state-owned enterprise (SOE) reforms, particularly focused on the equitisation program and the private sector development (PSD) policy. In this respect, a computable general equilibrium (CGE) model of Vietnam (referred to as VNGEM) has been developed to assess the likely effects of the future microeconomic reform programs on Vietnam's national economic outcomes and industries. This final chapter is aimed at providing a brief summary of key findings and arguments that have already been covered in Chapters 2 to 6.

This concluding chapter is structured as follows. Section 7.2 reports some key conclusions and/or findings throughout Chapters 2 to 6. In Section 7.3, some policy implications for Vietnam are identified, and measures to more effectively implemented policy changes are discussed, especially with respect to accelerating the SOE reform process, in order to sustain greater economic growth and development in the future. Section 7.4 specifies some research limitations and/or difficulties during the period of completing this thesis. These provide useful directions for subsequent studies in the future.

7.2 Concluding Remarks

Throughout Chapters 2 to 6, several notable conclusions and/or findings include the followings. First, Vietnam's economic performance has been very impressive since *Doi Moi*. The country experienced strong output growth, especially in the mid-1990s, improved BOPs, increasing labour incomes, high employment growth and a favourably low unemployment level. Nevertheless, Vietnam is still considered as a low-income country, with considerable income gaps between the

urban and rural areas, and between rich and poor regions. To finance its industrialisation process, Vietnam becomes more dependent on external debt, official development assistance (ODA) funds, overseas remittances and FDI. In terms of macroeconomic policies, during 1960-85, Vietnam implemented the heavy industry priority (HIP) strategy with limited successes because of the inefficient allocation of investment resources to heavy industry and away from light industry and agriculture. Since 1986, Vietnam has switched to developing light industry. Nevertheless, trade deficits continued to rise over time because the country kept exporting relatively low value-added products while importing relatively high value-added products (most of which could not be produced domestically) to accelerate its industrialisation process. Although Vietnam's dualistic trade regime has been more liberalised than before, it is still characterised as restrictive, protectionist and interventionist with favourable treatment given to domestic industries (especially domestic SOEs), but these protected agents did not expand strongly enough to lead the economy. Regarding the monetary policy, the SBV has been somewhat successful in controlling high levels of inflation by adopting a tight and/or prudential loosening monetary policy stance since *Doi Moi*. Nevertheless, the financial market as a whole has been hampered by too many administrative interventions by the SBV such that the distortion effects of such practice on banks' decisions are worth worrying.

Second, the SOE sector has long been receiving government preferential treatment, resulting in unfair competition such that investment capital has been inefficiently allocated to the SOE sector and away from the non-state enterprise (NSE) sector. Surprisingly, the SOE sector had lower contribution to aggregate output, employment and government tax revenues compared with the private sector. A majority of SOEs operated inefficiently in both managerial and productive areas because they did not follow market disciplines and were not seriously penalised for their failures, and because they were guided by multiple conflicting objectives which prioritised job security over profit maximisation. Therefore, SOE reforms were implemented, largely through equitisation, to improve the efficiency and competitiveness of SOEs. Overall, the SOE reform and equitisation processes have been slow and incomplete, regardless of the reduced number of SOEs. On the other hand, because the NSE sector is seen to be more efficient than the SOE sector, developing the private sector offers three main benefits including: (i) job creation; (ii) productivity improvement, which in turn increases labour incomes and reduces

poverty, especially poverty in rural areas; and (iii) absorption of labour redundancies resulting from SOE reforms. However, the PSD process has been slow because many obstacles still remain, especially the unfavourable government treatment of this sector.

Third, privatisation has been a common practice aimed at improving firms' efficiency and profitability. Governments around the world privatise SOEs because of their poor performance (or inefficiency) resulted from their pursuit of multiple conflicting objectives and soft budget constraints. On theoretical grounds, one of the main benefits offered by privatisation is to achieve efficiency gains, but these gains can be achieved only under competitive environments. In effect, privatisation increases unemployment in the short run, but decreases it in the medium and long runs. In addition, privatisation contributes to an increase in GDP growth and wage rates, through productivity improvements. However, the empirical literature shows that privatisation produces mixed results due to differences in research methods (each has certain methodological limitations), study periods, sample sizes, and degrees and types of privatisation (for instance, partial and/or mass privatisations), and also due to data constraints and the potential selection bias, which partly explain why some results cannot be generalised for the economies under examination.

Fourth, the key objective of this thesis is to develop a computable general equilibrium (CGE) model of Vietnam (referred to as VNGEM) to assess the likely effects of SOE reforms and the PSD policy on Vietnam's national economic outcomes and industries. VNGEM is a comparative-static model, largely based on ORANI-G and ORANI. In essence, VNGEM represents the Vietnamese economy with twenty four industries producing twenty four commodities, which can be produced domestically or imported from abroad. There are four margin commodities, six labour groups by educational qualifications and one representative household. The choice of VNGEM in this thesis is aimed at closing several literature gaps as follows: (i) this thesis contributes to the literature of privatisation in a context of a transition economy like Vietnam, which has not been investigated at the macro level in any great detail; (ii) this thesis extends the current literature by investigating the impacts of Vietnam's reform programs not only on GDP growth and employment, but also on many other macroeconomic variables in a general equilibrium context, such as the trade balance, exports and imports, investment and consumption; (iii) while previous studies investigate whether or not privatisation, as part of the reform

packages, generates positive, negative, or neutral effects on productivity, this thesis deliberately assumes the positive impacts of Vietnam's reform programs not only on firms' efficiency, but also on industries' efficiency. It then investigates the likely impacts of such efficiency gains on industries, and on the macro-economy of Vietnam; (iv) although there are many CGE models applied to Vietnam (see Annex 10), research into SOE reforms, particularly focused on the equitisation program and the PSD policy in Vietnam at the macro level remains under researched. This thesis extends the work of Chisari et al. (1999) by using more generalised CES (constant elasticity of substitution) functional forms in replacement of the Cobb-Douglas ones. It also extends the work of Pham and Mohnen (2012) by adopting a more realistic assumption of a small open economy of Vietnam; and (v) the use of VNGEM could simulate both short-run and long-run effects of SOE reforms on the Vietnamese economy. In addition, VNGEM identifies winners and losers from such reforms, and quantifies the general welfare effects on the overall Vietnamese economy. The decomposition technique in VNGEM provides detailed expositions of the sources of output growth such as an output expansion through the export channel, or the local market and domestic share channels.

Finally, the simulation results show that efficiency gains resulted in relatively lower domestic price levels, thereby improving the competitiveness of the domestic producers in the export markets. Therefore, Vietnam's ongoing reform programs are simulated to be pro-growth as output increases through three major channels including: (i) export expansion; (ii) increased domestic usage of goods and services; and (iii) substitution between imported and domestic sources in response to relative price changes. In the short run, based on the modelling assumptions, economic expansion results in increases in the aggregate employment, while export expansion results in a short-run trade surplus in Vietnam. Nevertheless, these positive effects on exports and aggregate employment will fade out in the long run, as modelled, when the economy presumably achieves its full employment level and a trade balance. Under the full employment assumption, the real wage will increase in the long run, leading to increases in labour incomes and household consumption representative of welfare gains.[50]

[50] It is quite likely that the actual outcomes from the proposed microeconomic reform will lie somewhere in between the short-run and long-run as modelled.

Regarding industry employment, the demand for low-skilled workers grows at a faster rate than that for high-skilled workers in the short run. These short-run changes are quite consistent with the current labour market conditions in Vietnam, in which the former account for 70 per cent of total wage bill while the latter account for 30 per cent. By contrast, the demand for medium- and high-skilled workers will increase strongly in the long run, relative to that for low-skilled workers, because the fast-growing, capital-intensive industries will expand their long-run investment activities in accumulating more capital, machinery and equipment. To work with these newly-installed facilities, the economy needs to acquire more medium- and high-skilled workers in the long run. Further, VNGEM's results indicate that the most favourably affected industries in the short run include Steel, Electrical and TCF, while the least favourably affected ones include Construct and PubAdmin. Likewise, the most favourably affected industries in the long run include Electrical, Steel and OtherManuf, while the least favourably affected ones include RicePad and OGP. Overall, VNGEM's results are sufficiently robust to withstand changes in a number of key behavioural parameters in the model, as well as changes in the simulated value of the primary factor productivity. Besides, the results are consistent with some empirical studies in the literature, but contrast to or cannot be comparable directly with some other studies, largely because of differences in research methodologies and scope of analysis.

7.3 Policy Implications

7.3.1 Implications for Macroeconomic Policies (based on the review)

Reducing Population and Regional Imbalances

First, Vietnam's large population size indicates that the country continues to have a young and dynamic labour force to accommodate its economic growth and development process. However, high population growth will also cause pressures on the labour market and increase the need for housing, health care and education. These potential problems need to be carefully considered in Vietnam's future development plans.

Second, Vietnam's industrialisation and modernisation has created a number of negative side effects, especially regional imbalances (including income gaps) between rich and poor regions, and between rural and urban areas. To reduce these

imbalances, the government should adjust its national investment policy to encourage both foreign and domestic investors to allocate their investment portfolios in productive areas with attractive rates of return rather than investing in less productive areas with high walls of government protection. Likewise, to reduce income gaps, the government needs to pay more attention to regional development and improve its taxation and social security systems, in order to redistribute incomes more effectively.

Improving the SBV's Autonomy and Its Forecasting Ability

The SBV should be given more freedom in designing and implementing its monetary policy. It also needs to improve its forecasting ability available when formulating and implementing its monetary policy. To combat inflation more effectively, the current money-supply (M2) targeting regime should be shifted towards another regime such as the interest targeting regime, which is commonly adopted in many advanced economies such as the U.S. and Australia.

Reducing Dependence on External Finance

In recent years, Vietnam becomes more dependent on external finance. Hence, there is a high probability that the country will be vulnerable to any external shocks, causing massive withdrawals of financial resources, especially FDI, to their home countries as in the cases of the 1997 Asian financial crisis, the 2001 American terrorist attack and the recent 2008 global financial crisis.[51] To overcome this, Vietnam needs to strengthen its BOPs, especially its trade balance. This in turn requires the country to make long-term investments (particularly relied on internal rather than external financial resources) in upgrading skills and technologies, in order to gain greater competitive advantage in the export and import markets.

Elaborating on the Industrial and Trade Strategies

As mentioned previously, trade deficits in Vietnam have continued to rise, even though the country has successfully shifted to developing light industry since 1986. Instead of having a broad aim of developing all industries, Vietnam should have a specific aim of promoting industries that are capable of improving the trade

[51] As discussed in sub-section 2.2.7 of Chapter 2, the average debt burden (measured by external debt plus implemented FDI divided by nominal GDP) was extremely high during 1990-94 and 1995-99 (233.7 and 103.2 per cent of nominal GDP, respectively), which was reduced substantially to 40.4 per cent during 2005-09 and 43.4 per cent during 2010-11.

balance significantly. That is, Vietnam needs to have clear and comprehensive objectives instead of pursuing multiple but conflicting objectives.

In addition, the government needs to minimise its interventions in the market and remove favourable treatment of SOEs across all industries. Most noticeably, when practicing the picking-winners game, the government should pick the right winners since picking the wrong ones would be costly to the economy. So far, the results in this study suggest that the TCF industry should be chosen as one of the right winners to be promoted. For other industries that have long been receiving government subsidies, the government needs to establish a strict time frame as to when it will cut all of the subsidies and let those industries be exposed to the competitive forces in the economy.

7.3.2 Implications for Microeconomic Reform Programs (based on CGE modelling)

Prospects for Job Creation

This thesis has shown that Vietnam's microeconomic reform on domestic enterprises is pro-growth, as reflected in the increasing rates of growth in aggregate output and employment. Therefore, promoting the private sector and, at the same time, reforming the SOE sector (more effectively) can solve Vietnam's employment problem, at least in the short run. According to the GSO (Various Issues), in 2009, the number of employed people was approximately 43.93 million. The projected short-run increase in aggregate employment is 2.97 per cent (see Table 6.1), indicating that those reform programs will create about 1.3 million more jobs in the short run (43.93 million x 0.0297 = 1.3 million). These new job opportunities are sufficiently high enough for satisfying the demand of 1 million new job seekers each year, according to Webster's (1999) estimates.

Nevertheless, there are doubts about Vietnam's statistical data. Although the unemployment rate was reported to be around 2.38 per cent in 2009, the number of people not actively seeking jobs was surprisingly high (17.78 per cent of the total working population) (GSO, Various Issues). It means, if the real unemployment figure is revealed or if the people outside the labour market start to search for jobs, the primary factor productivity needs to be increased by far more than 5 per cent assumed in the modelling in this thesis. Detailed suggestions of how to achieve this will be addressed in sub-section 7.3.3 of this chapter.

Creating Conducive Policy Environment for Better-Performing Industries

Vietnam's microeconomic reform of domestic enterprises will improve the competitiveness of domestic producers through price reductions. Hence, they will perform well in the export markets and that export expansion will contribute greatly to Vietnam's economic growth. Intuitively, the government should create conducive policy environment for the domestic export-oriented and export-related industries (such as the TCF industry). If the government is concerned about job creation, it should stop picking specific industries and letting some labour-intensive activities in agriculture and light industries (such as RicePad, Agriculture, Chemicals, Machinery and Electrical) to expand.

Short- and Long-run Labour Training Schemes

The simulation results in this study have shown that the demand for low- and medium-skilled workers will increase. Hence, the government should create opportunities for vocational training for workers. The demand for high-skilled workers will increase over time. The government should have a long-term plan to develop domestic human capital through education and R&D, in order to acquire a sufficient number of high-skilled personnel to work with new technologies, machinery and equipment into the future. To do this, the government should reallocate its spending budget towards these activities, which can be financed from two sources: (i) government savings from waste: in the short term, the government can cut wasteful subsidies on inefficient SOEs and reduce waste from idle capital stock within the state sector; and (ii) revenue from a broader tax base: in the long term, the government will have a broader tax base, and hence increased tax revenues, due to expanding economic activities in the private sector.

7.3.3 Towards a More Effective Policy Environment

Full Coverage of SOE Reforms

As mentioned in sub-section 3.2.3 of Chapter 3, SOE reforms have been applied only to small and unprofitable SOEs across many non-strategic industries, according to the 'keeping the big and releasing the small' principle. This has been one of the main causes of a slow and incomplete reform process. Such a reform principle is not appropriate any longer. To achieve greater reform outcomes, a full coverage of SOE reforms is required, which means SOE reforms should be extended

to include medium to large SOEs across all industries. In so doing, the total effect of productivity improvement will become significantly larger, contributing more to increases in real GDP and aggregate employment, as shown in sub-section 6.4 of Chapter 6.

