Reducing Tariffs according to WTO Accession Rules: The Case of Vietnam

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Abstract

When Vietnam entered WTO in 2007 it was granted an accession period up to 2014. During this period tariffs would have to fall according to the accession agreement. This paper evaluates this 2007-2014 trade liberalization by building an applied general equilibrium model and calibrating it to the Vietnamese data. The model pays careful attention to the fact that Vietnam has many state-owned enterprises that do not behave in a profit maximizing way. The model simulations show that the WTO imposed tariff reforms will reduce the overall welfare level of the Vietnamese households. Moreover, the biggest loss of income will take place among the poor rural households in Vietnam. We propose other tariff reforms that both raise overall welfare and reduce income inequality.

JEL-Code: F140, F170, C680.

Keywords: Vietnam, WTO accession, trade reforms, state-owned enterprises.

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1. INTRODUCTION

On January 11, 2007, and after 12 years of accession process, Vietnam became the 150th member of the World Trade Organization (WTO). Becoming a member of the WTO ultimately implies a binding tariff schedule. The Vietnamese accession process will be formally completed when a gradual reduction of the existing tariff rates reach the pre-determined final rates. This will be the case in 2014.

The present paper evaluates this accession-led trade liberalization using a computable general equilibrium (CGE) model calibrated to the Vietnamese economy. In doing that, special attention is paid to the existence of state-owned enterprises and how they affect the economy by large. Moreover, we pay attention to income distribution issues among heterogeneous households and we investigate how different trade liberalization schemes affect this distribution. While linking trade liberalization to income distribution is not by itself novel, doing that in the presence of state-owned enterprises and for a calibrated model of the Vietnamese WTO accession is, to the best of our knowledge, novel to the literature.[1]

In modelling state-owned enterprises we follow the approach adopted in several writings about state-owned enterprises in general, viz. that they do not maximize profits (see Schmitz., J., 1996; and World Bank, 2005). More in particular, we follow Whalley and Zhang (2006) who assume that state-owned enterprises maximize revenues. With prices being fixed by the world market (Vietnam being a small open economy), this maximizing revenue assumption implies that state-owned enterprises in reality maximize output and thus employment. As we will show, introducing such a state-owned enterprise behavior in an otherwise standard trade model of a small open economy alters considerably the welfare effects of different tariff reforms.

We will show that if the state-owned enterprises behaved as profit maximizers, the WTO accession tariff reforms would both increase aggregate real income and reduce income inequality — clearly, a win-win situation. However, with state-owned enterprises maximizing revenues, the WTO accession tariff reforms will end up doing exactly the opposite, viz. reduce aggregate income and increase income inequality. The same will be true for other well-known reform rules — the concertina rule (where the highest tariff is reduced to the second highest level) and the

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[1] See Abbott et al. (2009) for a survey of this literature using Vietnam as the case of study. Similar to our paper, Ghosh and Whalley (2008) focus on Vietnam and trade liberalization under state-owned enterprices. However, both the model and the experiments they consider are quite different from ours (they apply a shirking model of state-owned enterprises that they use to analyze the case of zero tariffs, and thus not a move from one tariff-ridden equilibrium to another).

proportional rule (where all tariff rates are reduced by the same proportion). In other words, all the well-known tariff reduction rules bound to fail when state-owned enterprises distort the market economy.

Given this distorting behavior of state-owned enterprises, one may want to know what kind of tariff reform would achieve the goals of higher real income and lower income inequality. We show that the main characteristic of this reform has to be a large and disproportionate reduction of the protection of the state-owned sector — in fact, we will show that if the imports of the goods produced by the state-owned enterprises are subsidized, both welfare and income distribution will improve. We will provide intuition for this and all other results after we explain what state-owned enterprises imply to the market equilibrium. Firstly, however, and in order to set the background for our model choices, we provide a brief description of the Vietnamese economy and the significance of the state-owned enterprises in that economy.

1.1. Vietnam. Vietnam is a country in change. It is turning global in many aspects – culturally, socially, and economically. Table 1 shows the change of the overall structure of the Vietnamese economy in the period 1990-2006, with manufacturing clearly increasing its GDP value added at the cost of the primary sector.

Year	Agriculture, forestry and fishing	Industry and construction	Service
1990	39	23	39
2006	20	42	38

Source: General Statistics Office of Vietnam

Table 1: Decomposition of GDP in Vietnam (pct.)

However, while industrialization has made manufacturing and services the predominant providers of value added, the income source of the majority of the Vietnamese population is still the primary sector. As of 2006, more than 58 % of the population were employed within these industries (see table 2).

Since the majority of the population, and especially of the lower-income households, is employed in the labour-intensive primary sector, this sector is of special consideration. That the poor people work in the rural areas is supported by looking at the urban-rural 0.37 Gini coefficient, implying that wealth distribution is skewed moderately towards urban Vietnam. Combined with a 0.28 Gini coefficient of rural Vietnam, this points towards a generally low, but even, rural per capita income level. Clearly, and as one would expect from a socialist country,

Employment by kind of economic activity, pct. (2006)	
Agriculture and forestry	55.4
Fishing	3.4
Industry	12.7
Construction	4.6
Trade	11.5
Hotel, restaurant	1.8
Transport, storage and communications	2.9
Culture, health and education	4.0
Other services	3.7
UNDP Poverty Line (2002), pct.	29.0
UNDP Food Poverty Line (2002), pct.	10.9
UNDP Urban/Rural Gini coefficient	0.37
Urban	0.35
Rural	0.28

Source: General Statistics Office of Vietnam

Table 2: Employment, Poverty and Income Distribution

the overall income inequality in Vietnam is relatively low — a 0.3 value places Vietnam between the Scandinavian countries (0.26) and the USA (0.408), and close to countries such as France, Canada, Australia and the United Kingdom. But Vietnam is a low income developing country. A growth in income inequality may be devastating for many Vietnamese families if the source of this growth is lower income at the bottom end of the income scale. According to the United Nations Development Programme in Vietnam, even though absolute poverty has been reduced considerably throughout the 90's, 29% of the population were still living below the poverty line in 2002 (UNDP VN, 2002). In rough numbers that is more than 23 million people in a country with more than 80 million inhabitants.

