Trade Liberalization and Poverty: Lessons from Asia and Africa

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April 2006

Abstract

We bring together the lessons drawn from the computable general equilibrium (CGE) analysis of the impacts of trade liberalization on poverty in seven Asian and African countries: Bangladesh, Benin, India, Nepal, Pakistan, the Philippines and Senegal. We compare and contrast the results in these countries, explaining where there are similarities and why there are differences. Particular attention is paid to identifying how the specific characteristics of each country – initial tariff structure, trade patterns, relative factor endowments, production patterns, income sources and consumption patterns of the poor, etc. – modify the results. Conclusions are then drawn with respect to the key factors in managing trade liberalization and designing appropriate accompanying measures. Results show that trade liberalization has little but positive impact on welfare and poverty. Overall, industrial sectors benefit - relatively to agriculture - from trade liberalization and so are urban households relatively to their rural counterparts.

1. Introduction

In recent years, the impacts of macro-economic shocks, such as fiscal reform and trade liberalization, on income distribution and poverty have become the subject of intense debate. Which tax regime is most equitable? Do the poor share in the gains from freer trade? What alternative or accompanying policies could be used to ensure a more equitable distribution? What are the mechanisms linking macro policies to micro, and particularly poverty, impacts?

The standard story begins with the observation that initial tariff rates are generally much higher for industrial imports, so that trade liberalization leads to an expansion in the agricultural sector, which benefits unskilled workers and rural households relatively more than capital owners and urban households. The results of our study challenge the standard story in important ways. Most importantly, trade liberalization is found to generally favor urban households and to actually lead to an increase in rural poverty in four of the seven countries analyzed. The explanations for these results reveal a number of unexpected channels of impact through which trade liberalization influences these economies and, ultimately, poverty.

The analysis of macroeconomic shocks and poverty are generally based on very different techniques and sources of data. Income distribution and poverty issues are generally analyzed on the basis of household data in recognition of the heterogeneity of these agents and the importance of capturing their full distribution. On the other hand, given its economy-wide nature and the strong general equilibrium effects they imply, macroeconomic shocks are ideally examined in the context of a computable general equilibrium (CGE) model based on national accounting data. The use of a CGE model is also justified by the complexity of the impacts of trade liberalization on households, as they involve changes in wage rates, returns to land, capital returns, consumption prices and compensatory direct and indirect taxes. Finally, CGE simulation analysis has the advantage over ex post econometric analysis of generating a counterfactual in the absence of trade liberalization and also of allowing ex ante predictions.

In this study we meld these two currents. Average household income variations following trade liberalization are estimated at the household category level in CGE models of seven Asian and African countries: Bangladesh, Benin, India, Nepal, Pakistan, Philippines and Senegal. These variations are then applied to individual households within each category using base-year income

data from household surveys. These results are then contrasted with initial income values through the estimation of standard Foster-Greer-Thorbecke (FGT) poverty indicators.

Underlying individual country studies were all conducted by local researchers in the context of the PEP-MIMAP research network[1]. The differences between these countries provide us with a natural laboratory to better understand how trade liberalization impacts the poor. The economy-wide modeling framework we have adopted allows us to identify and compare the principal channels of influence. Every effort has been made to ensure the comparability of the modeling frameworks in each country to ensure that all observed differences reflect actual differences rather than differences of approach.

2. Brief literature review

There have been numerous attempts to use CGE models in the analysis of income distribution and poverty issues[2]. The simplest approach is to increase the number of categories of households. In this context, it is possible to examine how different types of households (rural vs. urban, landholders vs. sharecroppers, region A vs. region B, etc.) are affected by a given shock. However, nothing can be said about the relative impacts on households within any given category as the model only generates information on the representative (or "average") household. There is increasing evidence that households within a given category may be affected quite differently according to their factor endowments, location, demographics, education, consumption patterns, etc. Of course, this problem of intra-category variation decreases with the degree of disaggregation of household categories. Yet even in the most disaggregate versions – Piggott and Whalley (1985) have over 100 household categories – substantial intra-category heterogeneity in the impacts of a given shock is likely to subsist.

A popular alternative is to assume a lognormal distribution of income within each category where the variance is estimated using base year data (see De Janvry, Sadoulet and Fargeix, 1991). In this approach, the CGE model is used to estimate the change in the average income for each household category, while the variance of this income is assumed to be fixed. Decaluwé et al. (1999)

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[1] Poverty and Economic Policy (PEP) research network: www.pep-net.org. Micro Impacts of Macro and Adjustment Policies (MIMAP) project: www.mimap.org.

