MPIA Working Paper 2012-02

Privatization and Poverty Reduction in Vietnam
Optimal choices and its potential impacts

NGOC Q. PHAM

ngoc.pham@markets4poor.org , *pqngoc@yahoo.com*

PIERRE MOHNEN

p.mohnen@maastrichtuniversity.nl

April 2012

IDRC photo: N. McKee

Abstract

Since its transition from a centrally planned economy to a market economy, Vietnam has been under pressure to reduce the size of the state-owned sector. In this process, the private sector has emerged. The objective of this paper is to examine how the privatization could contribute better to economic growth and hence further accelerate poverty reduction in Vietnam. We use the multi-sectorial integrated activity analysis model, and apply it to the data of the Vietnamese economy in 2007 to measure the impacts of ownership restructuring on economic growth. If labour and capital could reallocate across sectors and type of ownership, what would be the optimal allocation of activities and the feasible level of domestic final demand? Factor inputs are capital and four types of labour, namely technicians, high skilled, low skilled and unskilled workers. The model keeps track on asymmetric mobility of labour endowments by skill levels.

Main contributions of this paper are fourfold. First, we demonstrate that that at the optimum, privatization does not mean to weaken the economic power of state sector. Second, we propose a specific pattern of SOE reform for Vietnam. Third, alternative experiments on the mobility of labour to shows that there is a trade-off between further privatization toward economic efficiency gain and job-creation in Vietnam, which means privatization does not contribute to job creation. Last, the paper shows that current skill situation of Vietnam's labour force will be a 'bottle neck' for Vietnam economic growth in the near future.
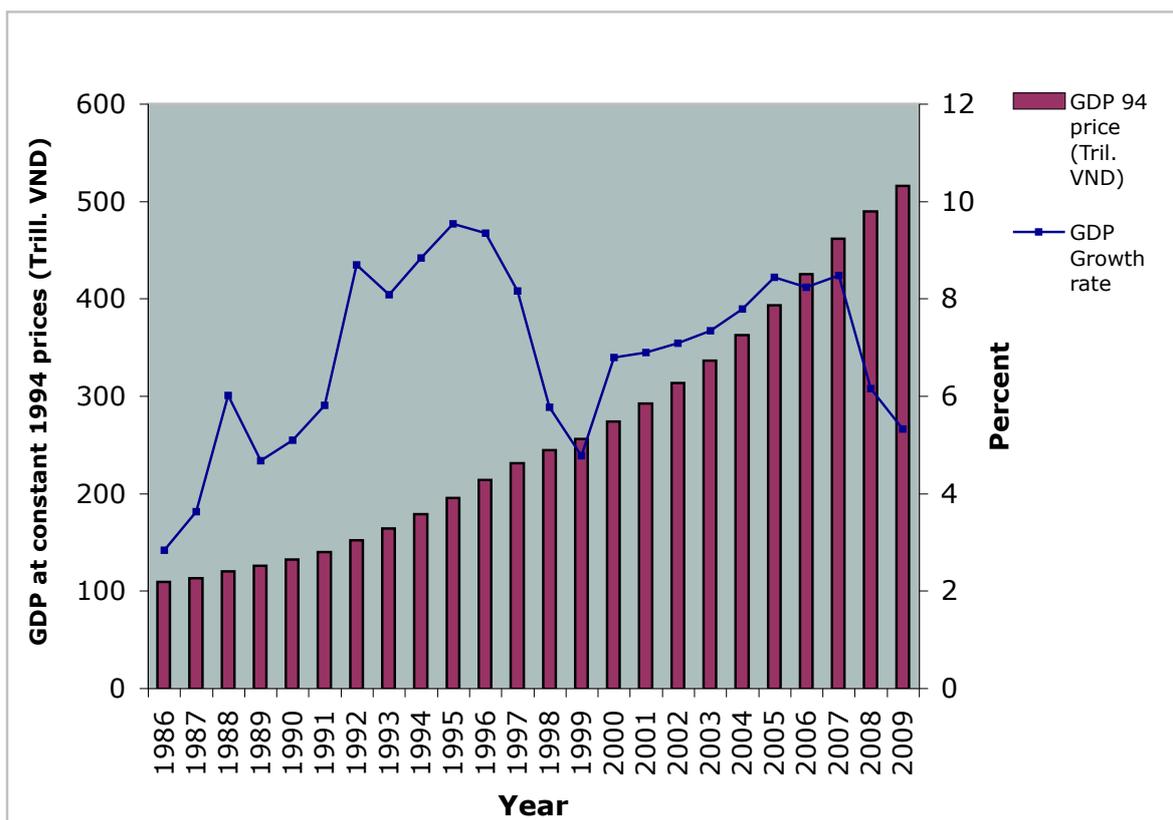
1 Introduction

Since 1986 Vietnam has made the transition from a centrally planned to a market economy. One of the most striking features of Vietnam's transition has been the steady growth of output (see figure (1)) and remarkable achievement of poverty reduction without widening inequality (Klump, 2007).

FIGURE 1. Economic Growth in Vietnam, 1985-2009

Source: Tran Van Tho *et al.* (2000) for data to 1990, post 1990 data from General Statistic Office (GSO) (2008, 2009)

Vietnam's rapid economic growth is marked by the state owned enterprise reform (SOE reform) and the emergence of viable private sector, which has been facilitated by a new legal framework for private enterprises.

When Vietnam was a centrally planned economy, government and state owned enterprises (SOEs) (including co-operatives) were the only two sectors. All economic activities were planned and controlled by the government. The labour and capital markets were no exception. Based on the overall plan laid down by the government, the number of workers as well as the capital stocks allocated for each organization were determined by their respective administrative units. A salary budget was allocated and workers were paid according to a predetermined scale.

The inefficiency of the central planned system resulted in the collapse of many SOEs, forcing the government to embark on an economic reform, often known as *"Doi Moi"* *(Renovation)*. The economic reform, unveiled in 1986, represented a significant step towards a market-oriented economy. One important feature during the reform was the gradual demise of SOEs and the gradual expansion of private firms. The number of SOEs dropped from some 12,000 to 6,020 by the end of 1996 (of which 1,140 enterprises belonging to state corporations, 500 centrally-controlled state enterprises, and 4,380 locally-controlled state enterprises) (Webster and Amin, 1998). More than 10 years later, the total number of SOEs was roughly 2,176 in 2007 (CIEM, 2007).

The SOE reform and the emergence of the private sectors significantly affected the quantity and quality of job creation in Vietnam (Klump, 2007). Along with the falling number of SOEs, the level of employment in SOEs has decreased dramatically since the launch of *"Doi Moi"* (O'Conner, 1996). Between 1986 and the mid-1990s, total state sector employment dropped by over a quarter (Liu, 2004). By the end of 1996, Vietnamese state enterprises employed about two million people (Webster and Amin, 1998). In terms of the share in labour market, state sector employment in 1986 accounted for about 15% of total employment. During 1991 to 1999, employment share of SOEs dropped form 6.5% to 4.8% (Vo, 2000). In contrast, employment in the (formal) private sector more than doubled between 1996 and 2000 (World Bank, 2001) and the number of jobs created by the private sector was three times higher than those created by SOEs (Liu, 2004).

The SOE reform first gave the enterprises more autonomy and flexibility in their decision making. The real privatization of SOEs started in 1992. This was to be accomplished through sales of enterprise shares to employees on preferential terms, to domestic private and public investors, and to foreign investors on a limited basis. The opening of Ho-Chi-Minh City Securities Trading Center (HoSTC) in 2000 (was upgraded to Ho-Chi-Minh City Stock Exchange (HOSE) in 2007) and Hanoi Securities Trading Center (HASTC) in 2005 enabled shares of SOEs to be traded in the secondary market on listed bourses. So far, there are 249 share and fund certificate items listed on the Ho-Chi-Minh City Stock Exchange and Hanoi Stock Exchange (138 on HOSE and 111 on HASTC) (Vietnamese Economic Time, 2007). In 2007, the stock market value equaled 40% of GDP, far exceeding the 25-30% level set by the Prime Minister. It is expected that the market capitalization value in 2008 would be as much as 50-60% of GDP (Vietnam Economic Time, 2008). The Vietnamese government indicated its commitment to speed up the pace of privatization in order to meet the increasing demand of the stock market. Currently, the number of listed companies just accounts for 2% of total joint stock companies now operational in Vietnam (Vietnam Economic Time, 2008).