Focusing on the importance of state-owned enterprises it should be mentioned that from 1995 to 2006, state ownership of production facilities has decreased from 50% to 38%, household ownership of production facilities has decreased from 36% to 30%, while foreign investment ownership of production has increased from 6% to 17%. Moreover, this state production is very much focused in the industrial sector; in 2006, 75% of the state output was industrial output. Such predominance of state-owned firms can be explained by what the literature calls a Guanxi approach (Ashwill and Diep, 2005) — typically assumed for Chinese state-owned firms. Vietnamese culture exhibits — along with pervasive corruption — a system of relationship building similar to the Guanxi system in China. In such a system, a politically appointed management may build up prestige by securing many jobs for the locals in the local community. More im-

portantly to the management, by managing a large enterprise it may increase its proceeds from networking with other managers (under the assumption that the larger the firm you manage, the more important people you will network with). The management may also experience proceeds from networking with influential party members who politically motivated — directly or indirectly — facilitate a subsidy to the firm. Hence, by maximizing employment and size of the firm, the manager is assumed to maximize personal utility.

One of the focal points of the state-owned enterprise reform in Vietnam has been to reduce the number of typically small local government controlled firms (UNDP VN, 2006; Sjöholm, 2006). The local governed state-owned firms have been singled out as a way of channeling state resources to other purposes than intended. Equitization is conceived as the way of restructuring state-owned firms. By creating publicly listed firms, where the government may own only some shares, the government wants to make the state-owned enterprises partly dependent on competitive capital funding. In general, however, the high national dependency on state output seems to slow down the privatization process. Large SOEs seem so far to have been exempted from equitization. Moreover, the evidence of major sourcing of equities to non-governmental stakeholders has yet to be seen. The General Statistics Office of Vietnam (GSO) provides data for how many people are employed in state-owned production facilities, how many state-owned firms exist, but not how much they produce, what profits are, and e.g. which state firms are equitized and what governs the principle of foreign investments in these firms.[2]

On the basis of the above facts, we build a model where state-owned enterprises are explicitly taken into account within an otherwise traditional general equilibrium model of the Vietnamese economy. We also pay careful attention to heterogenous households and their source of income. In what follows, we describe in detail the model chosen.

2. The Model

2.1. Production. We model a specific-factor small open economy. There are four representative producers of four final goods in the economy: A competitive *primary* producer, y_P, a competitive (private) light manufacturer, y_l, a manufacturing *state-owned enterprise*, y_{soe}, and a rest-of-economy sector, y_{roe}.

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[2]Moreover, even if one observes private share owners, these may in turn owned by a public agent. This is an often cited problem in the literature on assessments of Chinese state-ownership of publicly as well as (seemingly) privately held (off-listed) companies. As pointed out by Whalley and Zhang (2006) one example is Lenovo. The company is formally owned by Legend Holdings. However, Legend Holding is controlled by the Chinese Academy of Natural Sciences.

The production functions applied in the model are Cobb-Douglas:

$$y_j = A_j F_j^{1-\alpha_j} L_j^{\alpha_j} = \varphi_j L_j^{\alpha_j}, \quad j = p, l, soe, roe \tag{1}$$

where F_j is the specific factor of the respective sectors, and thus $\varphi_j = A_j F_j^{1-\alpha_j}$ is just a scalar.

Three of the sectors have identical structures but different inputs to production. In the primary sector, y_p, the single immobile factor is land, while in the two other competitive sectors the immobile factor is sector-specific capital. Profit maximization under perfect competition yields the traditional result that labour is paid its marginal product value. Moreover, zero profits are achieved. The immobile factor is paid a residual rent. That is,

$$
\begin{aligned}
R_j &= p_j y_j - w L_j = p_j y_j - p_j \frac{\partial y_j}{\partial L_j} L_j = p_j L_j \left(\frac{y_j}{L_j} - \frac{\partial y_j}{\partial L_j} \right) \\
&= p_j L_j \left(AP_{Lj} - MP_{Lj} \right) > 0 \quad , \quad L_j > 0, \ j = p, l, roe
\end{aligned} \tag{2}
$$

The fourth sector, the state-owned enterprises, behaves differently. By assuming that the management of the state-owned firms seeks to maximize the size of the enterprise and not its profits, it hires as many workers as possible. Hence, state capital is considered allocated free of cost from the perspective of the state-owned firm. The problem of the firm simply is to maximize revenues subject to the wage bill, which implies hiring labour at a nominal wage rate equal to the value average product of labour, $w = p_{soe} \cdot AP_{L_{soe}}$, instead of the value marginal product of labour, $p_{soe} \cdot MP_{L_{soe}}$, as is the case in the rest of the economy. Since $MP_{LL} < 0$, $AP_L > MP_L$ for any $L > 0$. As is the case in the competitive part of the economy, the residual rents of the SOE go to the immobile factor: state allocated capital. However, since capital is allocated free of cost, the rents accrued by the government are effectively zero.[3]

2.2. Households. The model considers three households. Two lower-income households in rural and urban areas, h_1 and h_2 respectively, and a higher-income household, h_3, found both in the rural and urban areas. Household preferences for the goods consumed are represented by

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[3]It is this zero capital rent property of SOEs that motivates our choice of a specific-factor model. If we considered a Hecksher-Ohlin model with intersectoral mobility of all factors, then the zero cost of capital would extend to all sectors — clealry, an undesirable property within a general equilibrium model (it would be equivalent to having only labour as factor of production). Ghosh and Whalley (2008) consider also a specific-factor model of the Vietnamese economy.

CES utility functions

$$U_i = U_i(x_{i,j}) = \left(\sum_j \beta_{i,j} x_{i,j}^{\frac{\epsilon_i - 1}{\epsilon_i}} \right)^{\frac{\epsilon_i}{\epsilon_i - 1}}, \quad i = 1, 2, 3, \quad j = p, m, l, soe \qquad (3)$$

where ε is the elasticity of substitution,[4] and β denotes the share parameter that determines demand patterns of the households.

The income of each of the households is given by

$$I_i = \sum_j \left(\gamma_{i,j} w L_j \right) + \sum_{j \neq soe} \left(\lambda_{i,j} R_j \right) + \theta_i G, \quad i = 1, 2, 3 \quad and \quad j = p, l, soe, roe \qquad (4)$$

where $\gamma_{i,j}$ are household shares of labour income (with $\sum_i \sum_j \gamma_{i,j} = 1$), and $\lambda_{i,j}$ are the residual rents from immobile factors (with $\sum_i \sum_{j \neq soe} \lambda_{i,j} = 1$). Using γ and λ, the modeler assigns property rights of the total economy factor endowments to the households. G denotes total transfers to/from the government. These are described in detail when introducing the government below. θ_i denotes household share of G where $\sum_i \theta_i = 1$.