Promoting the Private Sector

Unarguably, the private sector has become more dynamic and more efficient in contributing to aggregate output, employment and government tax revenues. Therefore, the government needs to realise and promote its increasingly important role in the economy. Some useful proposals for PSD have already been discussed in sub-section 3.3.4 of Chapter 3. Essentially, the government's PSD policy needs to be effective enough to generate some quality effect for NSEs to expand to their full potential. As a pre-condition, this requires a complete removal of the government's preferential treatment of the SOE sector. It means a level playing field needs to be established such that all economic agents will be given a fair chance to do businesses and compete equally with each other.

In addition, the government needs to establish some business forums and business organisations as essential venues for NSEs to obtain useful information and seek opportunities to collaborate with other enterprises. Besides, the government needs to provide some training centres for upgrading skills and knowledge. Equally important, private enterprises should be given more chances to gain access to land and credit, similar to SOEs, because they also need those scarce resources for expansion.

Speeding Up SOE Reforms

To speed up the SOE reform process, Vietnam can learn from China's experience, especially with respect to the equitisation of SOEs (Garnaut et al., 2005). First, the reform in China started in 1992 at the local level, which means local government was given a greater role in participating in the equitisation process. In the initial stage, China also equitised SOEs based on the 'keeping the big and releasing the small' principle. To accelerate the equitisation process, an increasing number of better performing SOEs and those with greater net assets were more likely to be equitised first because they would be more able to compensate workers and settle their debt liabilities. It means that for Vietnam, encouraging the participation of

local government might make the equitisation process more flexible, while equitising large SOEs first might reduce significantly the costs of equitisation.

Second, to compensate SOE employees who lost their jobs due to equitisation, the Chinese government established a number of supporting funds including: (i) state asset exit funds; (ii) SOE bankruptcy provisional funds; and (iii) funds to assist retailers to prepare for enterprise reform. Further, China at a time introduced a new social security system covering the urban labour force only, but abandoned it after a few years. Key components of this system included: (i) a pension system providing pension funds and saving schemes; (ii) a medical insurance system; (iii) an unemployment insurance system; and (iv) a social relief system providing minimum living allowances to unemployed workers. In addition, the Chinese government established some re-employment centres to take the unemployed workers and provided them with minimum living expenses, training and job information. Besides, there were regulations outlining the benefits or compensation encouraging SOE employees to take early retirement, resign or take unpaid holidays. Likewise, tax holidays, deductions from taxable incomes, and some extra subsidies were also given to former SOE employees, who started their own businesses, or given to new enterprises employing a large number of former SOE workers. These newly-established firms were also assisted with business registration and access to bank loans.

These suggest that the Vietnamese government could also establish attractive compensation and incentive schemes, in order to convince SOE employees to not resist the equitisation process, but accept and support it. In fact, Vietnam has already established the equitisation funds (EFs) and the worker redundancy fund (WRF) in 1999 and 2002, respectively, for accommodating the equitisation process. Nevertheless, as discussed in Box 7.1, these funds have not been fully utilised in an efficient manner because: (i) idle funds remain significantly large; and (ii) these funds have not been adequately used and managed. Hence, it is suggested that the Ministry of Finance (MoF) needs to coordinate effectively with the state capital investment corporation (SCIC), in order to deliver better equitisation results. Further, instead of wastefully subsidising SOEs and equitised SOEs, these funds need to be redirected towards: (i) compensating the adversely-affected workers and other creditors; (ii) providing more effective training and re-training facilities; and (iii) promoting the role of outside investors in the equitisation process.

Third, the Chinese government promoted the private sector and encouraged its participation in the equitisation process as a means to absorb the burden of SOE reforms. Evidence suggested that outside investors were more likely to care about efficiency, lay off workers and strengthen the firm's internal management. As a result, equitisation involving outside investors was generally more productive than other forms of equitisation because outside investors injected new capital and dynamism to the firm, and also because they could redeploy employees more efficiently and effectively. Therefore, Vietnam should continue to promote the private sector by creating a policy environment that will improve the quality, rather than quantity, of PSD.

Fourth, similar to China, Vietnam should improve the fairness and transparency of the equitisation process by imposing regulations on: (i) the disclosure of information; (ii) the establishment of an orderly process of ownership transformation; and (iii) the expansion of the role of outside investors. Further, the process of transferring property rights must be made public and competitive through auctioning, public bidding and agreed transfer. With respect to asset valuation, Vietnam should establish a number of asset management companies (AMCs) acting as independent valuation professionals. To encourage more buyers of the state assets, the Vietnamese government should give them discounts for assuming more social obligations such as paying workers' compensation and other related payments, or to redeploy employees in ways that minimise the number of layoffs.

Fifth, in Vietnam inside buyers of state assets are authorised to participate in the equitisation process, especially management buyouts (MBOs), similar to China. It may happen that some managers of equitised SOEs deliberately run the firms down before equitisation, in order to lower the equitisation prices. To prevent this moral hazard, poor-performing managers must be prohibited from buying state assets and, at the same time, outside buyers should be encouraged to compete in purchasing these equitised SOEs. In other instances, some SOEs subject to reform may use bankruptcy to evade paying back debt. Therefore, the Vietnamese government must not process bankruptcy cases if the main intention is to escape debt. Further, there must be some regulations aimed at strengthening the firms' management of their debt liabilities and preventing them from avoiding paying debt. Generally, any equitisation plan needs mutual agreement among workers and creditors before it can

be implemented to ensure that workers will be fairly compensated and creditors will be guaranteed receipt of their debt repayments.

Sixth, following China's experience, Vietnam needs a new structure of corporate governance to provide checks and balances in an enterprise. This new model should consist of three main components: (i) a shareholder conference to make decisions on investment and profit distribution; (ii) a board of directors to undertake audit functions; and (iii) a board of supervisors to investigate the firm's financial health. Such a model may create a power sharing between the shareholders, the board of directors and management. The model also suggests firms appoint some legal representatives to handle complicated legal issues and ensure that all business activities are legitimate. In addition, the chief executive officer and the chairman must be two separate people to prevent any conflict of interests and moral hazards. Ideally, firms need to establish a reward system or incentive policies to reward managers and employees who deliver outstanding performance. The reward can be in the form of shares and bonuses determined by the board of directors instead of management.

Finally, there remains an unresolved problem with respect to the managerial appointment practice in Vietnam. It commonly happens that SOE mangers can be transferred suddenly to other SOEs based on political criteria without taking into account the interests of the company and its shareholders. In fact, SOEs and equitised SOEs can run very well if they are willing to hire professional managers from the private sector. Therefore, there is no need for the Vietnamese government to interfere in the firms' decisions, especially on managerial appointment, employment and wage rates. Instead, there should be appropriate institution and regulatory framework to deal with the employment and wage-related issues. In other words, the Vietnamese government needs to reduce its political interference and let the new corporate governance in equitised SOEs function independently. Ideally, the government should withdraw its direct involvement in economic activities and focus on macroeconomic stability and providing public goods.

Box 7.1- Vietnam's equitisation funds and worker redundancy fund

In 1999, Vietnam established the equitisation funds (EFs) for supporting SOE re-arrangement and equitisation. The EFs' aims were: (i) to provide training and re-training for redundant workers and help them find new employment opportunities; (ii) to provide subsidies for employees who voluntarily terminate their labour contracts or lose their jobs from the equitisation process; (iii) to help equitised SOEs' employees buy shares at preferential prices; and (iv) to provide additional capital to SOEs or equitised SOEs as directed by the state-approved plans.

By October 2001, the EFs' total budget amounted to $US62.28 million while total expenditures amounted to $US26.32 million, indicating a surplus of $US35.97 million. A large proportion of the funds was spent on equitisation costs, followed by financial subsidies for SOEs and investment subsidies for equitised SOEs ($US11.62 million, $US9.94 million and $US2.91 million, respectively). Clearly, the government paid less attention to the provision of training and re-training, subsidies for redundant workers and other related worker compensation schemes, which altogether accounted for only $US1.84 million. This explains why the fund was in a big surplus of $US35.97 million (Annex 14).

In 2002 Vietnam established the worker redundancy fund (WRF) for subsidising redundant workers due to SOE re-arrangement and equitisation. (The structure of revenues and expenditures of this fund is not discussed here since it is somewhat similar to that of the EFs). By December 2005, it was estimated that each redundant worker received an average subsidy of $VN30-40 million. In effect, the EFs and WRF were said to play a significant role in accelerating the equitisation process in the period 1999-2006.

Recently, two major changes were made by the government regarding the use and management of these funds. First, Decree 110 in 2007 terminated the operation of the WRF. Second, due to serious misuse of funds at the local level, Decree 187 in 2004 abolished the local EFs, but the central EFs still remained operative. In 2007, Decree 109 was issued to replace Decree 187, putting the central EFs under the SCIC's management. In 2008, Decision 113 was issued to authorise the MoF to supervise the management and usage of the EFs while, at the same time, the SCIC managed and used the central EFs under the MoF's guidance and supervision.

Source: Nguyen (2010).

7.4 Limitations and Focuses for Future Research

Inevitably, there are several methodological limitations in this thesis. First, VNGEM does not disaggregate the industries to consist of the SOE sector and the private sector, in order to distinguish each sector's contribution to the economy. It is obvious that SOEs and NSEs are coexistent in most industries in Vietnam. The SOE sector is believed to capture smaller output, employment and investment shares in non-strategic industries (such as agriculture and manufacturing), but larger shares in strategic industries (such as OGP, telecommunication and public utilities). To

advance the analysis, it is necessary to calculate each sector's shares in the economy, but this is not an easy task since firm-specific and industry-specific data for Vietnam is not always available.

Second, although one of the sensitivity tests shows that VNGEM's results are sufficiently robust to withstand changes in several behavioural parameters, it is necessary to update such parameters to provide more accurate results. This requires substantial econometric works, which are far beyond the scope of this thesis. Likewise, it is also necessary to update the I-O database. The latest I-O database (namely, the 2010 version) is available by the time this thesis progresses to the final stage. Hence, it is too late to use this latest version since processing the raw I-O table is very time consuming. Anyway, VNGEM's results are still valid, provided that there are not many significant structural changes in the Vietnamese economy from 2005 to 2010. This condition may hold, given the fact that structural changes in Vietnam happen very slowly through time.

Third, VNGEM is limited by its statics nature. Future works may employ a dynamic model, which has more powerful analytical ability. For instance, such model can show the dynamic adjustments of the capital stock and the employment level. In addition, VNGEM simulates the results by arbitrarily increasing the primary factor productivity by 5 per cent. To provide a better analysis, a dynamic model can distribute the rate of change in productivity (for instance, from 2005 to 2010) more flexibly, which in turn can be used to simulate and produce more useful projections.

Fourth, VNGEM cannot effectively isolate the impacts of SOE reforms and the PSD policy. Future works can redress this limitation by modelling changes in the government budget and the dynamic adjustment in output, employment and investment from the SOE sector toward the NSE sector, in order to reflect the reduced role of the former and the increasing role of the latter.

Fifth, VNGEM does not address the non-profit-maximising behaviour and the monopoly power of most SOEs. To improve the model, future works need to address one or all of these issues, taking into account the wage and price differentials between the SOE sector and NSE sector across all industries.

Finally, VNGEM does not incorporate the impact of the Vietnamese stock market on privatisation and on the whole economy. Future works may address this issue to provide a better analysis. One of the problems facing research scholars is that, the Vietnamese stock market has been actually developed for a decade or so,

and is still in its infancy stage. Hence, it may be difficult to gain access to complete, accurate data and other related information for use in the model. In addition, there is relatively poor theoretical and empirical literature on the Vietnamese stock market and its impacts on privatisation and on the whole economy, making it difficult to communicate the potential findings with other related studies.

Annexes

Annex 1- World's 20 Most Populous Countries as of 2011

Rank	Country	Population
1	China	1,336,718,015
2	India	1,189,172,906
3	United States	311,705,000
4	Indonesia	245,613,043
5	Brazil	203,429,773
6	Pakistan	176,554,000
7	Nigeria	155,215,573
8	Bangladesh	150,863,000
9	Russia	138,739,892
10	Japan	126,475,664
11	Mexico	112,336,538
12	Philippines	101,833,938
13	Ethiopia	90,873,739
14	Vietnam	87,375,000
15	Germany	81,471,834
16	Egypt	80,492,000
17	Turkey	78,785,548
18	Iran	75,448,000
19	Congo	71,712,867
20	Thailand	66,720,153

Source: NationMaster (Various Issues).

Annex 2- Vietnam's Poor Industry Performance (1960-1985)

During the period 1960-85 the government failed to provide the necessary infrastructure and skilled workers to support heavy industry (Vo, 1990). Hence, heavy industry could not deliver the expected performance. Worse still, the over-emphasis on industry, especially heavy industry, led to unbalanced growth between industry and agriculture, and between heavy and light industries. In other words, agriculture and light industry suffered seriously from this over-emphasis on heavy industry, leading to unbalanced economic structure and wasteful and inefficient investments. Consequently, heavy industry grew at the expense of the agriculture and light industry.

Table A1 illustrates the poor performance of the industry sector (including light and heavy industry) in the period 1976-85 as a result of the unsuccessful HIP strategy. First, industrial production in 1980 was lower than that in 1976, with considerable declines in almost all industrial products. Coal production declined from 5.7 million tons in 1976 to 5.2 million tons in 1980. Other industrial products exhibited the same pattern as coal, except for electricity where output increased from 3.1 billion kWh in 1976 to 3.7 billion kWh in 1980. For all products, the government failed to achieve all of its planned targets in 1980 as determined in the second FYP. Further, Vietnam faced severe economic hardship in the period 1979-80 because of engagement in two destructive wars against the Khmer Rouge in 1978 and China in February, 1979.

Second, the industry's performance in the period 1981-85 was better than in the previous period. Cement production grew strongly from 0.6 million tons in 1981 to 1.5 million tons in 1985. Likewise, rolled steel production increased sharply from 36.1 thousand tons in 1981 to 61.6 thousand tons in 1985. Other industrial products exhibited the same pattern, except for coal where output declined slightly from 6 million tons in 1981 to 5.7 million tons in 1985. Nevertheless, none of the output targets were met in 1985, except for cigarettes and sugar and molasses where outputs were slightly above the targets (1050.6 million packages and 401.7 thousand tons, respectively).