However, the SOEs reform did not mean to weaken their economic power. That the share of state sector in GDP was firmly increasing during the period of privatization (see Figure (2)) reflects '*Hanoi's consensus*' on the '*dominating role of state sector*' as a fundamental characteristic of the '*socialism-oriented market economy*' (Ngoc *et al.*, 2006). Figure (2) shows that since 1990, the state sector's share in GDP had kept increasing until 1995 and standing constant for a quite long period of time. This discloses a fact that SOE restructuring programs only aims at strengthening the state sector. Especially, the year 1996 observed a series of conservative policies (Womack, 1997). In June 1996, the Eighth Party Congress reemphasized the "leading role" of the state sector as a strategic task.[1] The state investment hence accelerated with a pace more rapid than any other period (see Figure (3)).

FIGURE 2. Structure of GDP at current price by ownership, 1990-2008
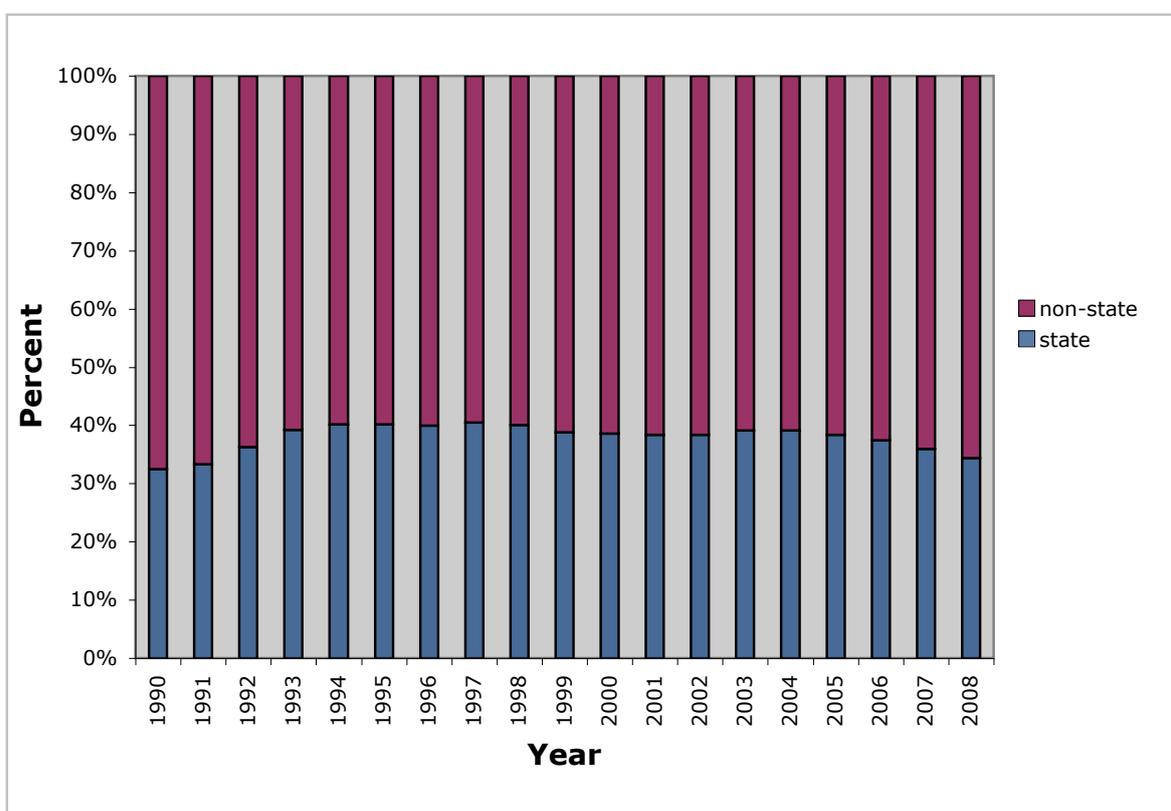
Source: 1990-94 data (GSO, 1996) and post-1994 data (GSO, 2008).

In summary, Vietnam has achieved an impressive record of GDP growth in the transition period. Accompanying this growth is some degree of ownership restructuring. This compositional change results from the decline of the number of SOEs, the emergence of the private sectors, and the movement of employment to the private sector, resulted via both

[1] In the draft of Political Report, it was suggested to increase the state sector's share in GDP from current 40% to 60%, but then softened to a "leading role" (Womack 1997)

absorbing retrenched SOE workers and new job creation of this sector. This has prompted questions about whether or not as the case of other countries, ownership restructuring fuelled by privatization is an important source of growth. Another view would be that privatization is an important and main driver of poverty reduction. This view receives some support from Klump (2007). In his study on pro-poor growth in Vietnam, he argues that "new legal framework for private enterprises, which facilitated the emergence of private sectors and the movement of employment from informal to formal sector industry and services … significantly affected the quality and quantity of job creation in Vietnam" and hence "income growth and poverty reduction occurred in both urban and rural area" (Klump, 2007, p.120).

FIGURE 3. Structure of Investment at current price by ownership, 1990-2008
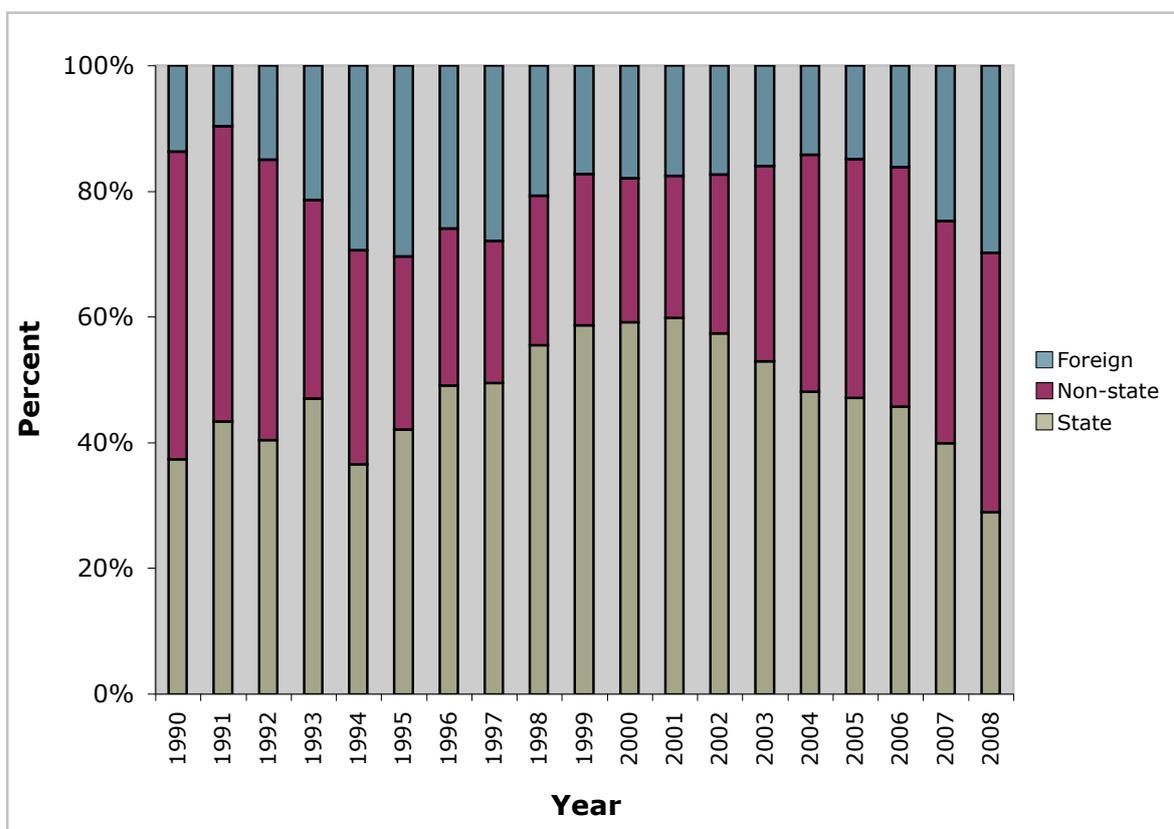
Source: Pham & Le (2003) for 1990-94 data, GSO (2008) for post-1994 data.