Welfare maximization subject to the income equal expenditure constraint leads to the following demand functions

$$x_{i,j} = \beta_{i,j}^{\epsilon_i} \left(\frac{p_i}{P_i} \right)^{-\epsilon_i} \frac{I_i}{P_i}, \quad i = 1, 2, 3 \quad and \quad j = p, m, l, soe \qquad (5)$$

where $P_i = \left(\sum_j \beta_{ij}^{\epsilon_i} p_j^{1-\epsilon_i} \right)^{\frac{1}{1-\epsilon_i}}$ is the subjective CES price index.

2.3. Government. Given our small open economy assumption, world prices are kept fixed. By setting tariffs at an arbitrary level the government has full control over the domestic prices. Assuming ad valorem tariff rates, the domestic prices (p) are given by world prices (p^w) times the mark-up $(1 + t)$, where t is the percentage tax rate on imports, i.e.

$$p_j = p_j^w (1 + t_j) \qquad (6)$$

The government solely focuses on managing a balanced budget. Hence, it is simply repre-

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[4]For our calculations we set this elasticity at 0.8. Other values (i.e. 0.6 and 0.9) have been used without any change to our qualitative results.

sented by a budget constraint

$$G = T = \sum_j t_j p_j^w z_j + R_{soe} \tag{7}$$

where G is government expenditure, T is revenues from trade taxes and rents accrued from state-owned enterprise capital (which, as discussed above, is zero if SOE maximize revenues), and z_j being imports defined as excess demand $(z_j = \sum_i x_{i,j} - y_j)$. The actions available to balance the budget are simple lump-sum taxes, i.e. either collecting a lump sum tax from the households in case of a budget deficit, or distributing a lump sum tax to the consumers in case of a budget surplus.

Finally, full employment and balanced trade conditions are imposed to clear the labour and goods markets, respectively.

Before moving to the calibration of the model using data from Vietnam, we should emphasize the importance of having state-owned enterprises (SOE) in the model. We showed that under the assumption that SOEs maximize revenues, a SOE will hire labour at a wage equal to the value of the average product instead of the value of the marginal product of labour. The SOE will thus demand more labour than is economically efficient. This higher demand will drive up the (nominal) wage and lower the potential output of the rest of the economy. In this situation, a tariff on SOE produced goods will aggravate the distortion SOEs create, as it will even further move recourses towards the state-owned sector. Reducing tariffs is naturally a correct response to this. However, as the theory of the second-best tells us, not any tariff reduction will work. That is exactly the purpose of building an applied general equilibrium and calibrating to the Vietnamese data.

3. Case Study: The Vietnamese Accession to the WTO

Using Vietnam's WTO accession as a case, we proceed by calibrating the model to the data. To do that, we need to aggregate the existing data into 3 type of households and 4 type of production sectors. Starting from production, functions are calibrated on the basis of the value added shares of each of the four sectors in the model. Consumer demands are then preset residually to match trade patterns of the Vietnamese economy. A top down split of GDP shares is shown in table 3.

The primary production sector, y_p, includes the activities agriculture, forestry and fishing

Year 2004	Total economy (p,l,roe,soe)	Non-primary sectors (l,roe,soe)	Primary sector (p)	Rest of economy (roe)	Private manufac-turing (l)	State manufac-turing (soe)
Labour	70.3	67.4	80.7	48.2	48.2	100
Capital	25.5	32.6	–	51.8	52.8	–
Land	4.2	–	19.3	–	–	–
GDP shares	100	78.2	21.8	38.0	11.3	28.9

Source: Nielsen (2002), General Statistics Office of Vietnam, IMF WEO,
Penn World Table, and own calculations

Table 3: Model benchmark: Sectoral GDP shares and factor allocation

which sum to 21.8% of GDP. The factor allocation in the primary sector implies a 80.7% labour value added share and a 19.3% land value added share. Aggregate capital formation constitutes 25.5% of GDP. Capital is allocated in the manufacturing and service industries and comprise 32.6% of non-primary production value added. These are split on the two private sectors, y_l and y_{roe}, since the assumption of un-priced capital in state-owned enterprises implies that labour value added makes up a 100% of total factor value added going into SOE production, y_{soe}.

Recall that the value of φ_j is a product of $F_j^{1-\alpha}$ and an unobservable sector specific technology scale parameter, A_j. Given the Ricardo-Viner structure of the model, calibration of the parameters φ_i and α_i suffices. The calibrated values are shown in table 4.

	p	roe	l	soe
α_j	0.81	0.48	0.48	0.30
φ_j	1.68	8.24	4.41	8.83

Source: WTO, Comtrade and own calculations

Table 4: Supply side parameters in the Vietnam Model

Moving into the demand side of the economy, we need to match the Vietnamese reality described in the introductory section and thus consider three heterogenous households: the lower income rural population, h_1, the lower income urban population, h_2, and the higher income population, h_3, found in urban as well as rural Vietnam.

The key to distribute factor income among the three households stems from Nielsen's (2002) social accountancy matrix (SAM) found most suitable for the purpose of this analysis. From this SAM, a small sub-matrix is extracted and simplified.

The point of departure for creating the postulated income distribution is an assignment of rights of access to the factor endowments. As mentioned previously, income inequality in

Vietnam is no higher than in a typical European economy. In general, inequality is low but there is an above average inequality between rural and urban Vietnam and within urban Vietnam, while in the rural areas the average Vietnamese citizen tends to be poorer and facing almost no inequality. This view has spurred an assignment of rights of access to income accrued from unskilled, medium skilled, and skilled types of labour used in Nielsen (2002), and from land and capital. In doing that, we note that while general education in Vietnam is not high compared to developed economies, the majority of the population has a standard elementary school education and literacy levels are above 90% for both genders (UNESCO). This has led to the assumption that the lower income households receive income both from paid unskilled jobs and from (medium skill) self-employment. The lower income rural household receives 15% of land rents whereas the majority of land rents are received by the higher income household. The resulting calculations are presented in table 5.