Table A1- Output of Some Industrial Products, 1976- 1985

	1976	1980		1981	1985	
		Target	Actual		Target	Actual
Heavy industry						
Coal (million tons)	5.7	10.0	5.2	6.0	8- 9	5.7
Electricity (billion kWh)	3.1	5.0	3.7	3.8	5.5- 6	5.2
Rolled steel (thousand tons)	63.8	N/A	N/A	36.1	72.2	61.6
Steel (million metres)	63.8	300.0	63.5	N/A	N/A	N/A
Phosphate fertilisers (million tons)	0.28	N/A	N/A	0.17	0.35-0.4	0.32
Chemical fertilisers (million tons)	0.43	1.3	0.36	N/A	N/A	N/A
Cement (million tons)	0.74	2.00	0.64	0.60	2.00	1.50
Light Industry						
Cloth & silk (million metres)	218.0	450.0	174.4	167.0	380-400	374.3
Sugar & molasses (thousand tons)	72.8	N/A	N/A	201.7	350-400	401.7
Cigarettes (million packages)	404.2	N/A	N/A	545.3	1,000.0	1,050.6
Paper & cardboard (thousand tons)	75.0	130.0	48.3	45.2	90-100	78.5

Note: Data was compiled and re-edited to align with the discussion. N/A = Not Available.
Source: Vo (1990).

Finally, the implementation of the HIP strategy involved substantial amounts of imported inputs, such as raw materials and equipment, most of which could not be produced domestically. This led to persistent trade deficits in the period 1976-87 because Vietnam's imports of material inputs always exceeded exports due to the increasing demand for capital accumulation. Trade deficits increased remarkably from $US659.6 million during 1976-80 to $US1.34 billion during 1985-87 (Table A2).

Table A2- Vietnam's Trade Balance ($US million, Period Average), 1976-1987

	1976-80	1981-85	1986-87
Trade Balance	-659.6	-778.4	-1,340.5
Exports	412.4	574.6	832.5
Imports	-1,072.0	-1,353.0	-2,173.0

Note: Data was compiled and re-edited to align with the discussion.
Source: Vo (1990).

Annex 3- Vietnam's Improvement in Industry Performance (1986-88)

As shown in Table A3, Vietnam's gross industrial production increased steadily from $VN112.5 billion in 1986 to $VN132.3 billion in 1988. In this period, light industry began to play a leading role in the economy. Its output increased from $VN76.6 billion in 1986 to $VN93 billion in 1988, while heavy industry's output increased from $VN35.8 billion to $VN39.3 billion in the same period. The four largest industries in this period were food and foodstuffs; construction; weaving, leather and dyeing; and machinery.

Table A3- Industrial Production ($VN million at 1982 prices), 1986-88

	1986	1987	1988
Gross industrial production	112,451	121,410	132,336
By sector			
Heavy industry	35,862	37,625	39,335
Light industry	76,589	83,785	93,001
By industrial branches			
Energy, combustibles	7,059	7,714	N/A
Metallurgy	1,594	1,567	N/A
Machinery	16,178	18,221	N/A
Chemicals	10,815	11,736	N/A
Construction	22,962	23,670	N/A
Food & foodstuffs	30,495	32,732	N/A
Weaving, leather & dyeing	18,835	20,116	N/A
Other industries	4,058	5,169	N/A

Note: Data was compiled and re-edited to align with the discussion. N/A = Not Available.
Source: Vo (1990).

Annex 4- Vietnam's Trade Reform in the Period 1987-98

Year	Changes in Trade and Exchange System
1987	* Law on Foreign Investment — introduction of open-door policy
1988	* Foreign exchange control decree liberalises retention of foreign exchange, opening of foreign currency accounts, use of transfers to pay for imports and repay foreign loans * Devaluation of trade and invisible payments exchange rates * Restrictions on establishment of foreign trading organisations relaxed and central government monopoly of foreign trade terminated * Law on Import and Export Duties introduces the customs tariffs
1989	* Quotas removed on all but ten export and 14 import commodities (subsequently reduced to seven export and 12 import commodities * Requirement that SOEs fulfil CMEA export targets before exporting to convertible currency area removed * Number of export commodities subject to export duties reduced from 30 to 12 and most rates reduced * Producers of exportables allowed to sell to any appropriately licensed foreign trade company * Number of import commodities subject to duties reduced from 124 to 80, range of rates expanded from 5–50 per cent to 5–120 per cent * Foreign exchange rate system unified * All budgetary export subsidies removed
1990	* Special sales tax introduced * Turnover tax and profit tax introduced * Law on Foreign Investment revised * Special import duties imposed on selected goods such as mopeds and tourist vehicles * General export–import companies required to register with regulatory organisation for individual commodities * Exports of certain commodities limited to members of relevant exporters associations
1991	* Foreign exchange trading floors opened at SBV * Regulation on setting up export processing zones (EPZs) promulgated * Export duty on rice reduced from 10 per cent to 1 per cent * Imported inputs used to produce exports exempted from duty * Private companies allowed to directly engage in international trade
1992	* Harmonised system of tariff nomenclature introduction * Foreign investment law amended to reduce discrimination in favour of joint ventures

* 100 per cent foreign owned enterprises permitted, and the introduction of build-operate-transfer (BOT) concept for infrastructure projects
* Trade agreement signed with European Union (EU) establishes quota on exports of textiles and clothing to EU and grants tariff preference on selected imports from EU

1993 * Export shipment licensing relaxed− six monthly licenses issued for 22 export commodities
* 90-day duty suspension system for inputs into export production introduced
* Tariff and revenue laws amended to add provisions for other than normal importation (such as, goods in transit)
* Vietnam joins Customs Cooperation Council
* United Nations (UN) layout key for customs declaration adopted

1994 * Elimination of import permits for all but 15 products
* Responsibility to initiate change in tariff passes from MoF to MoT
* Vietnam gains GATT observer status
* Introduction of interbank foreign exchange market
* Steps in process of licensing to engage in international trade reduced from three to two
* Duty exemption system for exports extended to suspend duty payments for 90 days
* Export shipment licensing further relaxed− completely lifted for all commodities except rice, timber and petroleum

1995 * Coverage of export quotas reduced to one commodity− rice
* Export tax rates raised on 11 products
* Vietnam joins ASEAN and accedes to protocols of membership of AFTA
* Reduction in number of turnover tax rates from 18 to 11
* Requirement for importers to get import permits on a by-shipment basis eliminated for a wide range of consumer and producer goods
* Range of goods subject to management by import quota reduced to seven
* 1996 List of goods under the common effective preferential tariff (CEPT) for AFTA promulgated (involves no change in duties)
* Major reorganisation of ministries establishes leading role for the Ministry of Planning and Investment in approval and regulation of foreign investment

1996 * Maximum tariff rate reduced to 80 per cent special sales tax imposed at rates up to 100 per cent on imported (but not locally produced) passenger cars following reduction in tariff rate
* List of commodities under CEPT of AFTA for 1997 promulgated
* New Law on Foreign Investment reduces scope of import duty exemptions for foreign investment projects
* Inward foreign exchange remittance tax lifted
* Import–export policy decision for 1996 reduces number of goods managed by import quotas to six

1997 * Decree allocates rice export quotas to Provincial People's Committees as well as agencies under central management thus opening the way for direct export by the private sector. All restrictions on domestic trade in rice abolished

* Imports of sugar prohibited. Number of goods subject to import quotas to achieve natural balances increases

* Temporary prohibitions imposed on imports of wide range of consumer goods then lifted

* Approval of certain foreign investment projects decentralised to selected peoples' committees and industrial zones

* Import stamp system introduced as anti-smuggling measure

1998 * Forward and swap foreign exchange transactions authorised

* Foreign invested enterprises allowed to export goods not specified in investment license

* Highest tariff rate reduced to 60 per cent

* Informal road map of CEPT tariff reductions to 2006 issued

* List of commodities under CEPT for 1998 promulgated, completing coverage of inclusion list

* Management of imports of most consumer goods shifted to tariffs rather than quotas or licensing

* Decision to allocate rice export and fertiliser import quotas to private sector enterprises announced

* Domestic enterprises authorised to directly export production without an export/import license

* Partial surrender requirements imposed on enterprises holding foreign exchange accounts

* Restrictions imposed on imports of alcohol

* Use of minimum price list for valuation of imports by foreign invested enterprises terminated

* Amendment to import/export tax law introduces 3- schedule tariff, and provision for antidumping and countervailing duty

* Special sales tax amended, partially extending tax to local motor vehicles, increasing rates on luxuries

* General conditions and procedures for Vietnamese enterprises to undertake international trading activities simplified with elimination of requirement for licensing by Ministry of Trade

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Source: CIE (1998, p. 5).

Annex 5- Summary of Tariff-related Regulations and Decrees

Regulation	Date	Content
Decree 33/CP	19/ 04/ 94	State management of import and export operations. Provides general provisions for import and export
20 TC/TCT	16/ 03/ 95	Import and/or export tax exemptions for foreign investors
640 TCHQ/KTTT	03/ 04/ 95	Guidance of import and/or export tax exemption or reduction for foreign capitalised enterprises
615 TC/TCT/QD	10/ 06/ 95	Amendments of names and tax rates of some commodity categories in the import and export tariff
615A TC/TCT/QD	10/ 07/ 95	List of tariff changes to go with 615 TC/TCT/QD
293-NQ/UBTVQH9	08/ 11/ 95	Amending import tax rates. Provides list of commodities having tariff rates reduced
1188 TC/QD/TCT	20/ 11/ 95	List of tariff changes
1220 TC/QD/TCT	28/ 11/ 95	Amendment to import tariff on cement
1233 TC/TCT/QD	09/ 12/ 95	Amendment of tax rates of some commodity groups in the import tariff. Provides list of rate changes
1234A TC/QD/TCT	09/ 12/ 95	Amendment to tariff rate for heading 240300 (tobacco)
1324 TC/QD/TCT	21/ 12/ 95	Amendment to tariff rate on fuels
146 TC/QD/TCT	01/ 03/ 96	Amendments to minimum price list
18/CP	04/ 04/ 96	Regarding import tariff reduction against EU
397 TC/QD/TCT	19/ 04/ 96	Amendments to tariff rates.
443 TC/QD/TCT	04/ 05/ 96	Amendments to tariff rates
542 TC/QD/TCT	12/ 06/ 96	Amendments to tariff rates
659A TC/QD/TCT	25/ 07/ 96	Amendments to tariff rates
856 TC/QD/TCT	11/ 09/ 96	Amendments to tariff rates
861A TC/QD/TCT	15/ 09/ 96	Amendments to tariff rates
02 TC/QD/TCT	02/ 01/ 97	Amendments to tariff rates
242 TC/QD TCT	26/ 03/ 97	Amendments to tariff rates
257 TC/QD/TCT	31/ 03/ 97	Amendments to tariff rates
320 TC/QD/TCT	07/ 05/ 97	Amendments to tariff rates
496A TC/QD/TCT	15/ 07/ 97	Amendments to tariff rates
516 TC/QD/TC	21/ 07/ 97	Amendments to tariff rates
590 TC/QD/TCT	15/ 08/ 97	Amendments to tariff rates
848 TC/QD/TCT	01/ 11/ 97	Amendments to tariff rates
103/1998/QD/BTC	01/ 02/ 98	Amendments to tariff rates

Source: CIE (1998, p. 38).

Annex 6- Tariff Rates (%) on Consumer and Other Goods by Industry

ISIC Industry	Average Tariffs		Variation in Tariffs	
	Consumer Goods	Other Goods	Consumer Goods	Other Goods
Mining	0.0	2.4	0.0	108.9
Tobacco	50.0	0.0	0.0	0.0
Petroleum refineries	0.0	27.8	0.0	82.2
Petroleum & coal products	5.0	10.6	0.0	93.3
Glass & glass products	1.0	22.8	0.0	67.0
Other non-metallic mineral products	30.0	14.3	0.0	79.2
Iron & steel basic metal industries	0.0	7.2	0.0	191.1
Non ferrous basic metal industries	40.0	1.6	0.0	304.0
Wood, cork & products	42.2	11.0	9.8	122.8
Paper & paper products	36.2	14.9	17.3	79.2
Beverages	48.9	38.8	19.8	50.3
Textiles	38.6	13.0	26.7	87.2
Footwear	44.0	0.0	27.3	0.0
Wearing apparel	43.6	0.0	29.4	0.0
Metal products nec	25.5	11.8	43.4	91.5
Ceramic products	35.1	1.0	46.6	0.0
Motorcycles	43.0	30.0	47.4	52.7
Non electrical machinery	27.2	5.6	54.3	189.7
Wooden furniture & fixtures	25.0	10.0	60.0	0.0
Electrical machinery	26.5	10.3	61.8	113.1
Food manufacturing	24.3	11.5	62.9	89.0
Plastic products nec	26.2	15.7	65.2	72.0
Other manufacturing	19.8	2.0	78.7	92.9
Rubber products	15.5	20.5	82.1	84.6
Motor vehicles	78.6	22.6	84.1	123.0
Agriculture, forestry & fishing	10.5	9.7	90.5	102.0
Scientific equipment	16.4	5.7	93.5	180.3
Leather products	18.2	5.9	93.6	30.7
Printing and publishing	16.3	10.0	106.6	141.4
Other transport equipment	22.5	0.0	110.6	0.0
Industrial chemicals	0.3	1.9	152.8	185.8
Other chemical products	10.7	8.3	159.1	118.7
All items	24.2	13.8	82.5	123.2

Source: CIE (1998, p. 43).

Annex 7- Import-Substituting Activities Allowed to Purchase Foreign Exchange

	Import-Substituting Activities
1	Milk and diary products
2	Laminated steel
3	Wheat flour
4	Coated steel
5	Vegetable oil
6	Steel pipes
7	Sugar
8	Steel housing frames
9	Animal feed
10	Metal roofing
11	Cement
12	Aluminium structures for construction
13	Lubricant oil
14	Metal and plastic boxes
15	Bitumen
16	Electrical transformers
17	Phosphoric acid, hydrochloric acid, glutamine acid
18	Electrical equipment
19	Sodium hydroxide
20	Electricity control panels
21	Sodium carbonate
22	Electric lamps
23	Chemicals for the production of soap and detergent
24	Starters for fluorescent bulbs
25	Chemicals used in construction
26	Electricity cables
27	Vaccines
28	TVs
29	Fertilisers
30	Radios, cassette players
31	Pesticides
32	Bulbs and components
33	Paints and raw material for the production of paint
34	Electronic components
35	PVC for the production of plastic articles

36	Gasoline or diesel engines
37	Tyres and tubes for cars, tractors and motorcycles
38	Electricity and water meters
39	Natural fibres
40	Disposable plastic syringes
41	All types of medical equipment
42	Mechanical equipment and industrial moulds
43	Kraft packaging paper
44	Handling machines (including lifts and escalators)
45	Fabrics, including fabrics used in the production of tyres
46	Agricultural machinery
47	Garment materials
48	Cars
49	Construction glass and industrial glass
50	Motorcycles
51	Neutral bottles made of glass and PET bottles

Source: CIE (1998, p. 32).