[2] A detailed review of the CGE literature on the welfare, poverty and distributional effects of trade liberalization is provided by Cloutier, Cockburn and Decaluwé (2003).

argue that a beta distribution is preferable as, unlike the lognormal, it can be skewed left or right and thus better represent the different types of intra-category income distributions commonly observed. In this paper, we do not impose any specific functional form on the distribution function. Instead, we apply the income variation obtained for each household category in the CGE model simulation to the income of each individual household belonging to this category. This provides us with a vector of household incomes before and after the trade liberalization simulation on which we can perform standard poverty analysis.

A final alternative, currently pursued by the members of this research network, is to model each household individually in a microsimulation model. This microsimulation model can be either linked to a CGE model (Savard (2003)) or fully integrated into a CGE model (Cockburn (2001), Cogneau and Robilliard (2001)).

In the following sections, we track the effects of trade liberalization through the economies studied in order to explain the welfare poverty results (section 3). In particular, we trace the channels of impact on sectoral production and trade (section 3.2), factor prices (section 3.3), household income (section 3.4) and consumer prices (section 3.5) before revisiting our welfare and poverty analysis in the light of the preceding results (section 3.6). Throughout, we draw a series of lessons, many of which contrast with the standard trade liberalization-poverty story outlined in the introduction.

3. Simulation Results

The standard expectations for the impacts of trade liberalization on poverty go as follows. First, as initial tariffs are generally higher for industrial goods, we expect that the agricultural sector will be the main beneficiary of trade liberalization. This, in turn, raises the relative returns to factors used intensively in the agricultural sector: unskilled labor and land. Rural and poor households, which derive a relatively large share of their income from these two factors, should therefore be the "winners" from trade liberalization in income terms. On the other hand, consumer prices are expected to fall more for industrial goods, which is to the advantage of rich and urban households. The net effects on poverty will depend on the relative strength of the income and consumer price effects, although it is generally assumed that the income effect will dominate and the poor will thus benefit. The results of our simulations in these seven quite different developing countries challenge these expectations in a number of important ways.

3.1 Welfare and Poverty Impacts

LESSON ONE: Trade liberalization increases welfare and reduces poverty marginally

Our results do indicate that trade liberalization has positive, although generally small, aggregate welfare and poverty effects in most countries studied (Table 1). Note that welfare indicators concern all households, whereas poverty indicators compare the income of the poorest households with a minimum income required to satisfy their basic necessities. Overall welfare effects, as measured by equivalent variations (EV), are generally small but positive, with the exception of Benin (-0.3%) and India (-0.1%). At the same time, poverty is found to fall in all countries but Bangladesh, regardless of the poverty indicator chosen. Headcount ratios (P_0) fall substantially in Benin (-1.02%) and moderately in all other countries, except for Bangladesh (0.13%). Similar, if sometimes stronger, reductions are noted in the poverty gap (P_1) and poverty severity (P_2), the latter decreasing by 2.19% in Senegal. The rest of this paper will be devoted to explaining this and the following lesson.

Table 1
Impact on Income, Welfare and Poverty
(in %)