	Agri. self-empl. earnings	Non-agri. self-empl. earnings	Paid labour earnings	Land	Capital	Total income share*
Lower income rural household	86.6	36.8	35.5	15.0		34.8
Lower income urban household	6.3	46.6	25.7			18.8
Higher income household	7.1	16.7	38.7	85.0	100	46.4
Total	100	100	100	100	100	100

Source: Nielsen (2002), GSO, IMF WEO, Penn World World Table, and own calculations

*This is the benchmark distribution in the applied model

Table 5: Sectoral income distribution in the Vietnam Model, per cent

On the basis of this income distribution, population shares are assigned and per capita income measures are calculated.[5] The results are presented in table 6.

Finally, in performing the evaluation of the WTO accession rules we need to know the initial level of tariffs. We take these tariffs to be the bound tariff rates that Vietnam was obliged to have in 2007 before entering WTO. These rates (together with the final rates to be implemented in 2014) are attached to the WTO document WT/ACC/VNM/48/Add.1, which is downloadable from WTO's homepage. However, since these rates are reported at a very disaggregate tariff line level — e.g. it contains 1,700-1,800 line items on agricultural products and about 13,000

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[5]We did that by using a Lorenz-curve shape that matches the Vietnamese Gini-coefficient in table 2. The Lorenz-curve is inspired by an expenditure-based Lorenz-curve in Haughton et al. (2006).

Benchmark scenario (year 2004)	Population		GDP		GDP per capita		GDP per capita per day		
	Pct.	Mill.	Bill. Dongs	Bill. USD	Thousand Dongs	USD	Thousand Dongs	USD	USD PPP corrected[1]
Lower income rural population	58.0	47.3	248,855	15.9	5,259	336.1	14.41	0.92	4.64
Lower income urban population	20.0	16.3	134,477	8.6	8,241	526.8	22.58	1.44	7.27
Higher income population	22.0	17.9	331,974	21.2	18,494	1,182	50.67	3.24	16.31
Total	100	81.6	715,307	45.7					
Economy average					8,767	560.4	24.02	1.54	7.73

Source: Nielsen (2002), General Statistics Office Of Vietnam, Haughton et al (2006), IMF WEO, Penn World Table (2006), and own calculations
1: PPP correction is 5,035 (IMF WEO)

Table 6: Detailed income distribution based on the Vietnam Model

items on manufacturing products, all at an 8-digit HS trade classification — we need first to aggregate them. We have used the following step procedure: (i) calculate simple tariff averages of detailed HS data to create two-digit level HS data, (ii) convert the two-digit level HS data to two-digit level SITC data (as we only have detailed trade data for this categorization),[6] (iii) calculate weighted average tariff on one-digit level SITC categories, where the weights are the trade volumes at the two-digit level SITC,[7] and (iv) convert the SITC categorization to the average tariff rates that our four sectors face using the information from the General Statistics Office of Vietnam (GSO, 2004) about ownership.[8]

The result of this procedure is presented in row one (benchmark) and row two (final accession rates) of table 7 — the rest of the rows present other tariff reform scenarios examined in this paper and which are explained in detail below.

3.1. The analyzed scenarios. As mentioned above, the benchmark scenario replicates the tariff structure of the Vietnamese economy at the point of entry at the WTO, i.e. in 2007. In that benchmark case, the model in section 2 is used, where state-owned enterprises maximize revenues. Scenarios I-IV in table 7 are all using the same model but with different tariff rates.

Scenario I is applying the WTO accession-led tariff cuts that Vietnam has committed to implement by 2014. As we see, the most notable relative drop is within the light manufacturing sector (a 39% reduction), followed by the SOE sector (19% reduction) and the primary and ROE sector (18.5% reductions). In terms of absolute tariff reductions, the primary and the light

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[6] See table A1 in the appendix for these tariff averages (both the bound 2007 and the final 2014 rates).
[7] Reported at table A2 in the appenidx.
[8] This ownership information is presented in table A3 in the appendix.

Scenarios	p	roe	l	soe
Benchmark - 2007 tariff rates	28.1	13.5	13.3	19.4
I - final accession 2014 tariff rates	22.9	11.0	8.1	15.7
II - Concertina cut	19.4	13.5	13.3	19.4
III - proportional 20 per cent cut	22.5	10.8	10.6	15.5
IV - subsidy experiment	28.1	13.5	13.3	−32.0
V - restructuring SOEs + 2007 tariff rates	28.1	13.5	13.3	19.4
VI - restructuring SOEs + 2014 tariff rates	22.9	11.0	8.1	15.7
VII - restructuring SOEs + concertina cut	19.4	13.5	13.3	19.4
VIII - restructuring SOEs + proportional cut	22.5	10.8	10.6	15.5

Source: WTO, Comtrade, own calculations

Table 7: Tariff rates applied in the scenarios, per cent

manufacturing sector face a 5.2 percent points cuts, while the SOE face a 3.7 percent points cut and the ROE only a 2.5 percent point cut. Thus, the WTO accession-led tariff cuts reduce both the mean and the variance of the existent tariff structure. As we know from recent results in the theory of tariff reforms, such reductions are likely to be welfare enhancing in standard general equilibrium trade models (see Anderson and Neary, 2007).

Scenarios II and III focus on other tariff reforms that, in conventional settings, should yield welfare improvements. In scenario II we introduce a concertina cut, where the highest tariff falls to the second highest tariff level, while scenario III introduces a 20% proportional tariff cut to all tariff rates. From theory we know that such reductions will also increase welfare, if goods are substitutes for each other and normality in consumption is assured (see Hatta, 1977) – both assumptions that hold in our setting.

Scenario IV reduces the tariff on the SOE produced good leaving the other tariff rates unaltered. In this sense, it is also a univariate reform like the concertina reform, but while the concertina reform reduces the highest tariff (assuming that this was the highest distortion), here we reduce the tariff of the sector that distorts mostly the economy (both due to protection and due to the assumed revenue maximizing behavior). Thus, in essence, the present scenario is really what a concertina reform should do in our model, i.e. reduce only the highest distortion. In order to illustrate the potential gains of such a reform, we calculate the optimal tariff reduction. By using iteration techniques, the rate that maximizes the welfare gain from such a univariate reform turns out to be a 32% import subsidy.

Scenario V represents a different model and constitutes thus a different benchmark for the rest of the scenarios. We apply the initial 2007 tariff structure within a model that does not contain the assumed state-owned enterprise behavior. This scenario should capture the effects

of a complete reformation of the SOEs (so that they now behave as profit maximizers and not as output maximizers) prior to the reformation of tariffs. The following 3 scenarios, VI, VII, and VIII, use this new benchmark situation and allow for tariff reforms. Scenario VI allows for the final 2014 WTO-imposed tariff rates; scenario VII allows for a concertina cut; and scenario VIII allows for a proportional cut. Such a sequence of scenarios should capture the extra gains that we may get from external (tariff) reforms when internal (SOE) reforms are already in place.[9]

4. Results from different counterfactuals

Table 8 below presents the main results from the different scenarios.[10] We focus on production efficiency, real income and consumption, real factor rewards, and consumers' welfare change.