Annex 8- Vietnam's Trade Reform in the Period 1999-2009

Year	Trade Policy Changes
1999	* A value added tax (VAT) introduced in January 1999 (in place of the cascading turnover tax), along with a special sales tax (levied on cars, gasoline, cigarettes, beer and other alcoholic beverages, and a few other items) * The number of commodities under quantitative restrictions increased (from nine to 17) as a temporary measure to avert balance of payments pressure in the wake of the East Asian crisis * The suspension periods for duty payments on imported inputs under the duty rebate scheme extended to 275 days * Foreign exchange surrender requirement reduced from 80 per cent to 50 per cent
2000	* The bilateral trade agreement with the US signed in July, paving the way for MFN accession of Vietnamese exports to the US market and gradual opening up of the Vietnamese economy trade in goods and services, and investment from the US
2001	* The USBTA comes into effect on 10 December, granting Vietnam MFN status in the US market, resulting in an immediate reduction in US tariff on imports from Vietnam from around 40 per cent to 4 per cent * A Five Year Import-Export Regime that significantly advances the removal of quantitative restrictions (QR) announced (April) with a view to providing a more stable export–import regime and provide a road map for elimination of QRs and other trade measures * All legal entities (companies and individuals) permitted to export most goods without having to acquire special licenses * QRs on liquor, clinker, paper, floor tiles, construction glass, some types of steel and vegetable oils removed * Some tariff commitments under AFTA implemented in January: 713 items transferred from the Temporary Exclusion List (TEL) to the Inclusion List (IL), leaving 1200 items still in the TEL (these are expected to be moved to IL by 2003) * The foreign exchange surrender requirement for exporters reduced from 50 per cent to 40 per cent of realised export proceeds effective May 2001 * On 3 October 2001 the US Senate passes legislation implementing the landmark bilateral trade agreement between the US and Vietnam (the Agreement signed on 13 July 2000). The National Assembly ratifies the agreement in November * A resolution adopted by the Central Committee of the Party in August 2001, calls

for an accelerated phasing out of the dual pricing system (much of which originally authorised to take place in 1999) as well as further streamlining of licensing and administrative procedures for FIEs. The dual pricing system for foreign investors to be phased out by 2003 for almost all charges and fees, except those for power, which are to be removed by 2004

* A new Customs Law announced in October with the aim of improving customs operation and customs clearance

* QRs on construction glass, remaining steel products and vegetable oil replaced by tariffs in December (with effect from 1 January)

* A revised tariff schedule announced (in November) to reflect tariffs for goods on which QRs were removed

* All legal entities (individuals and companies) permitted to export most goods without a license (under the Decree 44/2001/ND-CP, August 2001)

2002 * FIEs granted the right to export commodities other than those they produce (January)

* Under the AFTA commitments, an additional 498 items transferred from the TEL to the Inclusion List, leaving 719 items still in the TEL. Of the 5568 items now in the IL, 65 per cent are subject to a tariff rate between 0 and 5 per cent and the remainder to an average tariff rate of 16.4 per cent (November)

* Quotas on motorcycles and certain parts thereof, and passenger vehicles with up to nine seats abolished (December)

2003 * The last tranche of tariff lines in the Temporary Exclusion List under CEPT transferred to the Inclusion List

* A list of seven agricultural commodities subject to tariff rate quotas (TRQs) announced on 9 August by Decision No. 91/2003/QD: raw milk (HS 0401), condensed milk (0402), poultry eggs (0407), maize (1005), raw tobacco (2401), salt (2501) and cotton (5201, 5202, 5203). The last three items to come under TRQs with effect from 1 July 2003 and the Ministry of Trade assigned the responsibility for introducing TRQs on the remaining four commodities depending on conditions of domestic production and foreign trade

* Within quota and beyond quota tariff for tobacco, salt and cotton imports announced on 7 August (Decision 126/2003/QD-TTg)

* Issued the tariff schedule under the ASEAN CEPT program for the period 2003 to 2006 (Ministry of Finance Decision No. 78/2003/ND-CP)

	* Issued the MFN tariff schedule based on 8-digit ASEAN Harmonised Tariff Nomenclature (AHTN) (Ministry of Finance Decision No. 110/2003/QD/BTC)
2004	* EU-Vietnam bilateral agreement on WTO accession * Almost all import quotas were eliminated, except raw tobacco, salt, cotton, condensed and non-condensed milk, maize, seed and chicken eggs
2005	* New/amended Law on Commerce and Trade * Aimed at creating a market economy, protecting free trade, ensuring legal transparency and harmonisation with international legal standards
2006	* Final bilateral agreements for WTO accession reached, CEPT/AFTA requirements should be fulfilled
2007	* WTO accession on January 11, 2007 * Improved trading relations with about 150 WTO members * The effective rate of protection decreased from 59.5 per cent in 1997 to 26.2 per cent in 2001 and further decreased to 20.43 per cent in 2006 and 16.93 per cent at the time of WTO accession
2008	* Signed a less expansive FTA with Japan, which committed to eliminate tariffs on 93 per cent of goods exported from ASEAN * Signed a preferential trading deal with Laos People's Democratic Republic focusing on import tariff reductions * Signed an Economic Partnership Agreement with Japan on trade, financial services, and migration
2009	* Signed a comprehensive free trade deal (implemented by the end of 2009) with Australia and New Zealand * Signed a FTA (implemented in January 1, 2010) with India

Source: Information for the period 1999-2003 sourced from APEC (2005, p. 18); information for the period 2004-07 sourced from Harris et al. (2007, p. 13), Pham (2011) and World Bank (2009).

Annex 9- Vietnam's Banking System

1 Characteristics of Vietnam's Banking System

1.1 The SOCBs-SOEs Nexus Weakened Vietnam's Banking System

Over time, Vietnam's banking system was uniquely characterised by a strong connection between banks, especially SOCBs, and SOEs. In reality, SOEs administratively dominated the real sector and represented the images of the state government while SOCBs dominated the banking sector. This abnormally close relationship existed because, under the current regulatory environment, one of the SBV's tasks was to facilitate SOEs' business operations by providing them necessary financial resources. Accordingly, other commercial banks including SOCBs were also forced to supply cheap credit to SOEs, either implicitly or explicitly.[52] In most bankers' view, lending to SOEs was perceived to be safer because they were more likely to be bailed out when in trouble. Hence, in 1995, more than 75 per cent of bank loans were saved for SOEs, naming them the biggest customers of commercial banks (Le and McCarty, 1995).

Consequently, the state-directed policy loan[53] (or directed lending) would adversely affect the overall profitability and efficiency of the banking sector and entail high risks of default. In late 1997, the banking sector recorded a large volume of non-performing loans (NPLs) mostly made to SOEs: NPLs of SOCBs were estimated to be 30-35 per cent of their total loans, while NPLs of JSBs were in between 30 and 40 per cent (Doan, 2000).[54] The available evidence suggested that the weaknesses of the banking system were strongly related to the inefficiency of the SOE sector (Vo et al., 2002). This problem continued to exist in the aftermath of the Asian financial crisis during which most banks ended up incurring an even larger amount of NPLs from the SOE sector. From 2007 onwards, a significant proportion of loans went into speculative activities in the real estate and stock markets instead of going into productive investments, resulting in a significant overheating of the

[52] Under state directions, commercial banks could not resist financing most SOEs' investment projects or make loans to many inefficient SOEs. As a result, most commercial banks, especially SOCBs, operated on a non-commercial basis or even violated their profit-maximisation principles.

[53] Whenever the government had a policy to be implemented (such as a rural development project), banks were forced to provide funds for such project quickly and easily.

[54] Reliable estimates on NPLs are still difficult to retrieve for illustration purposes (Leung, 2009). The central issue here is that NPLs continue to be one of the major problems that greatly affect the soundness of the Vietnamese banking sector.

economy and an increased vulnerability of the banking sector in subsequent years, especially in 2008 (Leung, 2009).

Most noticeably, large SOEs' borrowings were found to adversely affects (or crowd-out) the development of the domestic private sector and the macroeconomic stability mainly because the private sector continuingly faced many difficulties in gaining access to credit. As observed by Malesky and Taussig (2008), most banks continued to practice credit rationing by allocating a disproportionate share of credit to closely related enterprises with better borrowing conditions such as lower interest rates and/or easier collateral requirements. In addition, most SOCBs' loan officers were too cautious to lend to the private sector for fear of potential losses. Besides, SOCBs were authorised to provide unsecured lending to private enterprises having at least two consecutive years of profits, indicating that this facility was not applicable to newly established firms. Worse still, most private firms had difficulties in gaining access to land-use rights, especially in urban areas, preventing them from using land as collateral to acquire credit (Leung, 2009).

1.2 Underdeveloped and Segmented Financial Market

Vietnam's banking system remained underdeveloped over the same period for two reasons. First, the underdevelopment of the banking sector was reflected in the country's relatively low income and saving levels, which restricted its ability to mobilise and allocate financial resources in an efficient manner (Soo-Nam, 1998).[55] Second, Vietnam lacked modern banking technologies and experienced professionals to operate in the financial sector. Local banking was almost non-existent because most banks had little interest in providing loans to individuals and small businesses (Gottschang, 2001).

On the other hand, over the past decades, the Vietnamese banking system was separated into two segments such that: (i) SOCBs usually operated on a non-commercial basis in compliance with the state-directed lending policy; and (ii) the rest of the banking system was relatively more market- and profit-oriented. Due to this particular segmentation, SOCBs did not face intense competition, enabling them to have a larger customer base, compared with JSBs and other smaller private banks

[55] On average, in the 1990s, Vietnam's gross domestic savings accounted for 16 per cent of GDP and gradually increased to 28.3 and 28.6 per cent in the 2000s and during 2010-11, respectively (World Bank, Various Issues).

(Camen, 2006). In 1998, SOCBs dominated the financial market with significantly large shares in total banking assets: share in total loans accounted for 82 per cent while share in total deposits accounted for 80 per cent (Gottschang, 2001). By 2002, SOCBs still captured more than half of the banking sector's assets even though their share in total loans decreased to 74 per cent while share in total deposits remained unchanged at 80 per cent (Leung, 2009).

Regardless of its dominant position, the banking sector including SOCBs did not deliver outstanding performance. According to Nguyen (2007), during 2001-03, this sector performed poorly, with relatively low cost efficiency (60.6 per cent) and decreasing technological efficiency (by 4.3 percentage points). Vu and Turnell (2010) find that, in the same period, JSBs and foreign banks experienced considerable short-term reductions in cost efficiency due to increased spending on opening new bank branches, meeting new capital requirements, upgrading technology, improving and diversifying banking products and services.[56] However, the restructuring of the banking system, alongside with technological upgrade, offered a long-run benefit of improving most banks' cost efficiency (averaging at 87.21 per cent during 2000-06). Nahm and Vu (2008) continue investigating the performance of 56 commercial banks and find that, during 2000-06, most SOCBs were technologically and allocatively efficient, but their scale efficiency was relatively low and tended to decline over time. The authors also find that, for all sample banks, the main source of profit inefficiency tended to be allocative inefficiency. Likewise, Leung (2009) finds that, during 2006-07, the average rate of return on assets of SOCBs was lower than that of Asian banks while their capital adequacy ratios[57] were below the average ratios of the Asia and the Pacific region and the East Asia region (13.1 and 12.3 per cent, respectively).

1.3 The SBV Lacked Autonomy

Historically, the SBV had little autonomy in conducting its monetary policy. The National Assembly (NA) and the government had great influence on the design of monetary policy, while the SBV's role was to implement it as directed (Camen,

[56] Since the accession into WTO, the Vietnamese banking system has changed dramatically with the application of banking software to computerise transactions, the expansion of automatic teller machine (ATM) networks, the introduction of debit and credit cards, and the development of internet and electronic banking services.

[57] The capital adequacy ratio is measured by total equity divided by total risk-weighted assets. This ratio recognises that an asset may have different levels of risk. Therefore, it is used to determine a bank's ability to meet its time liabilities and other risks (such as operational risk and credit risk).

2006). Under the Law governing the State Bank, the SBV's monetary policy was guided by a multiple, conflicting objectives such as economic growth, price and currency stability and financial system stability (Nguyen, 2008). Among these, economic growth appeared to be the primary goal of the government. Le (2009) argues that the Vietnamese political leaders were unwilling to sacrifice the output growth and employment objectives to meet the inflation target even though controlling inflation was very important for growth to be sustainable. Accordingly, the SBV's monetary policy was primarily aimed at accommodating the government's socio-economic development plans rather than combating inflation. Its main task was to report the implementation of previous year's monetary policy and provide future economic outlooks. As a routine, the SBV submitted a draft of the next year's monetary policy to the government for consideration and approval. In turn, the government submitted the draft to the NA for final approval (Le and Pfau, 2009).

2 Vietnam's Banking Structure

The central bank of Vietnam was established in 1951 as the Vietnam National Bank and was renamed as the SBV in 1960. From 1976 to 1989, the government owned and controlled a mono-banking system in which the SBV provided almost all domestic banking services. Lending activities were monitored by the government and credit rationing became the norm since financial resources were scarce (Le, 2009). From 1990 onwards, a two-tier banking system was introduced with two new features: (i) the SBV remained as a central bank and was authorised to issue banknotes, manage currency trading, design and implement monetary policy; and (ii) the commercial banks provided commercial banking services. They included SOCBs, JSBs and JVBs (SBV, Various Issues).

Until recently, Vietnam has made a significant progress towards liberalising its banking system, which allowed foreign banks to operate in the Vietnamese market. In June 2012, Vietnam's banking structure consisted of 1 SBV, 5 SOCBs, 35 JSBs, 50 foreign banks' branches, 4 JVBs, 18 finance companies, 12 financial leasing companies and 49 foreign banks' representative offices (Table A4). Among these, JSBs and SOCBs were relatively large in terms of charter capital ($US7.95 billion and $US4.29 billion, respectively), followed by foreign banks' branches, finance companies and wholly foreign-owned banks ($US2.38 billion, $US965.9 million and $US929.2 million, respectively).

Table A4- Vietnam's Banking Structure as of June, 2012

Qty	Bank Names	Charter Capital ($US million)
1	SBV	N/A
5	SOCBs, including:	4,286.8
	Joint Stock Commercial Bank for Foreign Trade of Vietnam	1101.6
	Vietnam Bank for Industry and Trade	961.7
	Bank for Investment & Development of Vietnam	1,093.9
	Vietnam Bank for Agricultural & Rural Development	984.4
	Housing Bank of Mekong Delta	145.2
35	Joint-Stock Commercial Banks	7,950.1
50	Foreign Banks' Branches	2,383.1
4	Joint-Venture Banks	457.0
5	Wholly Foreign-Owned Banks	929.2
18	Finance Companies	965.9
12	Financial Leasing Companies	178.4
49	Representative Offices of Foreign Banks	N/A

Note: Some of the charter capital was originally expressed in VND, and was converted into USD (1 USD = 21,036 VND). N/A = Not Available.
Source: SBV (Various Issues).