	Income	CTH	CPI	EV	P_O	P_1	P_2	Initial poverty level		
								P_O	P_1	P_2
Bangladesh	**-3.1**	**-2.7**	**-2.8**	**0.1**	**0.13**	**0.53**	**0.71**	**0.418**	**0.099**	**0.034**
Rural	-3.2	-2.9	-2.8	-0.1	0.10	0.53	0.71	0.461	0.109	0.038
Urban	-3.1	-2.5	-2.9	0.4	0.46	0.53	0.67	0.204	0.047	0.016
Benin	**-4.2**	**-3.1**	**-3.2**	**-0.3**	**-1.02**	**-1.00**	**-1.23**	**0.354**	**0.110**	**0.050**
Rural	-5.5	-5.2	-2.4	-3.0	2.38	3.12	3.76	0.389	0.109	0.043
Urban	-3.1	-1.1	-4.1	2.0	-4.92	-4.84	-4.86	0.320	0.110	0.056
India	**-9.7**	**-9.2**	**-9.1**	**-0.1**	**-0.10**	**-0.13**	**-0.16**	**0.383**	**0.133**	**0.064**
Rural	-9.8	-9.8	-9.1	-0.2	0.00	0.27	0.32	0.404	0.134	0.062
Urban	-9.5	-9.0	-9.1	0.1	-0.14	-0.27	-0.31	0.376	0.133	0.065
Nepal	**-5.9**	**-5.0**	**-5.2**	**0.0**	**-0.74**	**-0.43**	**-0.46**	**0.395**	**0.121**	**0.054**
Rural	-5.8	-5.0	-5.2	0.0	-0.83	-0.48	-0.53	0.377	0.107	0.045
Urban	-6.4	-5.0	-5.2	0.0	0.00	-0.18	-0.23	0.636	0.302	0.176
Pakistan	**-6.7**	**-5.5**	**-5.7**	**0.3**	**-0.50**	**-0.55**	**-0.89**	**0.383**	**0.086**	**0.028**
Rural	-6.8	-6.4	-5.6	-0.8	1.70	2.78	3.19	0.372	0.081	0.026
Urban	-6.6	-4.5	-5.8	1.3	-3.42	-4.64	-5.74	0.397	0.094	0.031
Philippines	**-3.0**	**-1.8**	**-2.5**	**0.8**	**-0.75**	**-1.47**	**-1.88**	**0.485**	**0,171**	**0.079**
Rural	-3.1	-2.1	-2.5	0.4	-0.56	-1.37	-1.79	0.632	0.228	0.107
Urban	-2.9	-1.7	-2.5	0.9	-1.10	-1.68	-2.06	0.337	0.112	0.051
Senegal	**-3.7**	**-2.6**	**-3.1**	**0.3**	**-0.24**	**-1.49**	**-2.19**	**0.691**	**0.284**	**0.147**
Rural	-3.8	-1.6	-3.4	1.9	-0.49	-1.80	-2.48	0.884	0.401	0.218
Urban	-3.7	-3.2	-2.9	-0.2	0.63	0.47	0.61	0.390	0.100	0.036

CTH: Consumption, CPI: Consumer price index; EV: Equivalent variations; P_0: Headcount ratio; P_1: Poverty gap; P_2: Poverty severity

LESSON TWO: Trade liberalization is pro-urban and may increase rural poverty

Trade liberalization affects rural and urban households quite differently. In every country apart from Nepal and Senegal, welfare increases and poverty decreases most for urban households. This contrasts with the standard story, which suggests that rural households will be the "winners" from tariff reductions. Indeed, welfare actually decreases and poverty increases in the rural areas of four (Bangladesh, Benin, India and Pakistan) of the seven countries studied. Note that welfare and poverty results with more disaggregate household categories are presented in the country chapters.

To better understand these results, we now trace the impacts of trade liberalization through its effects on resource allocation, factor remuneration and the price structure.

3.2 Trade and output effects

LESSON THREE: Industrial output increases relative to agriculture as a result of a stronger export response and greater input cost savings.

The pro-industrial nature of trade liberalization can be explained by three major factors: a muted impact of import price reductions on domestic demand for local products, given their imperfect substitutability and low initial import penetration rates; a stronger positive industrial export response; and, finally, greater input cost savings in the industrial sector. These factors are outlined in more detail below.

The initial impact of trade liberalization is felt on imports. The elimination of tariffs directly reduces import prices (Table 2). In all countries, import prices decline more in the industrial sector as a result of higher initial tariff rates. Consequently, the import response (1 to 10 percent increase) is higher among industrial imports in all countries studied. As this response also depends on the degree to which imports and domestic goods are considered to be substitutes, which varies across countries, the increases in import volumes are not necessarily proportional to the fall in import prices. The smallest import increase is observed in Nepal, where initial tariff rates were lowest. In the case of India, the strong industrial import response is also due to the elimination of quantitative restrictions, whereas these restrictions had already been removed by the mid-1990s in the other countries.