4.1. Scenarios I - IV: tariff reforms under a distorted SOE sector. The assessment of economy-wide efficiency shows that the implementation of the final WTO tariffs (scenario I) is not overall beneficiary to Vietnam, nor is it beneficiary for the income inequality that exists in the country. In fact, the lower income rural population will face a money metric welfare loss of 1.2% of their income, while the richer households will gain by 0.5%. The reason for this may be assessed both from the supply side and the demand side of the economy.

On the supply side, the change in the tariff scheme is relatively soft on SOE production, implying that the sector stays relatively protected and still demands an excessive amount of labour. According to our calculations (see table A7 in the appendix for detailed sector results) the SOE production consumes 41.4% — up from 41.2% in the benchmark scenario — of the effective labour supply. The labour demand effects in the rest of the sectors skew the relative labour demand toward private and government services and other activities (L_{roe}) at the expense of the primary sector (L_p) and the privately manufactured goods sector (L_l).

Since the primary sector production is more sensitive to changes in the size of the labour supply, production drops significantly (see table A4). With consumer demand for primary goods

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[9]Before we proceed to the descrption of the results, it is important to note that in comparing the different scenarios we use different reform sizes. While the concertina brings the highest tariff down to the second highest tariff level, the proportional reform cuts all tariffs linearly by 20%, and the WTO accession reform cuts tariffs non-linearly by an average of 26, 3%. In scenario IV, we find the optimal size of the SOE tariff in terms of maximizing welfare gains. Thus, all our scenarios choose different sizes of tariff reductions; a property that in many ways is not ideal if we wanted to compare the welfare effects, e.g. which reform gives the highest welfare increase. A better approach would be to set all scenarios at an equal footing (e.g. by requiring that they deliver the same revenues, or by requiring that they are of the same size) and then see which one performs best (see Raimondos-Møller and Woodland, 2011). Here we stick to the conventional approach of pre-defining different reform sizes and examining only the sign of the effects (and not the size of the effects).

[10]More detailed tables are presented in appendix 2.

hardly affected, the production fall will reduce the exports of the primary sector (see table A5). Reduction of exports will reduce the overall Vietnamese purchasing power, per se, and thus the real consumption overall falls. When the lower income rural population suffers the most, it is due to its high dependency on the primary sector. The fall in the effective labour supply in the primary sector and the fall in rents to the immobile factor jointly produce the largest relative decline in real income among the three income groups. It suffers a 1.2% real income loss while the overall loss for the whole population is only 0.1%.

| | Main scenarios | | | | | Competitive scenarios with scenario V as benchmark | | |
	I	II	III	IV	V	VI	VII	VIII
Production efficiency	99.9	99.2	100.0	107.8	109.7	100.0	100.2	100.1
Real income	100.0	99.3	100.0	101.0	109.7	100.1	100.3	100.1
Real consumption	99.9	99.2	100.0	107.8	109.7	99.8	97.8	99.5
Real wage	99.3	97.3	99.3	110.1	88.2	99.1	95.8	99.1
Rents to immobile factors	97.3	99.9	97.9	113.4	163.4	97.3	101.2	97.7
Consumer welfare change (pct.)*								
Lower income rural household	-1.2	-6.6	-1.7	+16.3	+24.3	-1.4	-7.4	-2.1
Lower income urban household	+0.7	+2.4	+0.7	-9.8	-12.3	+1.3	+5.0	+1.5
Higher income household	+0.5	+2.4	+0.9	+2.1	+7.6	+0.9	+5.2	+1.6
Consumer welfare change, total	-0.1	-0.7	0.0	+4.9	+9.7	+0.1	+0.3	+0.1

Source: The model

* Measured as equivalent variation relative to benchmark income

Table 8: Main results

As we discussed previously, the WTO accession-led reform reduces both the simple mean and variance of the benchmark tariff structure. Even if these are desirable properties of a tariff reform, we do not know with certainty whether this particular reform was put wrongly together.[11] Other, more standard, reform rules should be examined. Within the theory of

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[11] For example, it does not follow the (often used by WTO) Swiss rule, where all tariffs fall and with the highest tariffs falling mostly.

piecemeal reforms, two rules are standard; the concertina rule and the proportional rule. Both rules are known to provide welfare gains under very general assumptions. However, with a state-owned sector distorting resource allocation, such welfare improvements may not arise.

As seen in column II, table 8, performing a concertina cut will worsen welfare in our model. The reason is simply the following: lowering the highest tariff (primary products) implies increasing relative protection for the SOE producers. Thus, instead of reducing the biggest distortion in the economy, this reform will increase it. This will happen at the expense of especially the primary sector and thus the labour employed in that sector, which to a large extent is the lower-income rural population. While the welfare of the urban population will rise, this rise is not enough to neutralize the loss of the rural households.

A proportional cut (column III, table 8) will again not generate gains since lowering all tariffs rates proportionally will bring the primary good tariff level closer to the SOE tariff level. Thus the SOE sector is again, as in scenarios I and II, protected at the expense of especially the primary sector. Still, and compared to a concertina cut, the SOE sector's protection is relatively reduced. In our simulation example, not significant changes will occur in aggregate real income, production efficiency, and in general aggregate welfare. However, income inequality will definitely increase with the lower income households loosing out again.

Both these two scenarios underline the consequences of underestimating the presence of a special SOE behavior and thus falsely suggesting concertina or proportional cuts in the search for welfare gains.

In scenario IV we return to the univariate type of reforms where only one tariff is reduced. However, now we choose a different tariff than the highest one. Let us explain. When tariffs are the only distortions in a model, reducing the highest tariff is usually equivalent to reducing the biggest distortion. However, when other distortions are in place, the highest tariff may not be equivalent with the biggest distortion. In the present model the sector that distorts mostly the efficient allocation of resources is the sector with state-owned enterprises. Even if that sector does not face the highest tariff protection, it is that sector's tariff that should be reduced. Leaving thus all the other tariffs unaltered, scenario IV allows the tariff of the SOE sector to fall.[12]

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[12]Note that an alternative reform would be not to constrain the direction of the tariff reform, and thus to allow raising the protection in other sectors. However, since such reforms can not be part of a WTO-based reform, we abstract from such reforms in this paper.