The main objective of this proposed study is: *to analyze the impacts of privatization on economic growth and to understand under what conditions, privatization would result in higher poverty reduction*.[2] In this paper we focus on the optimum distribution of economic activity across ownership structure.

If labour and capital could relocate across sectors and types of ownership, what would be the optimal allocation of activities and the feasible level of domestic final demand? And hence, as privatization proceeds, what accounts for these differences in terms of job-creation households' expenditure and inequality? The paper also addresses some key economic

policies namely privatization policy, foreign investment policy and national strategy for technological improvement and poverty reduction.

2 Background

Economists have recognized the impacts of ownership structural change caused by privatization on economic growth. The impact of privatization on firm-specific productivity growth was examined by Ehrlich, Gallais-Hamonno, Liu and Lutter (1994). They focus on the effect of state versus private ownership on the rates of firm economic performance. Their model and empirical results show the link between ownership and firm-specific rates of productivity growth. They argue that, the shift from completely state-ownership to full private ownership can increase the long-run annual rate of TFP growth. However, the result shows that in the short-run, this effect is expected to be ambiguous theoretically.

Megginson and Netter (2001) investigate the process of privatization. After being privatized firms raise its productivity, increase its investment and lower its prices. Consequently, the performance is improved and as state-owned firms produce only a fraction of GDP, they argue that such improvements translate into a gain in aggregate growth.

Another study on the impacts of privatization is on the increase of foreign-owned shares in domestic firms on economic performance of developing countries by Henry (2003). He argues that the developing countries would benefit from opening themselves to investment from overseas. As the shares held by foreigners increases, the whole economy growth averaged 1.1 percent points higher after liberalization than before.

Privatization, according to McMillan (2004), is generally beneficial economically, particularly for transition economies, but not a sole driven force of improving economic performance. McMillan argues that state-owned firms depend on their economic environment for improving their performance. He points out that the experience of 'big bang' reform – such as too fast privatization – justifies the caution to 'avoid hubris' because some mistakes create a new problem of state capture and underdeveloped institutions. However, Havrylyshyn (2004) offers two caveats, which firmly support the arguments that (i) the benefits of privatization without a proper accompanying climate of open competition and the rule of law maybe very small or even negligible; and (ii) privatization has resulted in a strong concentration of ownership, "it created unintended consequences of speeding up privatization by co-opting insiders and then may have been the most important error of reform advocates and certainly one area where humility is called for" (Havrylyshyn, 2004, p. 40) .

There is a paucity of studies on impact of SOE reform and/or privatization on poverty reduction in Vietnam. Huong et al (2003) calculates the employment elasticity of growth and finds that during 1992-1997, the elasticity was highest in agriculture where productivity

remained low. She argues that this is because agriculture absorbed jobless rural youth and workers retrenched by SOE reform, and hence agriculture growth made its effect on poverty reduction, mainly in the South of Vietnam.

In his study, Klump (2007) argues that privatization in Vietnam, and the emergence of private sector significantly affected the quality and quantity of job creation. Job creation along with income growth as a consequent of the reform process is a combining factor input to shrink poverty. Although showing that there is a increasing trend of job creation in the private non-farm sector, Klump is not certain about positive impact of privatization on poverty reduction without widening inequality.

This proposed study aims at making a contribution on literature of privatization and fill in the gap by studying on the translating impacts of privatization under various scenarios of mobility of labour into poverty reduction and inequality. The study also contribute to the literature of general equilibrium by applying new technique, which was first developed by ten Raa and Mohnen (2002), and its variant by Ngoc and Mohnen (2004).

3 Methodology

3.1 The general equilibrium

We use a variant of general equilibrium (GE) model which was first developed by ten Raa and Mohnen (2001) when they propose a new way to locate the comparative advantages of two economies linked by international trade. ten Raa and Mohnen (2002) also apply this kind of general equilibrium model to estimate total factor productivity growth and decompose TFP in to technical change and term of trade effect (2002). Since then some researches have applied this kind of modeling in investigating competitive pressures on China in terms of income inequality and migration (ten Raa and Pan, 2005). And recently ten Raa and Sahoo (2007) use this general equilibrium model to examine competitive pressure on the Indian households.

The model uses the input-output tables of the Vietnamese economy to measure the impacts of ownership restructuring on economic growth. The basic idea is that: if labour and capital could be reallocated across sectors and types of ownership, what would be the optimal allocation of activities and the feasible level of domestic final demand? The basic idea of the efficient allocation of resources can be illustrated graphically in Figure (4) follows.

According to ten Raa and Mohnen (2002) a basic model for an open economy with two commodities works as follows:

> " Net output is given by vector y. Trade moves it to the domestic final consumption vector, f. (Domestic final demand is consumption plus investment, but not net exports. Note that commodity 1 is exported and commodity 2 imported.) Trade is a means to align domestic final consumption with the preference. Assuming a Leontief welfare function, the optimum is

attained by expanding vector f in its own direction, up to fc, where c is the expansion vector. In figure 1 this is achieved by three things. Production y is pushed to the production possibility frontier (the curved line), reallocated in favor of output 2, yielding point $y*$, and the pattern of trade is changed (exporting commodity 2 and importing commodity 1). The frontier of domestic final consumption, fc, is attained by the elimination of slack and the reallocation of resources across sectors. Expansion vector c is a negative measure for efficiency. If $c = 1$, the economy is already at its optimum. If $c = 1.1$, the economy's potential is 10% more than actual performance." (ten Raa and Mohnen, 2002, pp. 114-115)

FIGURE 4. Movement toward the production possibility frontier and gain optimal net output
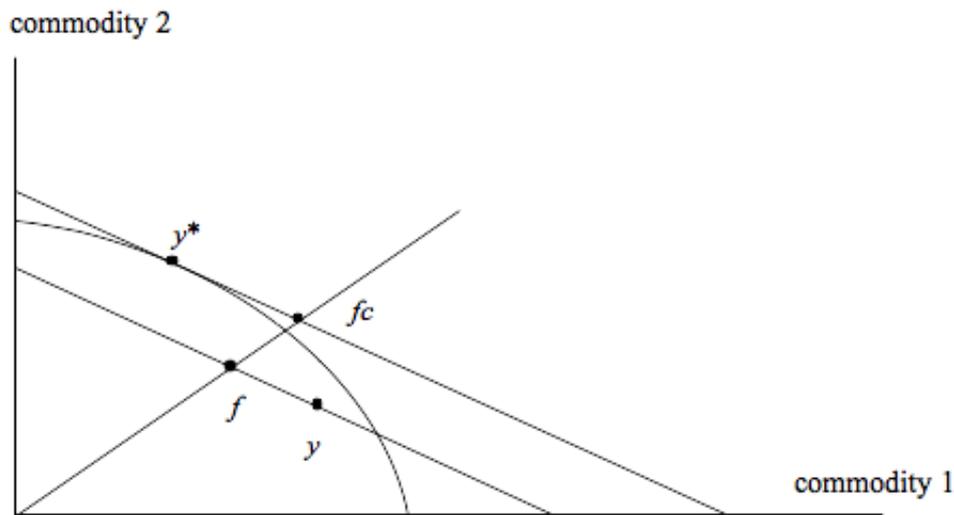
In this study we set up a GE model for both an open and a closed economy, with fixed domestic endowments, and tradeable and non-tradeable commodities (only with open economy mode). We assume the Leontief functions for the technologies and preferences. The efficient allocation of resources is obtained by pushing the economy to its frontier by maximizing the level of domestic final demand.

In our model privatization is an optimal choice of ownership structure. We do not analyze the *ex post* privatization but the *ex ante* one. The reason for doing this comes from the fact that privatization during almost two decades in Vietnam still reflects 'Hanoi's consensus' on the 'dominating role of state sector', hence there is no guarantee that the SOE reform has been well conducted and its assumed contribution to economic growth and poverty reduction are not well analyzed.