Table 2
Impact on Production, Trade and Prices
(in %)

	Sectoral shares*			Ratios*		Volume changes					Price changes				
	Value added	Imports	Exports	Imports/ Cons'n	Exports/ Output	Imports	Dom. sales	Exports	Output	Value added	Imports	Dom. sales	Exports	Output	Value added
Bangladesh				**9.1**	**5.0**	**10.0**	**-0.1**	**15.3**	**0.6**	**0.0**	**-13.3**	**-4.0**	**-8.2**	**-3.8**	**-3.3**
Agriculture	22.3	5.2	8.1	2.4	1.9	8.9	-0.7	6.7	-0.5	-0.6	-8.1	-3.3	-2.1	-3.2	-3.1
Industry	22.1	94.8	91.9	24.4	14.0	10.0	-0.4	16.0	1.9	1.2	-13.6	-4.7	-8.8	-4.0	-2.9
Services	55.5	0.0	0.0	0.0	0.0	-	0.2	-	0.2	-0.3	-	-3.9	-	-3.9	-3.5
Benin				**19.6**	**17.0**	**3.6**	**-1.4**	**5.0**	**-0.2**	**0.0**	**-14.9**	**-5.4**	**0.0**	**-4.4**	**-3.9**
Agriculture	36.3	3.0	6.0	2.7	3.9	3.3	-1.1	2.6	-1.0	-1.0	-9.6	-4.8	0.0	-4.6	-5.1
Industry	13.5	91.5	37.7	39.7	18.4	4.1	-3.0	2.6	-2.0	-2.2	-15.8	-5.4	0.0	-4.4	-7.1
Services	50.3	5.6	56.3	3.3	24.7	-4.6	-1.0	6.9	1.4	1.3	0.0	-5.8	0.0	-4.4	-2.2
India				**5.5**	**6.1**	**8.1**	**-0.7**	**10.3**	**-0.1**	**0.0**	**-14.6**	**-10.1**	**-3.2**	**-9.8**	**-10.0**
Agriculture	30.2	3.4	5.3	0.9	1.3	3.6	-0.1	7.3	0.0	0.0	-11.0	-9.6	-2.3	-9.5	-9.9
Industry	19.8	87.6	69.0	12.8	9.7	9.9	-1.3	11.6	0.1	0.2	-15.8	-10.8	-3.6	-10.1	-10.1
Services	50.0	8.9	25.7	1.2	4.7	-8.0	-0.4	7.2	-0.2	-0.1	0.0	-9.9	-2.3	-9.6	-10.0
Nepal				**15.4**	**15.0**	**1.0**	**-0.1**	**3.8**	**0.2**	**0.0**	**-7.9**	**-5.8**	**0.0**	**-5.5**	**-6.2**
Agriculture	57.9	15.1	8.6	5.5	1.2	1.0	0.1	3.4	0.1	0.0	-7.6	-6.0	0.0	-6.0	-6.2
Industry	6.7	84.9	62.3	54.4	28.0	1.0	0.0	3.1	0.8	0.9	-7.9	-5.9	0.0	-4.3	-6.2
Services	35.4	0.0	29.1	0.0	4.6	0.0	-0.3	5.3	0.0	-0.1	0.0	-5.6	0.0	-5.3	-6.3
Pakistan				**11.6**	**9.7**	**6.8**	**-0.8**	**10.4**	**0.1**	**0.0**	**-18.0**	**-7.9**	**0.0**	**-7.2**	**-7.3**
Agriculture	28.7	6.3	3.0	3.4	1.1	-0.2	-0.3	3.9	-0.3	-0.3	-6.4	-6.6	-1.5	-6.6	-6.7
Industry	19.5	85.4	79.6	24.3	16.3	8.7	-1.6	11.3	0.6	0.7	-20.1	-8.6	0.0	-7.2	-8.6
Services	51.9	8.3	17.4	2.5	6.5	-7.7	-0.4	7.5	-0.2	-0.2	0.0	-7.9	0.0	-7.6	-7.2
Philippines				**17.4**	**17.5**	**7.7**	**-1.1**	**6.9**	**0.3**	**0.0**	**-16.2**	**-5.2**	**0.0**	**-4.2**	**-3.1**
Agriculture	20.0	1.5	6.5	1.8	7.5	5.5	-1.6	4.7	-1.1	-1.0	-7.0	-4.1	0.0	-3.8	-4.0
Industry	23.2	87.9	59.3	33.3	25.4	9.2	-1.3	9.2	1.5	1.3	-18.0	-6.9	0.0	-5.1	-1.8
Services	56.8	10.6	34.3	4.6	13.7	-4.7	-0.8	3.3	-0.2	-0.2	0.0	-4.3	0.0	-3.7	-3.3
Senegal				**19.7**	**15.5**	**6.5**	**-2.0**	**8.8**	**-0.3**	**0.0**	**-13.6**	**-4.1**	**0.0**	**-3.4**	**-3.8**
Agriculture	19.4	14.6	0.7	14.8	0.6	3.1	-2.6	4.3	-2.6	-2.6	-11.9	-3.1	0.0	-3.1	-5.1
Industry	25.8	66.3	73.3	26.9	23.2	10.0	-3.0	8.1	-0.4	0.1	-17.2	-4.8	0.0	-3.6	-3.4
Services	54.7	19.0	26.1	11.8	10.0	-2.9	-0.3	10.8	0.9	0.9	0.0	-3.7	0.0	-3.3	-3.6