The next question then is how much to reduce that tariff.[13] In what follows we use iteration techniques and perform a numerical search for the locally optimal SOE tariff, i.e. a SOE tariff that maximizes the aggregate welfare gain given that the other tariffs do not change. As can be read from table 7, this optimal tariff turns out to be negative, i.e. an import subsidy, and equal to 32%. By subsidizing the imports of the goods produced by the state-owned enterprises, the aggregate welfare will rise by 4.9% with the poor rural households benefiting the most and thus reducing inequality (see column IV, table 8). The mechanisms for such results are based on the fact that the effective supply of labour to the state-owned sector will drop to 20.8% (down from 41.2%), leaving labour to be re-allocated to other sectors where its use is more efficient. As a result of this, the primary sector ends up increasing its exports. In general, trade as part of the country's GDP increases considerably (see table A5 in the appendix).

In general what such a reform shows is that the ingredient that is necessary to be included in a welfare increasing tariff reform is a large and disproportionate reduction of the tariff faced by the SOE sector. This sector has been attracting too many recourses, and as long as this sector is not reformed fundamentally, one should subsidize the imports of the goods produced by the state-owned enterprises. This will reduce the domestic production of these goods and move the freed-up inputs towards other sectors where they can be better used.

4.2. Scenarios V-VIII: tariff reforms under a competitive SOE sector. We now move to a different situation, where tariff reforms are performed *after* reforming the SOE sector into a competitive sector. Clearly, in that situation the rental rate of capital in the SOE sector will not be zero anymore. Firms in that sector will now have an incentive to choose a more balanced use of capital and labour, and capital rents will be distributed back to households. To create a new benchmark for analyzing tariff liberalization, we first allow for such internal reforms when no external reforms are yet put into place (i.e. the initial tariff rates are still in place); this is the situation depicted in scenario V.[14] As it is easy to see from table 8, internal reforms result in large gains in all accounts; an overall welfare increase by 9.7%; a reduction of income inequality with the lower income households experiencing a large 24.3% increase in their

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[13]Since tariff levels do not provide much information in this setting, we can not follow the "down to the second highest tariff level"-type of rule.

[14]In doing this, we use the same calibration values of the model as for the previous scenarios. A better procedure would have been to re-calibrate the model under the assumption that the benchmark model was fully perfectly competitive and then do the counterfactual that is described in scenario V. However, since in reality the benchmark case is not charcterised by a fully competitive state-owned sector, we do not have the data to do such a calibration correctly. Based on this caveat, scenarios V-VIII should only be seen as illustrative.

income; a 9.7% increase in production efficiency, real income, and real consumption. All that while wages fall across all sectors and income from rents to immobile factors increases by 63.4%.

As we have discussed above, the non-competitive nature of the SOE sector is the largest distortion in the Vietnamese economy and reforming that sector creates large overall gains. An economy wide efficiency improvement of 9.7% compared to the benchmark level is unleashed through a migration of effective labour resources to the primary sector (see table A7 in the appendix). This underlines that SOEs first and foremost attract labour resources from the sector with the most labour intensive production. The primary sector is also the main employment sector of the Vietnamese economy, employing some 58% of the working population. Hence, it is no surprise that the lower-income rural Vietnamese population is the big winner of an SOE reform. An increase in real income of 24.3% (table A9, appendix) to the lower-income rural population brings the average GDP per capita per day from 0.90 dollars to 1.11 dollars. The lower-income urban population stands to lose considerably from the restructuring since an important income source, SOE employment, is downsized dramatically. However, the money-metric welfare gains accrued to the two other population groups by far exceeds the loss of the lower-income urban population. Thus, by redistributing ex post, Pareto improvement is attainable.

The surge in economic activity in the exporting primary sector improves the purchasing power of the Vietnamese economy, adding to the welfare gains. This is also the essence of the gains from trade: optimal production induces trade patterns that improve consumer welfare by exporting goods of the sector in which the country is relatively more competitive, and importing what is relatively unfavorable to produce domestically.

If now, on top of these internal reforms, we allow tariff reductions then there will be extra gains to the economy. However, these gains are now marginal and of the order one would expect in standard competitive setups. As seen in columns VI-VII of table 8, a WTO-imposed tariff reduction will lead to an extra overall welfare gain of 0.1%, while a concertina and a proportional reform will increase welfare by 0.3% and 0.1% respectively, compared to the benchmark situation described in column V. While the concertina and the proportional cuts were expected to give welfare gains (based on known theoretical results), the fact that the WTO-accession tariff cuts also give comparable welfare gains is reassuring.[15]

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[15]The size of these welfare effects are specific to the simulations performed here and have no generalization power — see footnote 9 above.

5. Concluding remarks

Developing countries, especially socialist oriented developing countries, highly rely on state production. Indeed, Vietnam relies heavily on state industrial production. Such a predominant position of state-owned enterprises needs special consideration or otherwise mistaken policy conclusions can be made. The policy that this paper considers is the trade liberalization scheme that WTO has imposed on Vietnam upon its accession into the WTO in 2007. Tariffs have to fall in a pre-defined way by 2014. As we show, the ultimate gains from trade liberalization on economic development in Vietnam will be greatly at stake due to the distortions created by the strong presence of state-owned enterprises.

In the model it is assumed that the management in a state-owned enterprise pursues maximization of revenues instead of profits. Such behavior induces over-hiring of labour, attracting extra labour resources from the competitive sectors of the economy. Trade policy should take this into account and design tariffs in order to correct this over-production.[16]

The WTO accession-led tariff reform does not take all this into account. Tariffs on state-owned produced goods fall, but not a lot — other sectors' tariffs fall even more. As a result, the WTO accession tariff cuts will worsen the situation for Vietnam with the state-owned sector expanding even more. There are also distributional consequences to be aware of. Our results show that the aggregate welfare loss will hit mostly the lower-income rural population. These are the people that work in the sensitive labour-intensive primary sector. As generally recognized, this rural population is the prime source of poverty in developing countries, so the fact that the welfare losses are primarily within the lower end of the income scale demands special attention.