By investigating the optimal choice of privatization and its impacts on poverty reduction we assume that future privatization happens under the condition that trade is taken as exogenously fixed at actual observed levels for all commodities. Reasons for doing this are as follows:

(i) Some roles could always be given to international trade as a means to improve equality and reduce poverty; hence in an open economy mode poverty is under a dual-impact of privatization and international trade. Close economy mode, by its nature, helps us to isolate international trade and therefore impact of privatization on poverty could be measured in a more accurate way.

(ii) If we allow free trade and perfectly elastic foreign demand, the economy would specialize in production of few commodities for export and import all other tradable commodities for domestic demands Since the assumption that Vietnam can specialize only on production and export of some particular products is very weak, we prefer pursuing the analysis in the context of a closed economy.

3.2 Factor inputs

Factor inputs are capital and labour, which are available by 69 sectors in the input-output table. Both capital and labour are decomposed into 5 types of ownership namely central-state-owned, local-state-owned, 100% domestically private-owned, 100% foreign-owned and foreign joint-venture.

Both capital and labour are also modeled as being fully mobilized across sectors and types of ownership. Ideally, it is worth to test the model at which capital is modeled as being sector-specific as in the short-run, capital stocks are sector specific and quite immobile (such as machine buildings or lands are not to be assigned easily from one to other industries). However, by assuming the non-mobility of capital across sectors, the constraints are increased by a number of sectors. Thus when the number of variables stays, an increase in number of constraints could then lead to an increase in possibility of co-linearity (matrix singular) and/or (under the high rigidity of mobility) an increase in possibility of trivial solution. These technical difficulties lead us to the choice of non-capital-specific model.

There is evidence that poverty measures are sensitive to factor endowments; as poor people seem to be less educated, less qualified and less equipped than rich people. Taking this point into account, in this scenario, we consider different categories of labour in this mode. For each type of ownership, labour is decomposed into four types depending on skill levels namely technicians, high skilled, low skilled and unskilled workers.

Hence, we assume top down hierarchy movement of labour across skill levels. This approach follows ten Raa and Pan (2005), and the we define the rule of labour movement as the following: (i) technicians can do their own job and also capable of doing high skilled, low

skilled and unskilled works; (ii) high skilled workers can do their own job as well as low skilled and unskilled works; and (iii) low skilled workers can do their own job as well as unskilled works; and (iv) unskilled workers can only perform their own jobs.

According to ten Raa and Pan (2005), the labour constraints for each type of ownership $i = 1,..,5$ could be written as follows:

(1)
$$\sum_i l_i^1 s_i \leq \sum_i N_i^1$$
$$\sum_i \left(l_i^1 + l_i^2\right)s_i \leq \sum_i \left(N_i^1 + N_i^2\right)$$
$$\sum_i \left(l_i^1 + l_i^2 + l_i^3\right)s_i \leq \sum_i \left(N_i^1 + N_i^2 + N_i^3\right)$$
$$\sum_i \left(l_i^1 + l_i^2 + l_i^3 + l_i^4\right)s_i \leq \sum_i \left(N_i^1 + N_i^2 + N_i^3 + N_i^4\right)$$

where:

l_i^1 row vector of technicians' employment in ownership type i [# of sector] with respect to the labour forces N_1^i

l_i^2 row vector of high skilled workers' employment in ownership type i [# of sector] with respect to the labour forces N_2^i

l_i^3 row vector of low skilled workers' employment coefficients in ownership type i [# of sector] with respect to the labour forces N_3^i

l_i^4 row vector of unskilled workers' employment coefficients in ownership type i [# of sector] with respect to the labour forces N_3^i

s_i activity vector of ownership type i [# of sector] with respect to the labour forces N_4^i

In equation (1) the first constrains demand for technicians. The second constrains demand for high skilled workers as well as the redundant technicians. The third constrains demand for low skilled workers as well as the redundant high skilled workers and technicians. And the last constrains demand for not only unskilled workers but also the redundant technicians and high skilled and low skilled one for who are not employed at the three top levels. In the optimum allocation, the three constraints pick up the shadow prices. The shadow price of unskilled workers (the Lagrange multiplier associated with the last constraint) could be used as a based wage. The shadow prices of the first, the second and the third constraints are technician's premium and high skill premium and low skill premium. As the technical could do any job, hence the wage of a technician will be the sum of based wage and the other three

premiums. In case the first constraint is not binding, the technician premium is zero but the wage of a technician still be the base wage plus the high skill and low skill premiums. This shows that wages will increase by skill.

3.3 The models

There are two modes are modeled, namely mode I and mode II.

Mode I. In Mode I we do not differentiate between types of ownership. This means that the dimension of activity level vector s^1 is [# of sectors].

The model works as follows. The primal program is:

(2)
$$\max_{s^1, c^1} e^\top f c^1 \text{subject to}$$

$$\left(V^\top - U \right) s^1 \ge f c^1 + g$$
$$L^1 s^1 \le N^1$$
$$\left(L^1 + L^2 \right) s^1 \le N^1 + N^2$$
$$\left(L^1 + L^2 + L^3 \right) s^1 \le N^1 + N^2 + N^3$$
$$\left(L^1 + L^2 + L^3 + L^4 \right) s^1 \le N^1 + N^2 + N^3 + N^4$$
$$K s^1 \le M$$
$$s^1 \ge 0$$

where the endogenous variables (s^1, c^1) and all other variables and parameters are defined as follows [with dimensions in brackets]:

s^1 activity vector [# of sectors]

c^1 level of domestic final demand [scalar]

g vector of net export [# of tradable commodities]

e unit vector of all components one

$\top$ transposition symbol

f domestic final demand [# of commodities]

X vector of gross output

V make table [# of sectors by # of commodities]

U use table [# of commodities by # of sectors]

K capital stock row vector [# of sectors]

L^1 row vector of technicians' employment [# of sector] with respect to the labour forces N^1 [scalar]

L^2 row vector of high skilled workers' employment [# of sector] with respect to the labour forces N^2 [scalar]

L^3 row vector of low skilled workers' employment [# of sector] with respect to the labour forces N^3 [scalar]

L^4 row vector of unskilled workers' employment [# of sector] with respect to the labour forces N^4 [scalar]

M capital endowment [scalar]

Associated to this primal program is the following dual program:

(2) $$\min_{p,r,w^3 0} rM + wN \text{ subject to}$$

$$p\left(V^\top - U\right) \pounds rK + wL$$
$$pf = e^\top f$$

The variables in the dual program are the shadow prices p of commodities, r of capital, w of labour, and e of foreign debt (the exchange rate). Since the commodity constraint in the primal program has a zero bound, p does not show up in the objective function of the dual program. p is normalized by the second dual constraint, essentially about unity.

Mode II. In Mode II, we apply the 5-type-of-ownership split to all # of sector of the input-output tables. Now each production sector will be split into five sub-sectors corresponding to five types of ownership. Therefore, the dimension of activity level increases to [# of sectors times # of ownership types]. The primal program is the variant of the equation (1) as follows:

(3) $$\max_{s^2,c^2} e^\top fc^2 \text{ subject to}$$

$$\left(V_{split}^\top - U_{split}\right)s^2 \, ^3 \, fc^2 + g =: F$$
$$\left(L_1^1 \sim L_2^1 \sim L_3^1 \sim L_4^1 \sim L_5^1\right)s^2 \pounds N^1$$
$$\left(\left(L_1^1 + L_1^2\right) \sim \left(L_2^1 + L_2^2\right) \sim \left(L_3^1 + L_3^2\right) \sim \left(L_4^1 + L_4^2\right) \sim \left(L_5^1 + L_5^2\right)\right)s^2 \pounds N^1 + N^2$$
$$\left(\left(L_1^1 + L_1^2 + L_1^3\right) \sim \left(L_2^1 + L_2^2 + L_2^3\right) \sim \left(L_3^1 + L_3^2 + L_3^3\right) \sim \left(L_4^1 + L_4^2 + L_4^3\right) \sim \left(L_5^1 + L_5^2 + L_5^3\right)\right)s^2 \pounds N^1 + N^2 + N^3$$
$$\left(\left(L_1^1 + L_1^2 + L_1^3 + L_1^4\right) \sim \left(L_2^1 + L_2^2 + L_2^3 + _2^4\right) \sim \left(L_3^1 + L_3^2 + L_3^3 + L_3^4\right) \sim \left(L_4^1 + L_4^2 + L_4^3 + L_4^4\right) \sim \left(L_5^1 + L_5^2 + L_5^3 + L_5^4\right)\right)s^2 \pounds N^1 + N^2 + N^3 + N^4$$
$$\left(K_1 \sim K_2 \sim K_3 \sim K_4 \sim K_5\right)s^2 \pounds M$$
$$s^2 \, ^3 \, 0$$

where

s^2 activity vector [# of sectors times # of ownership types]

c^2 level of domestic final demand [scalar]

$V_{split}^\top$ matrix resulted from splitting columns of $V^\top$ by type of ownership

U_{split} matrix resulted from splitting columns of U by type of ownership

F final demand [# of commodities]

L_i^j labour employment vector of ownership category i ($i = 1, 2,…,5$), and with respect to skill level j ($j = 1, 2, ..4$) [# of sector]

N^j the labour forces with respect to skill level j ($j = 1, 2, ..4$) [scalar].