Annex 10- A Survey of CGE Models Applied to Vietnam

Annex 10 is worth considering because it is necessary to review the application of the CGE methodology, which is intended to be used in this thesis, in order to assess the economy-wide impact of Vietnam's microeconomic reforms and the private sector development (PSD) policy on its national outcomes and industries. However, it is important to note that the studies reviewed in Annex 10 are not necessarily related directly to the privatisation issue. Therefore, instead of having a detailed analysis of these studies, it is more convenient to summarise them in Table A5.

Table A5- Survey of CGE Models Applied to Vietnam

	Authors	Themes	Methods	Model Specifications	Data	Findings
Trade Liberalisation	Nguyen and Tran (2001)	Impacts of trade liberalisation on aggregate welfare and welfare of households by expenditure groups in Vietnam	CGE	10 household groups	1996 I-O table VLSS(97-98)	Efficiency gains from tariff reform are modest, but significant redistribution occurs. Generally, tariff reform is pro-rich and anti-poor
	Pham (2003)	Impacts of Vietnam's accession to the WTO on income distribution	CGE based on ORANI	4 labour types 6 household groups	1996 I-O table	Overall welfare improvement resulted from Vietnam's accession to the WTO
	Nguyen et al. (2005)	Distributional effects of trade liberalisation	CGE	10 household groups	1997 data	Without adjustment costs, trade liberalisation is pro-rich and anti-poor. There are large distributional impacts in the presence of adjustment costs
	Vanzetti and Pham (2006)	Vietnam's trade policy	GTAP	2 labour skills 87 countries 57 sectors	GTAP 6.0 database	Significant welfare benefits from unilateral liberalisation

	Abbott et al. (2008)	Linkages between trade and development	Dynamic CGE	3 labour types 6 household groups	SAM 2000	Trade policy provides incentives that determine both level and allocation of investment, hence export expansion
	Pham et al. (2008)	Welfare impacts of Vietnam's small livestock producers under trade liberalisation	GTAP	20 countries 1 region in Vietnam (Red River Delta)	GTAP 6.2 database	Small households in the livestock sector benefit from trade liberalisation. The effect is largest under full trade liberalisation
	Nguyen and Yoon (2009)	Impacts of Vietnam's WTO commitments in reducing tariffs and domestic taxes on the nation's economy	CGE	17 sectors 10 household groups	2000 I-O table	GDP increases, a trade surplus, and the overall welfare gains, moderately increased inequality between the richest and the poorest, and decreased inequality between urban and rural population
Tax Reform	Nguyen et al. (1998)	Welfare impacts of tax reform on households ranked by income group	CGE	5 household groups	1995 data	Gains from indirect tax reform and large redistributive effects
	Nguyen et al. (1999)	Tax reform	CGE	5 household groups	1995 data	Similar conclusion as above
Other Topics	Nguyen and Tran (2004)	Analysing the distributional implications of labour mobility restrictions	CGE	Homogenous labour; 10 household groups	2000 I-O table VLSS(2002)	Removal of restriction on labour mobility strongly improved per capita GDP, income per worker, and overall efficiency

	Cloutier et al. (2008)	Poverty impacts of a cut in public subsidies to higher education	CGE	2 labour skills 4 household groups	SAM 2000, VLSS(97-98)	50% cut in education subsidies results in welfare loss and increased poverty. Rural and agricultural households benefit from the reform, but urban and non-agricultural households lose
	Fujii and Roland-Holst (2008)	Poverty and Vietnam's accession to the WTO	CGE	8 labour skills 5 household groups	SAM 2000 VLSS(97-98)	Aggregate poverty will decrease when Vietnam remove all import tariffs and export subsidies
	Tran and Giesecke (2008)	Investigation of Vietnam's growth and structural change in 1996-2003	Dynamic CGE based on MONASH	3 labour skills 1 representative household	1996 I-O table	Three important sources of growth are technical improvement, shift in foreign preferences for Vietnamese goods, and employment growth

Annex 11- VNGEM's 2005 Base-year Database

This section provides a number of tables showing some key data entries and parameters extracted from VNGEM's 2005 base-year database.

Table A6- Joint Production Matrix (MAKE) ($US million)

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 RicePad	9,045	0	0	0	0	0	0	0	0	0	0	0	0
2 Agriculture	0	6,758	22	0	0	0	49	0	0	0	0	0	0
3 Forest	0	0	1,058	0	50	0	0	0	0	38	0	0	0
4 Fish	0	0	0	3,405	0	0	0	0	0	0	0	0	0
5 Mining	0	0	0	0	1,149	0	0	0	0	0	0	0	0
6 OGP	0	0	0	0	0	7,536	0	0	0	0	0	0	0
7 FoodBev	230	0	0	0	0	0	9,467	0	7	0	0	0	0
8 ConsMat	0	0	0	0	15	0	0	3,474	139	66	0	0	0
9 OtherManuf	0	0	0	0	0	0	11	14	2,896	0	37	0	0
10 Services	0	0	0	0	0	0	21	24	0	9,362	0	0	6
11 Machinery	0	0	0	0	0	0	0	20	5	107	7,606	0	16
12 Electrical	0	0	0	0	0	0	0	0	0	10	3	1,014	0
13 Steel	0	0	0	0	0	0	0	0	0	0	162	0	380
14 TCF	0	0	0	0	0	0	0	34	0	0	0	0	0
15 Chemicals	0	0	0	0	15	0	28	49	0	8	3	0	0
16 ElecGas	0	0	0	0	0	0	0	0	0	0	0	0	0
17 Water	0	0	0	0	0	0	13	0	0	0	0	0	0
18 Construct	0	0	0	0	7	0	0	27	0	548	4	0	0
19 Trade	0	0	0	0	2	0	37	0	0	350	32	0	0
20 RdWtrTrans	0	0	0	0	2	0	0	6	0	23	0	0	0
21 RailAirTrans	0	0	0	0	0	0	0	0	0	0	0	0	0
22 PostTelecom	0	0	0	0	0	0	0	0	0	0	0	0	0
23 FinInsur	0	0	0	0	0	0	0	0	0	0	0	0	0
24 PubAdmin	0	0	0	0	0	0	0	0	0	124	0	0	0
Total	**9,275**	**6,758**	**1,080**	**3,405**	**1,241**	**7,536**	**9,628**	**3,648**	**3,048**	**10,636**	**7,846**	**1,014**	**403**

Note: Column header = commodities; row header = corresponding industries.
Data was converted from VND to USD using the IMF's 2005 exchange rate (1 USD = 15,859 VND).
Source: VNGEM's base-year database (2005).

Table A6- Joint Production Matrix (MAKE) ($US million) (continued)

	14	15	16	17	18	19	20	21	22	23	24	Total
1 RicePad	0	0	0	0	0	0	0	0	0	0	0	**9,045**
2 Agriculture	0	0	0	0	0	0	0	0	0	0	0	**6,830**
3 Forest	0	0	0	0	0	0	0	0	0	0	0	**1,146**
4 Fish	0	0	0	0	0	0	0	0	0	0	0	**3,405**
5 Mining	0	0	0	0	55	0	0	0	0	0	0	**1,204**
6 OGP	0	0	0	0	0	0	0	0	0	0	0	**7,536**
7 FoodBev	0	9	0	0	0	191	0	0	0	0	0	**9,904**
8 ConsMat	0	3	0	0	313	0	0	0	0	0	0	**4,009**
9 OtherManuf	0	0	0	0	0	25	8	0	0	0	0	**2,992**
10 Services	56	2	0	0	77	41	0	0	0	59	0	**9,648**
11 Machinery	0	2	0	0	0	83	14	0	0	0	0	**7,854**
12 Electrical	0	0	0	0	0	0	0	0	0	0	0	**1,027**
13 Steel	0	0	0	0	0	0	0	0	0	0	0	**543**
14 TCF	11,491	0	0	0	240	0	0	0	11	0	0	**11,774**
15 Chemicals	59	4,961	0	0	0	0	0	0	0	0	0	**5,124**
16 ElecGas	0	0	2,416	0	0	0	0	0	0	0	0	**2,416**
17 Water	0	0	0	138	3	0	0	0	0	0	0	**154**
18 Construct	0	0	0	12	10,430	0	0	0	0	0	0	**11,029**
19 Trade	0	23	27	0	0	9,515	25	0	0	0	0	**10,013**
20 RdWtrTrans	10	0	0	0	0	2	1,233	0	0	0	0	**1,276**
21 RailAirTrans	0	0	0	0	0	0	0	1,000	0	0	0	**1,000**
22 PostTelecom	0	0	0	0	0	0	0	0	1,416	0	0	**1,416**
23 FinInsur	0	0	0	0	0	0	0	0	0	841	0	**841**
24 PubAdmin	0	0	0	0	0	0	0	0	0	0	7,252	**7,376**
Total	**11,616**	**5,001**	**2,443**	**151**	**11,117**	**9,858**	**1,281**	**1,000**	**1,427**	**900**	**7,252**	**117,563**

Note: Column header = commodities; row header = corresponding industries.
Data was converted from VND to USD using the IMF's 2005 exchange rate (1 USD = 15,859 VND).
Source: VNGEM's base-year database (2005).

Table A7- GDP on the Expenditure Side ($US million)

	Consumption	Investment	Government	Exports	Imports	Inventories
1 RicePad	2,755	250	64	1,450	26	386
2 Agriculture	3,659	682	74	1,845	938	157
3 Forest	6	150	3	26	14	0
4 Fish	1,702	361	0	223	73	32
5 Mining	45	151	32	348	441	19
6 OGP	86	986	0	7,469	5,286	322
7 FoodBev	6,935	856	7	3,350	1,777	497
8 ConsMat	193	441	96	400	576	135
9 OtherManuf	936	261	0	1,976	4,611	72
10 Services	6,132	4,001	637	494	1,523	-23
11 Machinery	1,487	790	0	3,153	7,435	9
12 Electrical	212	70	0	531	1,287	-38
13 Steel	80	59	0	447	1,649	55
14 TCF	1,715	812	0	9,462	4,633	-280
15 Chemicals	3,194	535	6	1,295	6,363	104
16 ElecGas	195	1,588	0	1	15	-0
17 Water	6	89	0	0	0	0
18 Construct	0	1,089	238	0	0	0
19 Trade	2,202	1,911	0	877	483	0
20 RdWtrTrans	112	503	14	184	168	0
21 RailAirTrans	298	239	6	213	302	0
22 PostTelecom	617	643	0	176	189	0
23 FinInsur	518	237	0	133	625	0
24 PubAdmin	717	1,150	5,956	986	852	0
Total	**33,802**	**17,855**	**7,133**	**35,037**	**39,265**	**1,446**

Note: Data was converted from VND to USD using the IMF's 2005 exchange rate (1 USD = 15,859 VND).
GDP = C + I + G + (X – M) + Inventories = $US56,008 million.
Source: VNGEM base-year database (2005).

Table A8- GDP on the Income Side ($US million)

	Land	Labour	Capital	Indirect taxes
1 RicePad	1,176	1,919	342	3,850
2 Agriculture	1,121	2,557	961	5,734
3 Forest	47	453	184	698
4 Fish	526	864	478	1,973
5 Mining	167	247	199	1,072
6 OGP	1,856	1,160	1,263	9,887
7 FoodBev	0	1,267	1,001	4,543
8 ConsMat	0	519	545	1,775
9 OtherManuf	0	261	303	5,247
10 Services	0	2,512	4,331	8,343
11 Machinery	0	1,068	835	9,347
12 Electrical	0	92	83	1,423
13 Steel	0	93	64	1,861
14 TCF	0	883	916	6,152
15 Chemicals	0	781	610	7,859
16 ElecGas	0	793	839	1,647
17 Water	0	53	57	109
18 Construct	0	1,677	1,456	3,133
19 Trade	0	2,846	2,252	5,581
20 RdWtrTrans	0	390	370	927
21 RailAirTrans	0	211	194	706
22 PostTelecom	0	420	549	1,157
23 FinInsur	0	342	261	1,229
24 PubAdmin	0	3,472	734	5,058
Total	**4,893**	**24,881**	**18,826**	**7,408**

Note: Data was converted from VND to USD using the IMF's 2005 exchange rate (1 USD = 15,859 VND).
GDP = Land + Labour + Capital + Indirect taxes = $US56,008 million.
Source: VNGEM base-year database (2005).

Table A9- Sources of Indirect Taxes ($US million)

	Intermediate	Investment	Household	Exports	Government	Production	Tariffs	Total
1 RicePad	60	0	70	0	2	28	1	**160**
2 Agriculture	20	0	88	0	2	74	36	**220**
3 Forest	13	0	0	0	0	81	0	**94**
4 Fish	22	0	43	0	0	33	7	**104**
5 Mining	21	0	2	1	2	22	1	**49**
6 OGP	-262	0	8	2	0	1,278	38	**1,065**
7 FoodBev	34	0	1,186	0	0	55	73	**1,348**
8 ConsMat	20	0	16	0	10	21	24	**91**
9 OtherManuf	24	0	67	0	0	18	83	**192**
10 Services	126	0	250	0	30	211	37	**654**
11 Machinery	108	334	218	3	0	39	339	**1,041**
12 Electrical	10	0	20	0	0	5	60	**95**
13 Steel	4	0	4	0	0	2	6	**16**
14 TCF	6	0	139	0	0	50	449	**643**
15 Chemicals	104	0	166	0	0	25	109	**404**
16 ElecGas	48	0	20	0	0	20	0	**88**
17 Water	2	0	0	0	0	3	0	**5**
18 Construct	13	375	0	0	27	103	0	**517**
19 Trade	36	0	211	1	0	122	0	**370**
20 RdWtrTrans	4	0	8	0	1	22	0	**35**
21 RailAirTrans	7	0	16	0	0	9	0	**32**
22 PostTelecom	28	0	56	0	0	17	0	**101**
23 FinInsur	4	0	23	0	0	8	0	**35**
24 PubAdmin	6	0	0	0	21	21	0	**48**
Total	**455**	**709**	**2,611**	**8**	**96**	**2,267**	**1,262**	**7,408**

Note: Data was converted from VND to USD using the IMF's 2005 exchange rate (1 USD = 15,859 VND).
Source: VNGEM base-year database (2005).