Policy makers must recognize that state-owned produced goods have to undergo relatively larger trade liberalization than competitively produced goods to secure the gains from trade. Therefore, not even other traditional tariff reforms (such as proportional tariff cuts and concertina cuts) will work in this setting. Such reforms will fail to reduce sufficiently the protection of the state-owned sector and thus bound to fail. Indeed, our calculations show that this is clearly the case.

Inspired by the basic principle behind the concertina tariff cut reform, viz. that we should reduce the highest distortion, we suggest a tariff reform that targets the highest distortion in the present model. We reduce the tariff of the state-owned enterprises leaving the other tariffs unchanged. To show the potential that such a reform can have, we search for the tariff level

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[16]The optimal tariff levels for such a small open economy are clearly not zero.

that will maximize the potential welfare gains. It turns out that the imports of the state-owned produced good should be subsidized by 32%. In that case, both the aggregate welfare and the welfare of the low income rural population will rise considerably.

Clearly, if Vietnam was able to complete within the accession period a reform of state-owned enterprises so that they become competitive, the WTO accession schedule of final rates, as all other conventional tariff reforms, will yield aggregate welfare gains. However, such a complete restructuring of the state-owned enterprises is far from what is going on in reality.

Appendix 1: Additional data

per cent	rates	
SITC Group	Bound	Final
01 Meat and meat preparations	30,0	16,6
02 Dairy products and birds' eggs	23,5	19,5
03 Fish (not marine mammals), crustaceans, molluscs and aquatic invertebrates, and preparations thereof	31,1	20,1
04 Cereals and cereal preparations	28,5	23,7
05 Vegetables and fruit	29,1	24,1
06 Sugars, sugar preparations and honey	36,2	31,5
07 Coffee, tea, cocoa, spices, and manufactures thereof	29,4	23,7
08 Feeding stuff for animals (not including unmilled cereals)	8,0	5,0
09 Misc. edible products etc	31,5	22,8
11 Beverages	60,7	45,4
12 Tobacco and tobacco manufactures	109,6	99,6
21 Hides, skins and furskins, raw	5,0	2,4
22 Oil-seeds and oleaginous fruits	10,5	8,3
23 Crude rubber (including synthetic and reclaimed)	6,0	4,8
24 Cork and wood	0,5	0,5
25 Pulp and waste paper	1,4	1,1
26 Textile fibres (other than wool tops and other combed wool) and their wastes (not manufactured into yarn or fabric)	12,4	5,8
27 Crude fertilizers, other than those of Division 56, and crude minerals (excluding coal, petroleum and precious stones)	6,7	6,7
28 Metalliferous ore, scrap	2,2	2,2
29 Crude animal and vegetable materials, n.e.s.	5,3	4,5

per cent	rates	
SITC Group	Bound	Final
33 Petroleum, petroleum products and related mat	23,3	23,2
34 Gas, natural and manufactured	4,5	4,5
74 General industrial machinery and equipment, n.e.s., and machine parts, n.e.s.	10,5	8,3
75 Office machines and automatic data-processing machines	7,4	1,5
76 Telecommunications and sound-recording and reproducing apparatus and equipment	17,8	11,0
77 Electrical machinery, apparatus and appliances, n.e.s., and electrical parts thereof (including non-electrical counterparts, n.e.s., of electrical household-type equipment)	12,4	9,2
78 Road vehicles (including air-cushion vehicles)	55,8	41,6
79 Other transport equipment	7,1	5,8
81 Prefabricated buildings sanitary, plumbing, heating and lighting fixtures and fittings, n.e.s.	20,2	15,5
83 Travel goods, handbags and similar containers	39,1	25,0
84 Articles of apparel and clothing accessories	21,2	19,5
85 Footwear	35,6	27,1
87 Professional, scientific and controlling instruments and apparatus, n.e.s.	2,4	1,3
88 Photographic apparatus, equipment and supplies and optical goods, n.e.s. watches and clocks	12,6	8,6
89 Miscellaneous manufactured articles, n.e.s.	20,4	15,0
93 Special transactions and commodities not classified according to kind	0,0	0,0
97 Gold, non-monetary (excluding gold ores and concentrates)	1,5	1,5

Table A1: Average tariff rates, 2-digit SITC categories: 00-20, and 30-90

	rates (%)	
SITC Group	Bound 2007 rates	Final 2014 rates
0 Food, foodstuff and live animals	21.5	16.6
1 Beverages and tobacco	103.4	92.7
2 Crude materials, inedible, except fuels	5.8	3.7
3 Mineral fuels, lubricants and related materials	22.6	22.6
4 Animal and vegetable oils, fats and wax	17.0	14.3
5 Chemical and related products, n.e.s.	13.0	6.5
6 Manufactured goods classified chiefly by materials	15.1	12.2
7 Machinery, transport and equipment	22.2	16.1
8 Miscellaneous manufactured articles	20.0	15.7
9 Other	1.5	1.5

Source: Comtrade, WTO and own calculations

Table A2: Average tariff rates, 1-digit SITC categories

By kind of economic activity	GDP Share	Vietnam Model Sector	Ownership
Agriculture	16,7	Primary	Private
Forestry	1,3	Primary	Private
Fishing	3,8	Primary	Private
Mining and quarrying	10,1	SOE	State
Manufacturing	20,3	SOE/Private	State/Private
Electricity, gas and water supply	3,5	SOE/Private	State/Private
Construction	6,2	SOE/Private	State/Private
Wholesale and retail trade; repair of motor vehicles, motor cycles and personal and household goods	13,6	ROE	Private
Hotels and restaurants	3,2	ROE	Private
Transport, storage and communications	4,3	ROE	Private
Financial intermedation	1,8	ROE	State
Scientific activities and technology	0,6	ROE	State
Real estate, renting and business activities	4,4	ROE	Private
Public administration and defence; compulsory social security	2,7	ROE	State
Education and training	3,3	ROE	State
Health and social work	1,5	ROE	State
Recreational, cultural and sporting activities	0,5	ROE	Private
Activities of party and of membership organisations	0,1	ROE	State
Community, social and personal service activities	2,0	ROE	State
Private households with employed persons	0,2	ROE	Private

Source: GSO (2004)

Table A3: Sector allocation in the model

Appendix 2: Detailed results from simulations

benchmark = index 100	Bencmark	I	II	III	IV	V	VI	VII	VIII
Primary sector	100.0	97.7	85.8	96.6	143.6	169.4	98.5	91.6	97.7
Priv. and gov. services, and other activities	100.0	101.2	103.2	101.2	108.4	112.4	101.4	104.7	101.4
Private manufacturing	100.0	98.9	103.2	101.2	108.4	112.4	99.1	104.7	101.5
State manufacturing	100.0	100.2	101.5	100.2	81.5	63.0	100.3	102.1	100.3
Total economy	100.0	99.9	99.2	100.0	107.8	109.7	100.0	100.2	100.1

Source: The Vietnam model

Scenarios VI-VIII are relative to scenario V.