K_i ($i = 1, 2,…,5$) capital stock vector in ownership category i [# of sector]

M Capital endowment [scalar].

$\sim$ horizontal concatenation operator.

3.4 Remarks

1. U_{split} table and V_{split} table are disaggregated table by types of ownership. The U_{split} and V_{split} matrix has the dimension of [# of sectors, # of sectors times # of ownership types].

2. As U_{split} and V_{split} exist only with respect to the number of industries and types of ownership, hence U_{split} and V_{split} matrices have to be unsplit with respect to different levels of skill. Therefore in mode II instead of extending the number of activities even further towards different levels of skill, we increase the number of labour constraints on labour by level of education/skill, allowing more educated workers to work in less education-requiring jobs.

3. M was computed by multiplying the total observed capital stock by capital utilization rate.

4. N was computed by dividing the total labour employment by labour utilization rate, which is available by skill levels**.**

4. Data

The study requires data complied from several sources.

The data on sectorial gross output, labour and capital stock by five types of ownership are available from The Annual Enterprise Survey conducted by the General Statistics Office of Vietnam (GSO) (which is available since 2000). The sectorial classification of enterprises is at five-digit level of Vietnam Standard Industrial Classification 2007 (VSIC 2007).

We use the national input-output tables of 2007 published by the GSO of Vietnam, which is the latest national benchmark I-O table, compiling based on direct full survey and was released in the year 2010. The Vietnam input-output table of 2007 classifies the commodity and industry into 138 three-digit level commodities/industries.[2] However in order to make a concordance of the input-output table classification with VSIC 2007 classification we have to aggregate the 138 sectors of the 2007 national benchmark I-O table into a 69-sector.

We use the I-O table, in which V table and U table are disaggregated by types of ownership. The new use matrix (U_{split}) and make matrix (V_{split}) have the dimension of [# of sectors, # of sectors times # of ownership types]. U_{split} and V_{split} contain some missing cells, which according to the input-output database are not active ownership sub-sectors in 2007. We are obliged to make the assumption that these inactive sub-sectors will not be activated at the optimal solution in which the economy operates at the production possibility frontier.

The data on labour unemployment rate and capacity utilization rate are from the MOLISA labour and employment surveys published by the Ministry of Labour Invalids and Socio Affairs (MOLISA) of Vietnam (MOLISA, 2009).

5. Results

5.1. Impact on economic growth

TABLE 1. The optimal activity levels of domestic final demand

Mode I	1.0076
Mode II	1.2892

Table (1) contains the activity levels of domestic final demand under mode I and mode II. It can be seen from table (1), there is a huge gap of optimal levels of welfare under mode I,

---

[2] Compilation of SNA-based national I-O tables started in the early 1990s with the compilation of the 1989-benchmark I-O table. The second and third national I-O table relates to 1996 with 97 production sectors and 2000 with 112 sectors. Between 1989 and 1996, and 2000 and 2007 annual I-O updating had been also undertaken to provide users with more current I-O data.

where we don't consider the sectorial ownership structure (without privatization) and under mode II where there are 5 types of ownership across sectors (with privatization). Attainable levels of domestic final demand are 0.76 percent under mode I and 28.92 percent under mode II. This difference of the achievements can be explained that under mode II, factor inputs could be reallocated across 5 types of ownership and across sectors, whereas under mode I, factor inputs can only move across sectors. That why, under mode I, the four labour constrains are not binding (see appendix table (A.4)), meaning that all four types of labour force (technicians, high skilled, low skilled and unskilled workers) are in excess supply. The more flexibility there is in reallocation of labour and capital, the closer of the economy performance to its production possibility frontier. Under mode II, there are two binding labour constrains (see appendix table (A.4)), this means that adding one dimension of labour mobility across types of ownership could bring about shortage of supply of technicians and high skilled workers. The difference in attainable levels of domestic final demand from two modes leads to the conclusion that ownership restructuring (with privatization) does contribute to welfare improvement.

The full activity level of 69 industries is indicated in the appendix table (A.1). In mode II, activity levels were aggregated across types of ownership for the sake of comparison with mode I. As shown by appendix table (A.1), all sectors gain different attainable levels. We could find that some activity levels are huge, that is quite particular to this kind of model, as input coefficients are fixed. The attainable levels of petroleum, natural gas are 49.5. The explanation for this result is due to the fact that in 2007 Vietnam still relies on almost 100% imported petroleum and natural gas. Therefore, in the condition of closed economy (net trade is taken as exogenous) all attainable activity levels of other 68 sectors could require a huge labour and capital reallocated to petroleum and natural gas for the efforts of domestic production, which could take place to replace imports.

For the breakdown of activity level under mode II by types of ownership, see appendix table (A.2). As for mode II, a 28.92 percent increase in domestic final demand from full employment of resources, sectorial reallocation of activity and ownership type choice of production location. Except when constrained to achieve a solution, no activity gets spread over different types of ownership. Symbol '-' denotes non-active sectors that remain non-active (by construction). We see that activities are generally conducted in local-state-owned and joint venture enterprises.

Appendix table (A.3) shows the labour productivity by sector and by type of ownership. If we compare the two appendices table (A.2) and (A.3), the interesting finding here is even though the optimal reallocation of labour is quite consistent with the distribution of the highest labour productivity, but not in all sector the movement of labour across sector and ownership types is a reflection of the actual labour productivity.

Appendix table (A.4) shows the factor shadow prices. Capital stock is in short supply in both modes, and earns 52.15 percent rate of return under mode I and 34.65 percent return under mode II.

Under mode I, all four labour constrains are not binding or the Lagrange multiplier is zero, which means labour is in excess supply. What is interesting here is that under mode II, both first two labour constrains are biding. As technicians and skilled labour are in short of supply, technicians gain both technicians' premium and high skill premium, which is 104.558 million of Vietnam Dong (VND) per worker per year or 8.7 VND million per month (equivalent to 420 USD). The high skill premium is 20.1 VND million, which is 1.68 million per month (equivalent to 81 USD). The base wage and low skill premium is zeros due to the last two labour constrains are not binding.

There is a question that how the optimal level of technicians' and high skill wage reflect the real wage rate. Table (2) (follows) shows the real wage rate based on the reports from various Department of Labour, Invalids and Socio Affairs (DOLISA) in several provinces across Vietnam. If we assume that the base wage and low skill premium at optimal level are the same at the observed level. Comparison of optimal and observed level of wage rate is shown in table 2. As shown by table (2), except for low skilled and unskilled wages, at the optimal level, both wage rates of high skilled and technicians are significantly increased.

TABLE 2. Wage rate at observed an optimal level (unit: VND million)

Skill level	Wage rate (per month)	
	Observed Level	Optimal Level
Technicians	n.a.	13.993
High skilled workers	4.000	5.280
Low skilled workers	2.000	2.000 *
Unskilled workers	1.600	1.600 *

Source: author's calculation based on various labour and wage report of provincial DOLISA at Nam Dinh, Thanh Hoa, Phu Tho, An Giang provinces of Vietnam.