Table A10- Primary Factor Costs ($US million)

	1 Labour		2 Capital		3 Land		Total	
	Value	**Share (%)**	**Value**	**Share (%)**	**Value**	**Share (%)**	**Value**	**Share (%)**
1 RicePad	1,919	55.8	342	10.0	1,176	34.2	3,438	100.0
2 Agriculture	2,557	55.1	961	20.7	1,121	24.2	4,639	100.0
3 Forest	453	66.2	184	27.0	47	6.8	684	100.0
4 Fish	864	46.2	478	25.6	526	28.2	1,868	100.0
5 Mining	247	40.3	199	32.5	167	27.2	613	100.0
6 OGP	1,160	27.1	1,263	29.5	1,856	43.4	4,279	100.0
7 FoodBev	1,267	55.9	1,001	44.1	0	0	2,268	100.0
8 ConsMat	519	48.8	545	51.2	0	0	1,064	100.0
9 OtherManuf	261	46.3	303	53.7	0	0	564	100.0
10 Services	2,512	36.7	4,331	63.3	0	0	6,842	100.0
11 Machinery	1,068	56.1	835	43.9	0	0	1,903	100.0
12 Electrical	92	52.5	83	47.5	0	0	175	100.0
13 Steel	93	59.3	64	40.7	0	0	157	100.0
14 TCF	883	49.1	916	50.9	0	0	1,799	100.0
15 Chemicals	781	56.1	610	43.9	0	0	1,392	100.0
16 ElecGas	793	48.6	839	51.4	0	0	1,632	100.0
17 Water	53	48.3	57	51.7	0	0	109	100.0
18 Construct	1,677	53.5	1,456	46.5	0	0	3,133	100.0
19 Trade	2,846	55.8	2,252	44.2	0	0	5,098	100.0
20 RdWtrTrans	390	51.3	370	48.7	0	0	759	100.0
21 RailAirTrans	211	52.1	194	47.9	0	0	404	100.0
22 PostTelecom	420	43.3	549	56.7	0	0	969	100.0
23 FinInsur	342	56.8	261	43.2	0	0	603	100.0
24 PubAdmin	3,472	82.5	734	17.5	0	0	4,207	100.0
Total	**24,881**	**51.2**	**18,826**	**38.7**	**4,893**	**10.1**	**48,601**	**100.0**

Note: Data was converted from VND to USD using the IMF's 2005 exchange rate (1 USD = 15,859 VND).
The share columns (%) are used to determine factor intensities in each industry.
Source: VNGEM base-year database (2005).

Table A11- Key Behavioural Parameters Used in VNGEM

	$\sigma_L^{(1)}{}_{(i)}$	$\sigma_{PR}^{(1)}{}_{(i)}$	$\sigma^{(1)}{}_{(c)}$	$\sigma_O^{(1)}{}_{(i)}$	$\sigma^{(2)}{}_{(c)}$	$\sigma^{(3)}{}_{(c)}$	$\gamma_{(c)}$	EPS
1 RicePad	0.50	0.34	4.74	0.50	1.06	0.90	-9.48	0.55
2 Agriculture	0.50	0.23	2.79	0.50	1.75	0.85	-5.57	0.85
3 Forest	0.50	0.20	2.50	0.50	2.00	0.83	-5.00	1.03
4 Fish	0.50	0.20	1.25	0.50	2.00	0.83	-2.50	0.98
5 Mining	0.50	0.20	1.55	0.50	2.00	0.82	-3.10	1.04
6 OGP	0.50	0.21	2.82	0.50	0.40	0.82	-5.64	1.05
7 FoodBev	0.50	1.12	2.31	0.50	1.44	0.87	-4.62	0.90
8 ConsMat	0.50	1.26	2.90	0.50	0.00	0.83	-5.80	1.03
9 OtherManuf	0.50	1.26	4.06	0.50	2.19	0.83	-8.13	1.03
10 Services	0.50	1.26	2.37	0.50	0.00	0.80	-4.74	1.25
11 Machinery	0.50	1.26	3.70	0.50	2.80	0.83	-7.39	1.03
12 Electrical	0.50	1.26	4.40	0.50	2.80	0.83	-8.80	1.03
13 Steel	0.50	1.26	3.35	0.50	1.27	0.83	-6.70	1.03
14 TCF	0.50	1.26	3.82	0.50	2.83	0.83	-7.64	1.01
15 Chemicals	0.50	1.26	3.30	0.50	1.95	0.83	-6.60	1.03
16 ElecGas	0.50	1.26	2.80	0.50	0.00	0.82	-5.60	1.04
17 Water	0.50	1.26	2.80	0.50	0.00	0.82	-5.60	1.04
18 Construct	0.50	1.40	1.90	0.50	0.00	0.82	-3.80	1.04
19 Trade	0.50	1.68	1.90	0.50	0.00	0.80	-3.80	1.20
20 RdWtrTrans	0.50	1.68	1.90	0.50	2.00	0.82	-3.80	1.05
21 RailAirTrans	0.50	1.68	1.90	0.50	2.00	0.82	-3.80	1.05
22 PostTelecom	0.50	1.26	1.90	0.50	0.00	0.82	-3.80	1.05
23 FinInsur	0.50	1.26	1.90	0.50	0.00	0.78	-3.80	1.35
24 PubAdmin	0.50	1.26	1.90	0.50	0.00	0.80	-3.80	1.20

Note: $\sigma_L^{(1)}{}_{(i)}$ = substitution elasticities between skill types; $\sigma_{PR}^{(1)}{}_{(i)}$ = substitution elasticities between primary factors; $\sigma^{(1)}{}_{(c)}$ = Armington substitution elasticities between domestic and imported sources; $\sigma_O^{(1)}{}_{(i)}$ = transformation elasticities of output; $\sigma^{(2)}{}_{(c)}$ = Armington investment elasticities; $\sigma^{(3)}{}_{(c)}$ = household Armington elasticities; $\gamma_{(c)}$ = individual export demand elasticities; EPS = household expenditure elasticities (this EPS is not reported in the model equations, but is used to generate simulation results for household consumption).

Source: VNGEM base-year database (2005).

Annex 12- Aggregation Mapping from 113 to 24 Sectors

	113 Sectors	Mapping		24 Sectors	Description
1	Paddy	RicePad	1	RicePad	Rice & Paddy
2	RawRubber	Agriculture	2	Agriculture	Agriculture
3	CoffeeBean	Agriculture	3	Forest	Forestry
4	SugarCane	Agriculture	4	Fish	Fisheries
5	RawTea	Agriculture	5	Mining	Mining
6	OthCrops	Agriculture	6	OGP	Oil, Gas & Petroleum
7	Pigs	Agriculture	7	FoodBev	Food & Beverage
8	Cows	Agriculture	8	ConsMat	Construction Materials
9	Poultry	Agriculture	9	OtherManuf	Other Manufacturing
10	OthLivestock	Agriculture	10	Services	Services
11	IrrigServ	Services	11	Machinery	Machinery
12	OthAgrServ	Forest	12	Electrical	Electricals
13	Forest	Forest	13	Steel	Steel
14	Fishing	Fish	14	TCF	Textile, Clothing & Footwear
15	FishFarming	Fish	15	Chemicals	Chemicals
16	Coal	Mining	16	ElecGas	Electricity & Gas
17	MetalOres	Mining	17	Water	Water
18	Stone	Mining	18	Construct	Construction
19	SandGravel	Mining	**19**	**Trade**	Trade
20	OthMining	Mining	**20**	**RdWtrTrans**	Road & Water Transportations
21	CrudeOilGas	OGP	**21**	**RailAirTrans**	Rail & Air Transportations
22	Meat	FoodBev	22	PostTelecom	Post & Telecommunication
23	OilFat	FoodBev	**23**	**FinInsur**	Finance & Insurance
24	Dairy	FoodBev	24	PubAdmin	Public Administration
25	BakeryConf	OtherManuf			
26	FruitVeg	FoodBev			
27	AlcoholWine	FoodBev			
28	Beer	FoodBev			
29	NonAlcBev	FoodBev			
30	SugarProd	FoodBev			
31	CoffeeProd	FoodBev			
32	TeaProd	FoodBev			
33	TobacoProd	FoodBev			
34	SeaFood	FoodBev			
35	Rice	RicePad			
36	OthFoodProd	FoodBev			
37	Glass	ConsMat			

38	Ceramics	ConsMat
39	BricksTiles	ConsMat
40	Cement	ConsMat
41	CementProd	ConsMat
42	OthBldgMat	ConsMat
43	PaperProd	Services
44	WoodProd	OtherManuf
45	OrgChem	Chemicals
46	InOrgChem	Chemicals
47	ChemFert	Chemicals
48	OthFert	Chemicals
49	Pesticides	Chemicals
50	PharmVeter	Chemicals
51	PharmHuman	Chemicals
52	RubberProd	Chemicals
53	SoapDeterg	Chemicals
54	PerfOthToil	Chemicals
55	PrimPlastic	Chemicals
56	OthPlastProd	Chemicals
57	Paint	Chemicals
58	VarnOthPaint	Chemicals
59	OthChem	Chemicals
60	HealthEquip	Machinery
61	OthPrecEquip	Machinery
62	HomeAppl	Electrical
63	Motorbike	Machinery
64	Bicycle	Machinery
65	AgricMach	Machinery
66	GenMach	Machinery
67	OthSpMach	Machinery
68	MotorVehicle	Machinery
69	OthTranEquip	Machinery
70	Transformers	Machinery
71	OthElecMach	Machinery
72	RadioTVEquip	Electrical
73	NonFeMetal	OtherManuf
74	FeMetal	Steel
75	Fabrics	TCF
76	FibreThreads	TCF
77	Clothing	TCF

78	Carpet	TCF
79	OthTextile	TCF
80	Leather	TCF
81	LeatherProd	TCF
82	AnimalFeed	FoodBev
83	Printing	Services
84	Publishing	Services
85	SprtRecOthEq	Machinery
86	PetrolLub	OGP
87	GasElect	ElecGas
88	Water	Water
89	CivlConstrct	Construct
90	OthConstrct	Construct
91	**Trade**	Trade
92	Repairs	Trade
93	Hotels	Trade
94	Restaurants	Trade
95	**RoadTrans**	RdWtrTrans
96	**RailTrans**	RailAirTrans
97	**WaterTrans**	RdWtrTrans
98	**AirTrans**	RailAirTrans
99	PostTelecom	PostTelecom
100	TouristServ	Trade
101	FinancServ	FinInsur
102	Lottery	Services
103	**Insurance**	FinInsur
104	SciTechServ	PubAdmin
105	PropertyServ	Services
106	OthBusServ	Services
107	PubAdminDef	PubAdmin
108	Education	PubAdmin
109	Healthcare	PubAdmin
110	CultureSport	Services
111	Association	Services
112	OthServ	Services
113	Dwellings	Services

Note: Commodities in bold represent margin commodities. Before aggregation, there are only six margin commodities. However, the mapping incorporates five additional commodities as margin including Repairs, Hotels, Restaurants, TouristServ and FinancServ.

Annex 13- Model Equations in VNGEM

These sets of equations represent the main structure of VNGEM, which are largely expressed in percentage-change forms. They are sufficient for generating simulation results. Besides, there are many other (optional) add-on equations (or back-of-the-envelop equations) used for explaining the results. However, they are not included in this section for simplicity.

1. Demand for labour by industry and skill group

$$x_L{}^{(1)}_{(io)} = x_{L\_O}{}^{(1)}_{(i)} - \sigma_L{}^{(1)}_{(i)} * [\, p_L{}^{(1)}_{(io)} - p_{L\_O}{}^{(1)}_{(i)} \,]$$

where

- $p_{L\_O}{}^{(1)}_{(i)} = \sum_{o=1}^{O} S_L{}^{(1)}_{(io)} * p_L{}^{(1)}_{(io)}$

2. Industry demands for effective labour

$$x_{L\_O}{}^{(1)}_{(i)} - a_{L\_O}{}^{(1)}_{(i)} = x_{PR}{}^{(1)}_{(i)} - \sigma_{PR}{}^{(1)}_{(i)} * [\, p_{L\_O}{}^{(1)}_{(i)} + a_{L\_O}{}^{(1)}_{(i)} - p_{PR}{}^{(1)}_{(i)} \,]$$

3. Industry demands for capital

$$x_K{}^{(1)}_{(i)} - a_K{}^{(1)}_{(i)} = x_{PR}{}^{(1)}_{(i)} - \sigma_{PR}{}^{(1)}_{(i)} * [\, p_K{}^{(1)}_{(i)} + a_K{}^{(1)}_{(i)} - p_{PR}{}^{(1)}_{(i)} \,]$$

4. Industry demands for land

$$x_{LD}{}^{(1)}_{(i)} - a_{LD}{}^{(1)}_{(i)} = x_{PR}{}^{(1)}_{(i)} - \sigma_{PR}{}^{(1)}_{(i)} * [\, p_{LD}{}^{(1)}_{(i)} + a_{LD}{}^{(1)}_{(i)} - p_{PR}{}^{(1)}_{(i)} \,]$$

where

- $p_{PR}{}^{(1)}_{(i)} = \sum_{v=1}^{V} S^{(1)}_{(v)i} * [\, p^{(1)}_{(v)i} + a^{(1)}_{(v)i} \,]$

  (v = 1: effective labour; v = 2: capital; and v = 3: land)

5. Demands for intermediate inputs (domestic and imported)

$$x^{(1)}_{(cs)i} - a^{(1)}_{(cs)i} = x\_s^{(1)}_{(c)i} - \sigma^{(1)}_{(c)} * [\, p^{(1)}_{(cs)i} + a^{(1)}_{(cs)i} - p\_s^{(1)}_{(c)i} \,]$$

where

- $p\_s^{(1)}_{(c)i} = \sum_{s=1}^{S} S^{(1)}_{(cs)i} * [\, p^{(1)}_{(cs)i} + a^{(1)}_{(cs)i} \,]$

6. Demands for intermediate input composite

$$x\_s^{(1)}_{(c)i} - [\, a\_s^{(1)}_{(c)i} + a_T{}^{(1)}_{(i)} \,] = x_T{}^{(1)}_{(i)}$$

7. Demands for primary factor composite

$$x_{PR}{}^{(1)}_{(i)} - [a_{PR}{}^{(1)}_{(i)} + a_T{}^{(1)}_{(i)}] = x_T{}^{(1)}_{(i)}$$

8. Demand for 'other costs'

$$x_{OC}{}^{(1)}_{(i)} - [a_{OC}{}^{(1)}_{(i)} + a_T{}^{(1)}_{(i)}] = x_T{}^{(1)}_{(i)}$$