Table A4: Production efficiency

per cent	Benchmark	I	II	III	IV	V	VI	VII	VIII
Primary sector	-9.2	-8.5	-5.2	-8.1	-20.5	-20.9	-20.1	-16.5	-19.7
Priv. and gov. services, and other activities	5.4	4.9	3.8	5.0	-1.7	4.6	4.1	2.8	4.1
Private manufacturing	-6.6	-6.3	-7.1	-6.8	-8.2	-6.8	-6.6	-7.5	-7.1
State manufacturing	7.5	7.8	6.8	7.8	25.0	17.8	18.4	17.6	18.4

Source: The Vietnam model

Table A5: Net trade (% of GDP)

benchmark = index 100	Bencmark	I	II	III	IV	V	VI	VII	VIII
Primary sector	100	93.8	80.0	92.4	143.6	169.4	94.6	85.4	93.4
Priv. and gov. services, and other activities	100	98.9	103.2	98.8	108.4	112.4	99.1	104.7	99.0
Private manufacturing	100	94.4	103.2	98.8	108.4	112.4	94.6	104.7	99.1
State manufacturing									
Total economy	100	97.3	99.9	97.9	113.4	163.4	97.3	101.2	97.7

Source: The Vietnam model

Scenarios VI-VIII are relative to scenario V.

Table A6: Rents to immobile factors

Per cent	Benchmark	I	II	III	IV	V	VI	VII	VIII
Primary sector	25.1	24.3	20.7	24.0	39.2	48.1	47.3	43.2	46.7
Priv. and gov. services, and other activities	26.0	26.7	27.8	26.7	30.8	33.2	34.2	36.5	34.2
Private manufacturing	7.7	7.6	8.3	7.9	9.1	9.9	9.7	10.9	10.2
State manufacturing	41.2	41.4	43.2	41.4	20.8	8.8	8.9	9.5	8.9

Source: Vietnam Model
Note: Percentage share of the total effective labour force

Table A7: Effective labour supply

	Real wage	Scenario wage levels (benchmark = index 100)							
	Benchmark	I	II	III	IV	V	VI	VII	VIII
Lower income rural household	0.85	99.3	97.3	99.3	110.1	88.2	99.1	95.8	99.1
Lower income urban household	0.85	99.4	97.2	99.3	110.0	88.2	99.1	95.7	99.0
Higher income household	0.85	99.5	98.0	99.5	107.1	88.2	99.3	96.4	99.2

Source: The Vietnam model
Note: The model operates with a single nominal wage rate meausered per effective labour unit. Real wage rates are based on expenditure weighted priceindices according to household consumption spending compositions. Scenarios VI-VIII are relative to scenario V.

Table A8: Real wage by household

per cent	I	II	III	IV	V	VI	VII	VIII
Lower income rural household	-1.1	-6.6	-1.6	+12.0	+24.3	-1.0	-5.6	-1.6
Lower income urban household	+0.7	+2.5	+0.8	-13.1	-12.3	+1.1	+4.2	+1.2
Higher income household	+0.5	+2.5	+1.0	-1.6	+7.6	+0.7	+4.1	+1.3
Total	0.0	-0.7	0.0	+1.0	+9.7	+0.1	+0.3	+0.1

Source: The Vietnam model
Note: Real income is measured as household nominal income deflated by an expenditure weighted price index specific to each household. Scenarios VI-VIII are relative to scenario V.

Table A9: Real income changes

benchmark = index 100	Bencmark	I	II	III	IV	V	VI	VII	VIII
Primary sector	100	101.0	105.2	101.5	88.6	109.3	101.2	106.5	101.6
Priv. and gov. services, and other activities	100	99.4	98.4	99.5	88.9	109.9	99.5	99.3	99.6
Private manufacturing	100	101.5	99.3	99.7	87.9	108.1	101.6	100.4	99.8
State manufacturing	100	100.1	98.4	100.2	139.5	109.9	100.2	99.3	100.3
Total economy	100	99.9	99.2	100.0	107.8	109.7	101.6	109.1	102.4

Source: The Vietnam model
Scenarios VI-VIII are relative to scenario V.

Table 10: Real consumption changes by sector

benchmark = index 100	Bencmark	I	II	III	IV	V	VI	VII	VIII
Lower income rural household	100	98.8	93.3	98.3	119.5	124.3	99.0	94.4	98.4
Lower income urban household	100	100.7	102.4	100.7	92.7	87.7	99.0	94.4	98.4
Higher income household	100	100.5	102.3	100.9	105.0	107.6	99.8	97.3	99.4
Total economy	100	99.9	99.2	100.0	107.8	109.7	99.8	97.8	99.5

Source: The Vietnam model
Scenarios VI-VIII are relative to scenario V.

Table A11: Real consumption changes by household

Appendix 3: Data sources

Our main sources of data are the following:

- Comtrade, United Nations Commodity Trade Statistics Database, at

  – http://unstats.un.org/unsd/comtrade/.

- European Commission:

  – Trade issues: http://ec.europa.eu/trade/issues/newround/index_en.htm

  – GSP 2003: http://ec.europa.eu/trade/issues/global/gsp/gspguide.htm

  – External relations: http://ec.europa.eu/external_relations/index.htm

  – External relations with Vietnam:

    — http://ec.europa.eu/external_relations/vietnam/intro/index.htm

- GSO, General Statistics Office of Vietnam, http://www.gso.gov.vn/

- IMF, 2006, various online information incl. statistics. WEO: World Economic Outlook Database.

- Heston, A., R. Summers, and B. Aten, 2006, Penn World Table Version 6.2, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania.

- World Bank, 2007, World Development Indicators database,

  – http://siteresources.worldbank.org/DATASTATISTICS/Resources/GDP.pdf.

- WTO, World Trade Organisation, various online information incl. statistics:

  – http://www.wto.org/english/thewto_e/whatis_e/tif_e/fact4_e.htm

  – and http://www.wto.org/english/tratop_e/schedules_e/goods_schedules_e.htm

  – http://www.wto.org/WT/ACC/VNM/48/Add.1

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