*Note: * base wage and low skill premium are assumed to be equal to the observed level.*

TABLE 3. Value added at observed an optimal level (unit: VND million)

Type of ownership	Mode II	
	Observed Level	Optimal Level
1	157,037,546	199,404,807
2	102,451,714	340,735,874
3	488,916,258	81,338,295
4	195,745,237	229,907,815
5	150,091,404	643,512,770
Total	1,094,242,158	1,494,899,562

TABLE 4. Share of value added at observed an optimal level (unit: %)

Type of ownership	Mode II, Scenario 1	
	Observed Level	Optimal Level
1	14%	13%
2	9%	23%
3	45%	5%
4	18%	15%
5	14%	43%
Total	100%	100%

1: state-central-owned   2: state-local-owned   3: 100% private-owned

4: 100% foreign-owned   5: joint-venture

Table (3) (above) shows the value added produced by SOEs (central and local ones), private firms and foreign invested firms (100% foreign owned and joint venture) under mode II. And table (4) (above) shows corresponding contribution to total GDP by 5 types of ownership. At the optimal allocation, state-central-owned firms produce less value added than at the observed level. Whereas the role of state-local-owned firms become more important as their value added at optimum increases remarkably. Its contribution to total GDP rise from 9 percent at observed level to 23 percent at the optimum. Private firms seem loss its importance at the optimum as their value added is expected to fall sharply after optimal allocation of resources. While playing a main role of contribution to GDP at 45 percent (at observed level), private firms' contribution to total GDP, due to its less efficiency in production, become lowest at optimal allocation of resources (5 percent). Surprisingly, 100% foreign invested firms produce much less value added than before and hence lower their role to the lowest group (drop from 18 to 15 percent). Vietnam economy, at the optimal

allocation of resources, relies heavily on join venture firms by more than 43 percent of GDP generation - the role, which played by private firms at the observed level.

5.2 Impact on job creation

The Vietnam Development Report 2000 shows that "sustained poverty reduction over the coming years must focus on three critical areas: creating opportunity, ensuring equity and reducing vulnerability" (World Bank, 1999, p.39). In this proposed study, poverty analysis focuses on one of these three critical areas: creating opportunity. Creating Opportunity has a number of dimensions. In this paper, we focus our analysis on net job-creation (defined as the different between optimal and observed levels of labour employment).

TABLE 5. Total of physical job created (unit: job)

Mode I	820,289
Mode II	(10,506,332)

Table (5) (above) shows the total job created under mode I where we don't consider privatization and under mode II where privatization is taken. It is quite interesting that privatization leads to more job creations in mode I (820,289 job created) but results in job loss in mode II (more than 10.5 million of jobs).

TABLE 6. Total of physical job created by skills (unit: job)

	Level of skilled labour			
	Unskilled	Low skilled	High skilled	Technicians
Mode I	351,723	169,507	240,799	58,261
Mode II	(8,829,012)	(2,175,856)	398,195	100,341

To measure the contribution of privatization to poverty reduction, the model keeps track on different scenarios of the mobility of labour. Table (6) (above) shows that under mode I, all four types of skilled-level of job are created but under mode II, job losses is found in unskilled and low skilled labour and at the optimum allocation the economy needs more high skilled workers and technicians. This situation of job creation under mode I and II are fully compatible with the factor shadow prices (appendix table (A.4)). Under mode I, all four labour constrains are not biding, means all four types of labour force (by skilled-level) are in excess of supply. That why an attainable level of 0.76 percent of the welfare resulted in job creation of all four types of skill as described in table (6). Under mode II, two first labour constrains are binding and the last two are not biding, meaning that technicians and high skilled workers are in short of supply whereas low skilled and unskilled workers are in excess of supply. That's why, at the optimum allocation, we got the situation of job creation under mode II shown in table (6).

More over under mode II, total job losses due to shedding of unskilled and low skilled workers is greater than total job created due to the needs for additional high skilled workers and technicians. This resulted in total job loss of 10,506,332. It could be understood that Vietnam's economy could be restructured to accelerate growth by allocating more of her resources into high value added sectors (skill-intensive and capital-intensive sectors) and hence has to be shedding jobs in low value added sectors such as agriculture and forestry where many of the unskilled used to work in. Data from GSO of Vietnam shows that, from 67 percent of employment in 1998, share of agriculture in total employment now is only 49 percent (GSO, 2011). This trend is due to the process of industrialization and urbanization, which has been gaining momentum during the last ten years. Table (A.5) of the appendix shows that under mode II, the sectors that have been shedding jobs are low value added sectors which could come from three groups: agriculture-related sectors, low-tech manufacturing sectors and less efficient service sectors. It is quite interesting that job losses could be happened also at some high-technology sectors such as electronic, car and motor manufacturing. These sectors dominated by foreign owned firms have been long protected by the Government's protection policy. Belonging to highly protected industry, these foreign owned firms became low international competitiveness. They are or relying on domestic market or doing transfer pricing (Ngoc, 2009). This leads to their low contribution to the GDP of the nation and hence could be an explanation for job losses of these sectors.

The multi-sectorial integrated activity analysis results in optimal level of labour employment by skill and by type of ownerships. Hence we could calculate net job-creation by type of skill and type of ownership. Table (7) (follows) shows total of physical job created by types of ownership under mode II (the breaking down for 69 industries are presented in appendix table (A.6)). The parentheses in table (7) represent negative sign.

TABLE 7. Total of physical job created by type of ownership under mode II
(unit: thousand of jobs)

	Type of ownership				
	1	2	3	4	5
Total	5,181,329	9,100,818	(25,408,441)	(6,513,869)	7,133,831
Unskilled	(301,721)	4,169,892	(12,598,414)	(4,123,271)	4,024,501
Low-skilled	900,177	2,803,721	(5,778,727)	(1,785,822)	1,684,795
High-skilled	3,904,876	1,704,063	(5,485,195)	(747,817)	1,022,268
Technicians	677,997	423,142	(1,546,105)	143,040	402,267

Type of ownership: 1: state-central-owned   2: state-local-owned
3: 100% private-owned   4: 100% foreign-owned.   5: joint-venture

As shown by table (7), in total, private firms are shedding workers in all four types of labour. 100% foreign firms are also shedding most types of workers (except technicians). As we

could see from table (7), Vietnam economy, at optimum allocation, much labour moves from private and 100% foreign owned firm into state sector and joint venture firms. But in fact total job losses are still 10,506,332. Even a larger number of job are created by state and join venture firms which could helps to absorb the out-of-job workers in private and 100% foreign firms, it could not help to offset the huge number of job losses due to shedding workers from private firms and 100% foreign firms. Therefore, even making a contribution to the better performance of the economy in terms of welfare improvement (as discussed in section 5.1), privatization under more flexibility of factor movement does not help to accelerate the level of job creation across sectors. This means there is a trade off between growth and creating opportunity: if Vietnam wants to growth faster from it current labour force structure, it could lead to a result when the economy has to shed a large amount of low skilled and unskilled workers. In fact, that kind ownership restructuring does not contribute to a higher job creation.

Where these newly unemployed labour could move? According to GSO of Vietnam, in 2009, jobless rate was estimated at 5.1 percent (2.3 percent in urban area and 6.1 percent in rural area), which is much higher than the official unemployment rate of 2.9 percent in 2009. Since Vietnam has a thriving informal economy where the jobless can take refuge, this led to the growth in the size of informal sector worker during this period. Most new entrants within the labour market that are unable to find jobs in the formal sectors or laid-off workers will not become unemployed, but rather they will end up working in the informal sector (Cling et al., 2010). Employment in the shadow economy is quite high in other developing countries, such as Brazil and India, which comprises of nearly half of total employment, and nearly three-quarters in Indonesia (The Economist, Jun 2010).[3]

Table (A.7) and (A.8) of the appendix show the level of job creation by 69 industries and by skill-level under model I and model II respectively. Table (A.8) of the appendix shows that low-tech and medium-tech manufacturing sectors need more skilled workers to achieve the attainable level of activity. Whereas in high-tech manufacturing sectors (electronic, radio, TV, petroleum and gas) and service sectors (banking, insurance, business and consultancy services) need more technicians.