9. Supplies of commodities by industries

$$q^{(1)}_{(c)i} = x_T{}^{(1)}_{(i)} + \sigma_O{}^{(1)}_{(i)} * [p_Q{}^{(1)}_{(c)i} - p_T{}^{(1)}_{(i)}]$$

where

- $p_Q{}^{(1)}_{(c)i} = p_C{}^{(0)}_{(c)}$
- $p_T{}^{(1)}_{(i)} = \sum_{c=1}^{C} M_{(c)i} * p_Q{}^{(1)}_{(c)i}$

10. Total output of commodities

$$x_C{}^{(0)}_{(c)} = \sum_{i=1}^{I} M_{(c)i} * q^{(1)}_{(c)i}$$

10.1. Supply of commodities to export market

$$\Psi * [x_D{}^{(0)}_{(c)} - x^{(4)}_{(c)}] = p_D{}^{(0)}_{(c)} - p_{E(c)}$$

10.2. Supply of commodities to domestic market

$$x_C{}^{(0)}_{(c)} = [1 - S_{X(c)}] * x_D{}^{(0)}_{(c)} + S_{X(c)} * x^{(4)}_{(c)}$$

10.3. Zero pure profit in transformation

$$p_C{}^{(0)}_{(c)} = [1 - S_{X(c)}] * p_D{}^{(0)}_{(c)} + S_{X(c)} * p_{E(c)}$$

11. Source-specific investment demands

$$x^{(2)}_{(cs)i} - a^{(2)}_{(cs)i} = x\_s^{(2)}_{(c)i} - \sigma^{(2)}_{(c)} * [p^{(2)}_{(cs)i} + a^{(2)}_{(cs)i} - p\_s^{(2)}_{(c)i}]$$

where

- $p\_s^{(2)}_{(c)i} = \sum_{s=1}^{S} S^{(2)}_{(cs)i} * [p^{(2)}_{(cs)i} + a^{(2)}_{(cs)i}]$

12. Investment Demands for Composite Commodities

$$x\_s^{(2)}_{(c)i} - [a\_s^{(2)}_{(c)i} + a_T{}^{(2)}_{(i)}] = x_T{}^{(2)}_{(i)}$$

$$p_T{}^{(2)}_{(i)} = \sum_{c=1}^{C} S\_s^{(2)}_{(c)i} * [p\_s^{(2)}_{(c)i} + a\_s^{(2)}_{(c)i} + a_T{}^{(2)}_{(i)}]$$

13. Household demands for commodities (domestic and imported)

$$x^{(3)}_{(cs)} - a^{(3)}_{(cs)} = x\_s^{(3)}_{(c)} - \sigma^{(3)}_{(c)} * [\, p^{(3)}_{(cs)} + a^{(3)}_{(cs)} - p\_s^{(3)}_{(c)} \,]$$

14. Effective prices for commodity composites

$$p\_s^{(3)}_{(c)} = \sum_{s=1}^{S} S^{(3)}_{(cs)} * [\, p^{(3)}_{(cs)} + a^{(3)}_{(cs)} \,]$$

15. Household demands for composite commodities

$$x\_s^{(3)}_{(c)} = B_{LX}{}^{(3)}_{(c)} * x_{LX}{}^{(3)}_{(c)} + [\, 1 - B_{LX}{}^{(3)}_{(c)} \,] * x_{SU}{}^{(3)}_{(c)}$$

where

- $x_{SU}{}^{(3)}_{(c)} = q + a_{SU}{}^{(3)}_{(c)}$
- $x_{LX}{}^{(3)}_{(c)} + p\_s^{(3)}_{(c)} = w_{LX}{}^{(3)} + a_{LX}{}^{(3)}_{(c)}$
- $u + q = \sum_{c=1}^{C} S_{LX}{}^{(3)}_{(c)} * x_{LX}{}^{(3)}_{(c)}$
- $a_{LX}{}^{(3)}_{(c)} = a_{SU}{}^{(3)}_{(c)} - \sum_{k=1}^{C} S_{LX}{}^{(3)}_{(k)} * a_{SU}{}^{(3)}_{(k)} \quad (k \neq c)$
- $a_{SU}{}^{(3)}_{(c)} = a\_s^{(3)}_{(c)} - \sum_{k=1}^{C} S\_s^{(3)}_{(k)} * a\_s^{(3)}_{(k)} \; (k \neq c)$

15.1. Real Household Consumption

$$x_T{}^{(3)} = \sum_{c=1}^{C} \sum_{s=1}^{S} S_{PUR}{}^{(3)}_{(cs)} * x^{(3)}_{(cs)}$$

15.2. Consumer Price Index

$$p_T{}^{(3)} = \sum_{c=1}^{C} \sum_{s=1}^{S} S_{PUR}{}^{(3)}_{(cs)} * p^{(3)}_{(cs)}$$

15.3. Household Budget Constraint

$$w_T{}^{(3)} = x_T{}^{(3)} + p_T{}^{(3)}$$

16. Individual export demand functions

$$x^{(4)}_{(c)} - f_Q{}^{(4)}_{(c)} = - \left| \gamma_{(c)} \right| * [\, p_F{}^{(4)}_{(c)} - f_P{}^{(4)}_{(c)} \,]$$

where

- $p_F{}^{(4)}_{(c)} = p^{(4)}_{(c)} - \Phi$

17. Collective export demand functions

$$x^{(4)}_{(c)} - f_Q^{(4)}_{(c)} = x_{NT}^{(4)}$$

where

- $x_{NT}^{(4)} - f_{QNT}^{(4)} = -\left| \gamma_{NT} \right| * [\, p_{NT}^{(4)} - \Phi - f_{QNT}^{(4)} \,]$
- $p_{NT}^{(4)} = \sum_{c=1}^{NT} V_{PUR}^{(4)}_{(c)} * p^{(4)}_{(c)}$

18. Government demands

$$x^{(5)}_{(cs)} = f^{(5)}_{(cs)} + f_T^{(5)}$$

where

- $f_T^{(5)} = x_T^{(3)} + f_{T2}^{(5)}$

19. Inventory demands

$$P^{(0)}_{(cs)} * \Delta x^{(6)}_{(cs)} = V_{BAS}^{(6)}_{(cs)} * x_{COM}^{(0)}_{(c)} + f_X^{6)}_{(cs)}$$ (i.e. stock flow domestic output)

20. Margin demands

$$x_{MA}^{(1)(cs)i}_{(m)} = x^{(1)}_{(cs)i} + a_{MA}^{(1)(cs)i}_{(m)}$$

$$x_{MA}^{(2)(cs)i}_{(m)} = x^{(2)}_{(cs)i} + a_{MA}^{(2)(cs)i}_{(m)}$$

$$x_{MA}^{(3)(cs)}_{(m)} = x^{(3)}_{(cs)} + a_{MA}^{(3)(cs)}_{(m)}$$

$$x_{MA}^{(4)(c)}_{(m)} = x^{(4)}_{(c)} + a_{MA}^{(4)(c)}_{(m)}$$

$$x_{MA}^{(5)(cs)}_{(m)} = x^{(5)}_{(cs)} + a_{MA}^{(5)(cs)}_{(m)}$$

21. Supply equals demands for domestic commodities

$$0.01 * \prod_{D(c)} * x_D^{(0)}_{(c)} = \sum_{u=1}^{U} \Delta Sale_{(c1)u}$$

22. Total supply of imported goods

$$0.01 * V_M^{(0)}_{(c)} * x_M^{(0)}_{(c)} = \sum_{u=1}^{U} \Delta Sale_{(c2)u}$$

23. Purchasers prices– production

$$p^{(1)}_{(cs)i} = S_{BATX}^{(1)}_{(cs)i} * [\, p^{(0)}_{(cs)} + t^{(1)}_{(cs)i} \,] + \sum_{m=1}^{M} S_{MA}^{(1)(cs)i}_{(m)} * [\, p_D^{(0)}_{(m)} + a_{MA}^{(1)(cs)i}_{(m)} \,]$$

24. Purchasers prices– investment

$$p^{(2)}_{(cs)i} = S_{BATX}^{(2)}_{(cs)i} * [\, p^{(0)}_{(cs)} + t^{(2)}_{(cs)i} \,] + \sum_{m=1}^{M} S_{MA}^{(2)(cs)i}_{(m)} * [\, p_D^{(0)}_{(m)} + a_{MA}^{(2)(cs)i}_{(m)} \,]$$

25. Purchasers prices− households

$$p^{(3)}_{(cs)} = S_{BATX}{}^{(3)}_{(cs)} * [\, p^{(0)}_{(cs)} + t^{(3)}_{(cs)} \,] + \sum_{m=1}^{M} S_{MA}{}^{(3)(cs)}_{(m)} * [\, p_D{}^{(0)}_{(m)} + a_{MA}{}^{(3)(cs)}_{(m)} \,]$$

26. Zero pure profits in exporting

$$p^{(4)}_{(c)} = S_{BATX}{}^{(4)}_{(c)} * [\, p_{E(c)} + t^{(4)}_{(c)} \,] + \sum_{m=1}^{M} S_{MA}{}^{(4)(c)}_{(m)} * [\, p_D{}^{(0)}_{(m)} + a_{MA}{}^{(4)(c)}_{(m)} \,]$$

27. Zero pure profits in distribution to government

$$p^{(5)}_{(cs)} = S_{BATX}{}^{(5)}_{(cs)} * [\, p^{(0)}_{(cs)} + t^{(5)}_{cs)} \,] + \sum_{m=1}^{M} S_{MA}{}^{(5)(cs)}_{(m)} * [\, p_D{}^{(0)}_{(m)} + a_{MA}{}^{(5)(cs)}_{(m)} \,]$$

28. Power of taxes on sales

$$t^{(1)}_{(cs)i} = f_{TX}{}^{(0)}_{(c)} + f_{TX}{}^{(1)}$$

$$t^{(2)}_{(cs)i} = f_{TX}{}^{(0)}_{(c)} + f_{TX}{}^{(2)}$$

$$t^{(3)}_{(cs)} = f_{TX}{}^{(0)}_{(c)} + f_{TX}{}^{(3)}$$

$$t^{(4)}_{(c)} = f_{TX}{}^{(0)}_{(c)} + f_{TXT}{}^{(4)}$$

$$t^{(4)}_{(c)} = f_{TX}{}^{(0)}_{(c)} + f_{TXNT}{}^{(4)}$$

$$t^{(5)}_{(cs)} = f_{TX}{}^{(0)}_{(c)} + f_{TX}{}^{(5)}$$

29. Zero pure profits in importing

$$p_M{}^{(0)}_{(c)} = p_{F\_CIF}{}^{(0)}_{(c)} + \Phi + t_M{}^{(0)}_{(c)}$$

30. Tariff revenue equation

$$\Delta V_{TAR}{}^{(0)}_{(c)} = 0.01 * V_{TAR}{}^{(0)}_{(c)} * [\, x_M{}^{(0)}_{(c)} + p_{F\_CIF}{}^{(0)}_{(c)} + \Phi \,] + 0.01 * V_{IMP}{}^{(0)}_{(c)} * t_M{}^{(0)}_{(c)}$$

31. Trade balance and other indices

31.1. Trade balance

$$100 * \Delta B = S_T{}^{(4)} * w_T{}^{(4)} - S_{CIF\_C}{}^{(0)} * w_{CIF\_C}{}^{(0)} - S_{\Delta X} * w_{GDPEXP}{}^{(0)}$$

31.2. Import volume index

$$x_{M\_C}{}^{(0)} = \sum_{c=1}^{C} S_M{}^{(0)}_{(c)} * x_M{}^{(0)}_{(c)}$$

31.3. Import price index

$$p_{M\_C}{}^{(0)} = \sum_{c=1}^{C} S_M{}^{(0)}_{(c)} * p^{(0)}_{(c2)}$$

31.4. Value of imports plus duty

$$w_{M\_C}^{(0)} = x_{M\_C}^{(0)} + p_{M\_C}^{(0)}$$

31.5. Terms of trade

$$p_{TOT}^{(0)} = p_{T}^{(4)} - p_{CIF\_C}^{(0)}$$

31.6. Real devaluation

$$p_{DE}^{(0)} = p_{CIF\_C}^{(0)} - p_{GDPEXP}^{(0)}$$

32. Primary factor aggregates

32.1. Employment by industry

$$l_{(i)} = \sum_{o=1}^{O} S_{L}^{(1)}{}_{(io)} * x_{L}^{(1)}{}_{(io)}$$

32.2. Aggregate employment

$$l\_I = \sum_{i=1}^{I} S_{L\_O}^{(1)}{}_{(i)} * l_{(i)}$$

32.3. Aggregate capital stock

$$x_{K\_I}^{(1)} = \sum_{i=1}^{I} S_{K}^{(1)}{}_{(i)} * x_{K}^{(1)}{}_{(i)}$$

32.4. Aggregate land stock

$$x_{LD\_I}^{(1)} = \sum_{i=1}^{I} S_{LD}^{(1)}{}_{(i)} * x_{LD}^{(1)}{}_{(i)}$$

32.5. Aggregate primary factor usage

$$x_{PR\_I}^{(1)} = C_{L\_IO}^{(1)} * l\_I + C_{K\_I}^{(1)} * x_{K\_I}^{(1)} + C_{LD\_I}^{(1)} * x_{LD\_I}^{(1)}$$

32.6. Average nominal wage

$$p_{L\_IO}^{(1)} = \sum_{i=1}^{I} C_{L}^{(1)}{}_{(io)} * p_{L}^{(1)}{}_{(io)}$$

32.7. Average real wage

$$w_{R} = p_{L\_IO}^{(1)} - p_{T}^{(3)}$$

32.8. Average capital rental

$$p_{K\_I}^{(1)} = \sum_{i=1}^{I} R_{K}^{(1)}{}_{(i)} * p_{K}^{(1)}{}_{(i)}$$

32.9. Average land rental

$$p_{LD\_I}^{(1)} = \sum_{i=1}^{I} R_{LD}^{(1)}{}_{(i)} * p_{LD}^{(1)}{}_{(i)}$$

32.10. Index of factor cost

$$p_{PR\_I}^{(1)} = C_{L\_IO}^{(1)} * p_{L\_IO}^{(1)} + C_{K\_I}^{(1)} * p_{K\_I}^{(1)} + C_{LD\_I}^{(1)} * p_{LD\_I}^{(1)}$$