6. Conclusions

Throughout more than 20 years of "*Doi Moi*", Vietnam economy is still under pressure to reduce the size of the state sector. Privatization, during last 20 years of renovation has reduced not only number of SOEs but also the labour endowment of this sector. However, privatization seems not to weaken SOE economic power as the share of state sector in GDP is quite stable and the share of state sector in total investment is still high.

---

[3] See the Appendix table 12 for the Vietnam's size of informal sector.

This paper examines how the privatization under ownership restructuring could contribute to economic growth and hence accelerate poverty reduction in Vietnam. The analysis shows that privatization does contribute to welfare improvement. As privatization is examined at the optimal allocation of resources, roles of different types of ownerships could be drawn from.

First, the analysis shows that privatization, as it was happened so far, does not mean to weaken the economic power of state sector. At the optimum, the role of state-central-owned enterprises slightly weakens but state-local-owned enterprises becomes much more important with its attainable contribution to GDP being achieved at 23 percent. Role of the private sector and 100% foreign invested firms become weaker at the optimum as their attainable contribution to GDP declines sharply. Main driving force of welfare improvement is join-venture firms as its attainable share in GDP is 43 percent. This conclusion is a source of policy implication for ownership restructuring strategy:

- The presence of state-owned firms should be continued and particularly enhance the role of local-state owned one. In fact as it was analysed in section 5.1 (p.16), shifting of resources lines in the difference in factor productivities according to ownership of production. Hence, if policy measure could be made to increase the factor productivity in the state-owned enterprise, it is not needed to do entirely the privatization. However, this would need a comprehensive policy measure as efficient management, particularly, in resource management, is an chromic disease of the state management in Vietnam.

- 100% foreign invested firms might not be fully encouraged, rather there should be a selection of foreign invested license. Recent study by Bui Trinh (2010) shows that foreign invested firms contribute to trade deficit of Vietnam as their intermediate demands for production are mainly imported goods when most of them have reported loss to the tax department. According to Bui Trinh (2010), Duc (2010), and Nghia (2010), the main reason of loss-report from foreign invested firms is that they have manipulated "transfer pricing skill" which make it hard to be controlled by the tax department. However, as it has been widely accepted, the presence of foreign firms could lead to positive externalities for local firm, such as enhancing interactive learning through technological change or knowledge management; creating an competitive pressure on economic environment. In fact, many domestic firms have benefited from plugging into the global value chain through backward linkages with high-tech manufacturing sectors. Therefore, a oriented foreign investment accommodative policy, which focus on backwards linkage through supporting industries, is worth to do.

Second, the analysis also shows that privatization does not contribute to job creation. Further analysis on different type of skills shows that at the optimum, demands for high skilled

labour : technicians is 4 : 1. This prompts the policy implication for technical and vocational training strategy. According to MOLISA (2005), the training recipe between technical vocational training – technical high school – college, university level in Vietnam was 2.8 : 0.9 : 1. This shows that in order to have good labour force availability for economic development, Vietnam needs to change her current status of vocational raining to match the demands of the national economy, at which the optimum recipe of 4 : 1 is a reference.[4]

Last, the analysis also shows that at the optimum, more value added don't associate with more job creation in general, as shifting of resources lies in the difference in factor productivities, thus leads to the need for more high skilled workers and technicians which are scare in Vietnam. As a lesson from ASEAN tigers, advantage of low-cost labour will sooner or latter not be an incentive for firms' investment decisions in labour-intensive sectors, as wage rate is continuously increasing. Therefore, if labour quality improvement could not be made, the current skill situation of Vietnam's labour force will be a 'bottle neck' for Vietnam economic growth in the near future.

---

[4] The optimum training recipe could be considered for the implementation of some current Government Decrees on Vocational Training Strategy for Rural Labour which recently been promulgated such as Decision 1956/QĐ-TTg on vocational training for rural labour for the period of 2010-2020 (27/11/2009); Decision 103/2008/QĐ-TTg on 21/7/2008 on supporting youth in vocational training and self-employment creation for the period 2008-2015; Decision 295/QĐ-TTg on 26/2/2010 on supporting women in vocational training and job creation.

Appendix

Appendix 1. Methodology

Modeling with sector-specific capital

If capital are modeled as being sector-specific, constraints for capital stock are as follows:

(4) $$\left\{ eye(n)* \sim K \right\} s \pounds M$$

where:

$eye(n)$ identity matrix [# of sector by # of sector]

*~   element-by-element matrix operators (horizontal direct product $z = x* \sim y$: the input matrices must have the same number of row. The result will have cols(x)*cols(y) columns)

In Mode I, the primal program (1) in which capital stocks are sectoral specific could be rewritten as follows:

(5) $$\max_{s^2,c^2} e^\top fc^2 \text{ subject to}$$

$$\left(V^\top - U \right) s^2 \; {}^3 \; fc^2 + g$$
$$Ls^2 \; \pounds \; N$$
$$\left\{ eye(n)* \sim K \right\} s^2 \; \pounds \; M$$
$$s^2 \; {}^3 \; 0$$

In Mode II, the primal program (3) would be:

(6) $$\max_{s^2,c^2} e^\top fc^2 \text{ subject to}$$

$$\left(V_{split}^{\;\top} - U_{split} \right) s^2 \; {}^3 \; fc^2 + g =: F$$
$$\left(L_1 \sim L_2 \sim L_3 \sim L_4 \sim L_5 \right) s^2 \; \pounds \; N$$
$$\left\{ eye(n)* \sim K \right\} s^2 \; \pounds \; M$$
$$s^2 \; {}^3 \; 0$$

Modeling for Open Economy Mode

As Vietnam being an open economy, we could also consider an Open Economy Mode where we consider net export is an endogenous variable. However as stated, open economy model could leads Vietnam to close in most of its sectors and only few sectors with high level of trade volume (net export) will exists. In order to avoid the unexpected solution of total dependence on foreign supply, in this mode, we isolate non-tradable goods (those with zero net export) and force their activity levels ($s_{non-tradable}$) to be equal to activity level of domestic

final demand (c). We could also test the open economy model under the scenario 3 (capital stock are sectoral specific) as a mean that would have avoided full specialization in a restricted number of sectors.

In Open Economy Mode I, the primal program (1) for the open economy, scenario 1 is as follows:

(7)
$$\max_{s^1,c^1,g^1} e^\top fc^1 \text{ subject to}$$

$$\left(V^\top - U\right)s^1 \geq fc^1 + Jg =: F$$
$$Ls^1 \leq N$$
$$Ks^1 \leq M$$
$$-e^T g \leq -e^T g^t =: D$$
$$s^3 \geq 0$$

and the dual program is:

(8)
$$\min_{p,r,w,e \geq 0} rM + wN + eD \text{ subject to}$$

$$p\left(V^\top - U\right) \leq rK + wL$$
$$pf = e^\top f$$
$$pJ = e$$

In Open Economy Mode II, the primal program (3) for the open economy, scenario 3 (capital stock are sectoral specific) is as follows:

(9)
$$\max_{s^2,c^2,g^2} e^\top fc^2 \text{ subject to}$$

$$\left(V_{split}^\top - U_{split}\right)s^2 \geq fc^2 + Jg =: F$$
$$\left(L_1 \sim L_2 \sim L_3 \sim L_4 \sim L_5\right)s^2 \leq N$$
$$\left\{eye(n)* \sim K\right\}s^2 \leq M$$
$$-e^T g \leq -e^T g^t =: D$$
$$s^2 \geq 0$$

g vector of net export [# of tradable commodities]

g^t vector of net exports observed at time t [# of tradable]

J 0-1 matrix placing tradeables [# of commodities by # of tradeables]

D observed trade deficit [scalar]

and the dual program is:

(10)
$$\min_{p,r,w,e \geq 0} rM + wN + eD \text{ subject to}$$

$$p\left(V_{split}^{\top} - U_{split}\right) \pounds rK + wL$$
$$pf = e^{\top}f$$
$$pJ = e$$

Remarks:

1. The sector specific capital scenarios were tested both in mode I and mode II. We have only found the solution for mode I and II, when labour is full mobility and capital are modeled as being sector-specific. We then aggregate the number of capital constrains into 17 aggregated sectors from 69 sectors of the input-output table. The attainable levels of welfare under mode I almost close to zero and under mode II is just about 3 percent. The factors shadow price are zero in both mode, non of the labour or capital constrains is biding. That is why we decided to skip this scenario.