33. Investment Equations

$$g_{K(i)} = x_T^{(2)}{}_{(i)} - x_K^{(1)}{}_{(i)}$$

$$g_{R(i)} = p_K^{(1)}{}_{(i)} - p_T^{(2)}{}_{(i)}$$

$$g_{K(i)} = f_I^{(1)}{}_{(i)} + 0.33 * [\ 2.0 * g_{R(i)} - i_{SLK}\ ]$$

$$x_T^{(2)}{}_{(i)} = x_{T\_I}^{(2)} + f_I^{(2)}{}_{(i)}$$

$$g_{K(i)} = f_I^{(3)}{}_{(i)} + i_{SLK}$$

$$x_{T\_I}^{(2)} = x_T^{(3)} + f_T^{(2)}$$

$$g_{R(i)} = f_{R(i)} + k_{SLK}$$

34. Demand equals supply for labour of each skill

$$x_{L\_I}^{(1)}{}_{(o)} = \sum_{i=1}^{I} C_L^{(1)}{}_{(io)} * x_L^{(1)}{}_{(io)}$$

35. Flexible setting of money wages

$$p_L^{(1)}{}_{(io)} = p_T^{(3)} + f_{L\_IO}^{(1)} + f_{L\_O}^{(1)}{}_{(i)} + f_{L\_I}^{(1)}{}_{(o)} + f_L^{(1)}{}_{(io)}$$

36. Average wage of occupation

$$p_{L\_I}^{(1)}{}_{(o)} = \sum_{i=1}^{I} C_L^{(1)}{}_{(io)} * p_L^{(1)}{}_{(io)}$$

37. Miscellaneous equations

37.1. Indexing of prices of 'other cost' tickets

$$p_{OC}^{(1)}{}_{(i)} = p_T^{(3)} + f_{OC}^{(1)}{}_{(i)}$$

37.2. Consumption function

$$w_T^{(3)} = w_{GDPEXP}^{(0)} + f_T^{(3)}$$

37.3. Basic price of domestic goods

$$p_D^{(0)}{}_{(c)} = p^{(0)}{}_{(c1)}$$

37.4. Basic price of imported goods

$$p_M^{(0)}{}_{(c)} = p^{(0)}{}_{(c2)}$$

Description of Variables and Parameters

Technical change and shift variables

$a_{L\_O}{}^{(1)}{}_{(i)}$ = labour-augmenting technical change by industry

$a_K{}^{(1)}{}_{(i)}$ = capital-augmenting technical change by industry

$a_{LD}{}^{(1)}{}_{(i)}$ = land-augmenting technical change by industry

$a^{(1)}{}_{(cs)i}$ = intermediate input technical change

$a\_s^{(1)}{}_{(c)i}$ = composite input-augmenting technical change

$a_T{}^{(1)}{}_{(i)}$ = all input-augmenting technical change

$a_{PR}{}^{(1)}{}_{(i)}$ = all factor-augmenting technical change

$a_{OC}{}^{(1)}{}_{(i)}$ = 'other cost' tickets-augmenting technical change

$a^{(2)}{}_{(cs)i}$ = investment basic technical change

$a\_s^{(2)}{}_{(c)i}$ = investment composite technical change

$a_T{}^{(2)}{}_{(i)}$ = neutral investment technical change

$a^{(3)}{}_{(cs)}$ = household basic taste change

$a_{SU}{}^{(3)}{}_{(c)}$ = subsistence demand taste change

$a_{LX}{}^{(3)}{}_{(c)}$ = luxury demand taste change

$a\_s^{(3)}{}_{(c)}$ = household composite commodity taste change

$a_{MA}{}^{(1)(cs)i}{}_{(m)}$ = intermediate margin technical change

$a_{MA}{}^{(2)(cs)i}{}_{(m)}$ = investment margin technical change

$a_{MA}{}^{(3)(cs)}{}_{(m)}$ = household margin technical change

$a_{MA}{}^{(4)(c)}{}_{(m)}$ = export margin technical change

$a_{MA}{}^{(5)(cs)}{}_{(m)}$ = government margin technical change

$f_Q{}^{(4)}{}_{(c)}$ = quantity shift in export demands

$f_P{}^{(4)}{}_{(c)}$ = price shift in export demands

$f_{TX}{}^{(0)}{}_{(c)}$ = general sales tax shifter

$f_{TX}^{(1)}$ = uniform % change in power of tax to intermediate

$f_{TX}^{(2)}$ = uniform % change in power of tax to investment

$f_{TX}^{(3)}$ = uniform % change in power of tax to households

$f_{TXT}^{(4)}$ = uniform % change in power of tax to traditional exports

$f_{TXNT}^{(4)}$ = uniform % change in power of tax to non-traditional exports

$f_{TX}^{(5)}$ = uniform % change in power of tax to government

$f_{QNT}^{(4)}$ = uniform quantity shift for collective exports

$f_{PNT}^{(4)}$ = uniform price shift for collective exports

$f^{(5)}_{(cs)}$ = government demand shift

$f_{T}^{(5)}$ = overall shift term for government demands

$f_{T2}^{(5)}$ = ratio between $f_{T}^{(5)}$ and real household consumption ($x_{T}^{(3)}$)

$f_{X}^{6)}{}_{(cs)}$ = shifter on rule for stocks

$f_{I}^{(1)}{}_{(i)}$ = shifter to enforce DPSV investment rule

$f_{I}^{(2)}{}_{(i)}$ = shifter for exogenous investment rule

$f_{I}^{(3)}{}_{(i)}$ = shifter for long-run investment rule

$f_{T}^{(2)}$ = ratio of investment to consumption

$f_{R(i)}$ = shifter to lock together industry rate of return

$f_{L\_IO}^{(1)}$ = overall wage shifter

$f_{L\_O}^{(1)}{}_{(i)}$ = industry-specific wage shifter

$f_{L\_I}^{(1)}{}_{(o)}$ = occupation-specific wage shifter

$f_{L}^{(1)f}{}_{(io)}$ = wage shift variable

$f_{OC}^{(1)}{}_{(i)}$ = shift in prices of ‘other cost’ tickets

$f_{T}^{(3)}$ = ratio of consumption to GDP

Demand- and supply-related variables

$x_{L}^{(1)}{}_{(io)}$ = employment by industry and occupation

$x_{L\_O}^{(1)}{}_{(i)}$ = effective labour input

$x_{PR}^{(1)}{}_{(i)}$ = primary factor composite

$x_{K}^{(1)}{}_{(i)}$ = current capital stock by industry

$x_{LD}^{(1)}{}_{(i)}$ = use of land by industry

$x^{(1)}{}_{(cs)i}$ = intermediate input demands

$x\_s^{(1)}{}_{(c)i}$ = intermediate input composite

$x_{T}^{(1)}{}_{(i)}$ = activity level or value added

$x_{OC}^{(1)}{}_{(i)}$ = demands for 'other cost' tickets

$x_{C}^{(0)}{}_{(c)}$ = output of commodities

$x_{D}^{(0)}{}_{(c)}$ = output of commodities for local market

$x^{(2)}{}_{(cs)i}$ = investment basic demands

$x\_s^{(2)}{}_{(c)i}$ = investment demands for composite commodities

$x_{T}^{(2)}{}_{(i)}$ = investment by using industry

$x_{T\_I}^{(2)}$ = aggregate real investment expenditure

$x^{(3)}{}_{(cs)}$ = household basic demands

$x\_s^{(3)}{}_{(c)}$ = household demands for composite commodities

$x_{LX}^{(3)}{}_{(c)}$ = household luxury demands

$x_{SU}^{(3)}{}_{(c)}$ = household subsistence demands

$x_{T}^{(3)}$ = real household consumption

$x^{(4)}{}_{(c)}$ = export basic demands

$x_{NT}^{(4)}$ = collective (or non-traditional) export composite

$x^{(5)}{}_{(cs)}$ = government basic demands

$x_{MA}^{(1)(cs)i}{}_{(m)}$ = intermediate margin demands

$x_{MA}^{(2)(cs)i}{}_{(m)}$ = investment margin demands

$x_{MA}^{(3)(cs)}{}_{(m)}$ = household margin demands

$x_{MA}^{(4)(c)}{}_{(m)}$ = export margin demands

$x_{MA}^{(5)(cs)}{}_{(m)}$ = government margin demands

$x_{M}^{(0)}{}_{(c)}$ = total supplies of imported goods

$x_{M\_C}^{(0)}$ = import volume index, duty paid weights

$x_{K\_I}^{(1)}$ = aggregate capital stocks, rental weights

$x_{LD\_I}^{(1)}$ = aggregate land stocks, rental weights

$x_{PR\_I}^{(1)}$ = aggregate primary factor use (excluding technical change)

$x_{L\_I}^{(1)}{}_{(o)}$ = employment by occupation

$q^{(1)}{}_{(c)i}$ = supplies of commodities by industry

$l_{(i)}$ = employment by industry, wage bill weights

l_I = aggregate employment, wage bill weights

Price-related variables

$p_{L}^{(1)}{}_{(io)}$ = wages by industry and occupation

$p_{L\_O}^{(1)}{}_{(i)}$ = wages of labour composite by industry

$p_{PR}^{(1)}{}_{(i)}$ = effective price of primary factor composite

$p_{K}^{(1)}{}_{(i)}$ = rental cost of capital by industry

$p_{LD}^{(1)}{}_{(i)}$ = rental cost of land by industry

$p^{(1)}{}_{(cs)i}$ = purchaser prices of intermediate inputs

$p\_s^{(1)}{}_{(c)i}$ = prices of intermediate input composite

$p_{Q}^{(1)}{}_{(c)i}$ = price of commodity c produced by industry i

$p_{T}^{(1)}{}_{(i)}$ = average input/output price

$p_{C}^{(0)}{}_{(c)}$ = general output price of locally produced commodity

$p_{D}^{(0)}{}_{(c)}$ = basic price of domestic goods

$p_{E(c)}$ = basic price of exportables

$p^{(2)}_{(cs)i}$ = purchaser price of investment

$p\_s^{(2)}_{(c)i}$ = investment price of composite commodities

$p_T^{(2)}_{(i)}$ = cost of units of capital

$p^{(3)}_{(cs)}$ = household purchaser price

$p\_s^{(3)}_{(c)}$ = household price of composite commodities

$p_T^{(3)}$ = consumer price index

$p_F^{(4)}_{(c)}$ = foreign currency export prices

$p^{(4)}_{(c)}$ = purchaser prices of exports in local currency

$p_{NT}^{(4)}$ = average price of collective exports

$P^{(0)}_{(cs)}$ = basic prices in level forms

$p^{(0)}_{(cs)}$ = basic prices for local users (in percentage-change forms)

$p^{(5)}_{(cs)}$ = government purchaser price

$p_{GDPEXP}^{(0)}$ = GDP price index from expenditure side

$p_T^{(4)}$ = export price index, local currency

$p_{CIF\_C}^{(0)}$ = c.i.f import price index, local currency

$p_M^{(0)}_{(c)}$ = import price of goods C or basic price of imported goods C ($p^{(0)}_{(c2)}$)

$p_{F\_CIF}^{(0)}_{(c)}$ = foreign currency import (c.i.f) prices

$p_{M\_C}^{(0)}$ = duty-paid import price index, local currency

$p_{TOT}^{(0)}$ = terms of trade

$p_{DE}^{(0)}$ = real devaluation

$p_{L\_IO}^{(1)}$ = average nominal wage

$p_{L\_I}^{(1)}_{(o)}$ = average wage of occupation

$p_{K\_I}^{(1)}$ = average capital rentals

$p_{LD\_I}^{(1)}$ = aggregate land rentals

$p_{PR\_I}^{(1)}$ = index of factor cost (excluding technical change)

w_R = real wage

$p_{OC}^{(1)}{}_{(i)}$ = price of 'other costs' tickets

Tax and ordinary-change variables

$t^{(1)}{}_{(cs)i}$ = power of tax on sales to intermediate

$t^{(2)}{}_{(cs)i}$ = power of tax on sales to investment

$t^{(3)}{}_{(cs)}$ = power of tax on sales to households

$t^{(4)}{}_{(c)}$ = power of tax on sales to exports

$t^{(5)}{}_{(cs)}$ = power of tax on sales to government

$t_M{}^{(0)}{}_{(c)}$ = power of tariff

$\Delta x^{(6)}{}_{(cs)}$ = inventory demands (ordinary change)

$\Delta Sale_{(c1)u}$ = sales aggregates (excluding export) of local categories

$\Delta Sale_{(c2)u}$ = sales aggregates (excluding export) of imported categories

ΔB = nominal trade balance/ nominal GDP

Miscellaneous variables

q = number of households

u = household utility

Φ = exchange rate (local currency/$world)

$w_{LX}^{(3)}$ = total nominal luxury expenditure

$w_T^{(3)}$ = nominal total household consumption

$w_{GDPEXP}^{(0)}$ = nominal GDP from expenditure side

$w_T^{(4)}$ = local currency border value of exports

$w_{CIF\_C}^{(0)}$ = c.i.f. local currency value of imports

$w_{M\_C}^{(0)}$ = value of imports plus duty

$g_{K(i)}$ = gross growth rate of capital (= investment/capital)

$g_{R(i)}$ = gross rate of return (= rental/price of new capital)

i_{SLK} = investment slack variable for exogenising total investment

k_{SLK} = slack variable to allow fixing aggregate capital

Parameters

$\sigma_L^{(1)}{}_{(i)}$ = substitution elasticities between skill types

$\sigma_{PR}^{(1)}{}_{(i)}$ = substitution elasticities between primary factors

$\sigma^{(1)}{}_{(c)}$ = Armington substitution elasticities between dom and imp sources

$\sigma_O^{(1)}{}_{(i)}$ = transformation elasticities of output

$\sigma^{(2)}{}_{(c)}$ = Armington investment elasticities

$\sigma^{(3)}{}_{(c)}$ = household Armington elasticities

Ψ = reciprocal of transformation elasticities ($\Psi = 0.0$)

$\gamma_{(c)}$ = individual export demand elasticities

γ_{NT} = collective export demand elasticities

Sale and Cost Shares

The sale and cost shares are denoted by capital letters such as S's, M's, B's, C's, R's and V's. These shares are calculated directly from the I-O database.

Annex 14- EFs' Budget and Expenditures ($US million) by October, 2001

	Total	Central	Local	GCs-91
Fund Balance	35.97	9.87	18.44	7.66
Total Budget	62.28	22.50	27.09	12.70
Total Expenditures, of which:	26.32	12.63	8.65	5.04
Training & re-training	0.80	0.27	0.39	0.13
Subsidies for redundant workers	0.43	0.06	0.16	0.21
Payments for social insurance	0.04	0.00	0.04	0.00
Help employees buy preferential shares	0.59	0.26	0.06	0.26
Financial subsidies for SOEs	9.94	1.58	4.35	4.01
Investment subsidies for equitised SOEs	2.91	0.11	2.53	0.27
Equitisation costs & other expenses	11.62	10.34	1.13	0.16

Note: Data was compiled and re-edited with currency conversion from VND to USD by the author (by 2001, 1 USD = 15,000 VND, approximately).
Source: Nguyen (2010).

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