2. Open economy modeling was tested with mode I and II. However mode II did not work. As stated in page 9, we decided to skip this and prefer pursuing the analysis in the contact of a closed economy.

Reference

Bui Trinh (2010), "Behind the USD 8 billion export value by foreign direct invested sector", *Saigon Economic Time*, 15 April 2010.

Central Institute for Economic Management (2004), *Kinh te Viet Nam 2003 (The Vietnamese Economy 2003),* Hanoi: Science and Technology Publishing House.

Central Institute for Economic Management (2007), "Báo cáo của Chính phủ về Cổ phần hóa các doanh nghiệp nhà nước (Government's report on privatization of SOEs)." http://www.vnep.org.vn/Web/Content.aspx?distid=3172&lang=vi-VN

Chenery, H.B., Robinson, S., Syrquin, M., and the World Bank (1986), *Industrialization and growth: a comparative study*, Published for the World Bank [by] Oxford University Press, New York.

Cling J.P, Nguyen Thi Thu Huyen, Nguyen Huu Chi, Phan Thi Ngoc Tram, Razafindrakoto M. and Roubaund F. (2010), *The Informal Sector in Vietnam – A focus on Hanoi and Ho Chi Minh City*, Hanoi: The Gioi Publisher.

Collins, S.M., Bosworth, B.P. (1996), "Economic Growth in East Asia: Accumulation versus Assimilation," in *Brooking Papers on Economic Activity*, 1996, 135-203.

Duc, T. (2010), "Loss due to transfer pricing?", *Saigon Economic Time*, 9 April 2010.

Ehrlich, I., Gallais-Hamono, G., Liu, Z. and Lutter, R. (2004), "Productivity Growth and Firm Ownership: An Analytical and Empirical Investigation," *The Journal of Political Economy*, 102, 1006-1038.

Foster J., Greer, J., and Thorbecke, E. (1984), "A class of decomposable poverty measures," *Econometrica*, 52, 761-766.

General Statistic Office of Vietnam (1996), *Statistical yearbook of Vietnam*, Hanoi: Statistic Publishing House.

General Statistic Office of Vietnam (2002), *The enterprise census, conducted on 1st April 2001*, Hanoi: Statistic Publishing House.

General Statistic Office of Vietnam (2003), *Input-Output Tables of Vietnam in 2000*, Hanoi: Statistic Publishing House.

General Statistic Office of Vietnam (2008), *Statistical yearbook of Vietnam*, Hanoi: Statistic Publishing House.

General Statistic Office of Vietnam (2009), "Tình hình kinh tế - xã hội năm 2008 (Socio-economic context in 2008)." http://www.gso.gov.vn/default.aspx?tabid=413&thangtk=12/2008

Havrylyshyn, O. (2004), "Avoid Hubris but Acknowledge Successes Lessons from the postcommunist transition," *Financial and Development*, 41, 38-41.

Henry, P.B. (2003), "Capital Account Liberalization, the Cost of Capital and Economic Growth," *American Economic Review*, 93, 91-96.

Huong, P.L., Tuan, B.Q., and Minh., D.H. (2003), "Employment Poverty Linkages and Policies for Pro-Poor Growth in Vietnam," in Employment and Poverty Discussion Paper, International Labour Organization, Geneva, Switzerland.

Klump, P. (2007), "Pro-Poor Growth in Vietnam: Miracle or Model?," in *Delivering on the Promise of Pro-Poor Growth – Insights and Lessons from Country Experiences* (2007), eds. T. Besley and L.J., Cord, New York: Palgrave Macmillan and the World Bank

Liu, A.Y.C. (2004), "Sectoral Gender Wage Gap in Vietnam," *Oxford Development Studies*, 32, 225-238.

McMillan, J. (2004), "Avoid Hubris and other lessons for reformers," *Financial and Development*, 41(3), 34-37.

Megginson, W.L. and Netter J.M. (2001), "From State to Market," *Journal of Economic Literature*, 93, 321-389.

Ministry of Labour Invalids and Social Affairs - MOLISA (2005), *Research on Labour Market and Career Guidance for Vietnam Youth at Current Time*, Hanoi: Labour and Social Affairs Publishing House.

Ministry of Labour Invalids and Social Affairs - MOLISA (2009), Employment Trends 2009, Hanoi: ILO Office in Vietnam.

Nghia, S. (2010), "Hard to monitor transfer pricing", *Saigon Economic Time*, 9 April 2010.

Ngoc, Q.P., and Mohnen, P. (2004), "Impact of Structural change on Economic Growth in Vietnam," *Input-Output and General Equilibrium: Data, Modeling, and Policy Analysis, Global Economic Modeling Network and International Input-Output Association Conference Proceedings* (on CD-Rom), Brussels, September 2-4, 2004 (28 p.)

Ngoc, Q. P., and Mohnen, P. (2005), "Optimal choice of ownership structure in Vietnam," Fifteenth International Input-Output Conference organised by International Input-output Association (IIOA), 27 June – 1 July 2005, Beijing, China P.R.

Ngoc, Q.P., Bui Trinh and Thanh, Duc Nguyen (2007), 'Economic performance of Vietnam, 1976-2000: New evidence from input-output model,' DEPOCEN working paper no. 2007/13, http://ideas.repec.org/p/dpc/wpaper/1307.html

Ngoc Q. P., (2009), "Assessment of Firm Productive Capability – Financial perspective," in Hang T. Pham (ed.), *VCCI Annual Enterprise Report 2008*, Hanoi: Political Publishing House.

O'Conner, D. (1996), "Labour Market Aspects of State Enterprises Reform in Vietnam," Technical Paper 117, OECD.

Pham, D.C. and Duc Viet, L. (2003), "A decade of *Doi Moi* in retrospect: 1989-99," in *The Vietnamese Economy: Awakening the Dormant Dragon*, eds. B. Tran-Nam Binh & C.D. Pham, London: Routledge Curzon, pp. 30-52.

The Economist, "Jobless Growth", *The Economist*, June 5th 2010.

ten Raa, T. and Mohnen, P. (2001), "The Location of Comparative Advantages on the Basis of Fundamentals Only," *Economic System Research*, 13, 1, 93-108

ten Raa, T. and Mohnen, P. (2002), "Neoclassical Growth Accounting and Frontier Analysis: A Synthesis," *Journal of Productivity Analysis*, 18, 111-128.

ten Raa, T. and Pan, H. (2005), "Competitive pressures on China: Income inequality and migration," *Regional Science and Urban Economics*, 35, 671-699

ten Raa, T. and A. Sahoo (2007), "Competitive pressure on the Indian households: A general equilibirum approach", *Economic Systems Research*, 9, 1, 57-71

Tran Van Tho, Nguyen Ngoc Duc, Nguyen Van Chinh, and Nguyen Quan (2000), *Kinh tế Việt nam 1955-2000, tính toán mới phân tích mới* (The Vietnamese Economy 1955-2000, new calculations and new analyes), Hanoi: Statistical Publishing House.

Vietnam Economic Time (2007), "Stock market features – 2007." *http://www.vneconomy.com.vn/eng/?param=article&catid=05&id=bc9e5139bfff6d*

Vietnam Economic Time (2008), "Stock market in 2008 promises double growth rate." *http://www.vneconomy.com.vn/eng/?param=article&catid=01&id=22ffe4f9470817*

Vo. T.T. (2000), "Vietnam in the 1990s: macroeconomic development and structural change," NCDS-AusAids Workshop, Hanoi.

Webster, L. and Amin, M.R. (1998), "Equitisation of State Enterprises in Vietnam: Experience to Date," MDPF Private Sector Discussion 3, MPDF: Hanoi.

Womack, B. (1997), "Vietnam in 1996: Reform Immobilism," *Asian Survey*, XXXVII:1.

World Bank (1999), *Vietnam Development Report 2000: Attacking Poverty*, Hanoi: The World Bank.

World Bank (2001), *Vietnam Economic Monitor*, World Bank, Hanoi, Spring.