** Initial shares and ratios*

In the agricultural and industrial sectors, domestic demand for locally-produced goods ("Dom. sales") declines in the face of lower-priced imports. However, as imports represent on average less than 20% of domestic consumption in all countries and are considered to be imperfect substitutes for local goods, the resulting fall in the price and volume of domestic sales of local goods is quite limited. Although these impacts are strongest in the industrial sector (except in the Philippines), the differences with respect to agriculture are generally small. A particularly strong price reduction is observed in India, where quantitative imports restrictions are simultaneously removed.

With a fixed current account balance, the increase in imports following trade liberalization leads to a real exchange rate depreciation. This, in turn, stimulates exports. The strength of this export response depends on the fall in prices for domestic sales, the capacity of local producers to substitute between local and export markets, the price elasticity of world demand for these exports[3] and initial export intensities. As domestic prices fall most and initial export intensities are highest in the industrial sector, it is this sector that generally has the strongest export response.

Indeed, this response is strong enough to counteract the reduction in domestic sales such that total industrial output actually rises relative to total agricultural output in all but one country (Benin). Even there, the difference in output response is much smaller than the difference in domestic sales. This pro-industrial "export-push" effect of trade liberalization is not often noted in studies of trade liberalization. However, the combined effect of fixed or falling export prices and falling prices for domestic sales is a fall in output prices that hits the industrial sector slightly harder than the agricultural sector, except in Benin and Nepal.

Given higher initial tariff rates and import penetration rates in the industrial sector, consumer prices systematically decline much more than in the agricultural sector[4]. As the industrial sector consumes a higher share of industrial inputs in most countries, it benefits most from the resulting input cost savings of trade liberalization. While industrial output prices fall relative to agricultural output prices in five of the seven countries, value added prices actually increase in the industrial sector relative to the agricultural sector in four (Bangladesh, Nepal, Philippines and Senegal) of these seven countries. This counteracting input cost effect of trade liberalization on the relative value added prices of industry and agriculture is another novel finding of this study.

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[3] In all countries but Bangladesh, India and Pakistan, world demand for the country's exports are assumed to be perfectly elastic.

[4] We will discuss this result further in section 7 below.

We now turn our attention to the impacts on the service sector. Initial tariffs on the limited or inexistent imports of services are all zero. Consequently, where there are any imports of services, their price remains constant and import values actually decrease as consumers switch to cheaper agricultural and industrial goods. Domestic sales decline nonetheless, albeit much less than in agriculture or industry, as import penetration ratios are small and real depreciation leads producers to increase their exports. However, the net impact on the output and value added of services is generally small and negative, except in Benin and Senegal, which have the two of three highest export intensities for services. Output and value added prices fall roughly in proportion with the agricultural and industrial sector.

In conclusion, in most countries we observe a similar pattern concerning the trade and output effects of trade liberalization. Higher initial tariffs on industrial imports translate into greater reductions in their import prices. However, due to their imperfect substitutability with respect to domestic goods and generally low import penetration ratios, the resulting reductions in domestic output prices and volumes are much smaller. Furthermore, due to its high export intensity, it is the industrial sector that benefits most from the resulting export expansion, such that industrial output, with the exception of Benin, rises relative to agricultural output. This pro-industrial impact is further reinforced by industry's more substantial input cost savings. Finally, the service sector is characterized by generally small output effects as it has no initial tariffs.

3.3 Factor Price Effects

In this section, we see how the general fall in value added prices affects factor prices, which are the prime determinants of household income and, ultimately, poverty effects.

LESSON FOUR: Relative wages increase, returns to capital fall.

We assume perfect sectoral mobility of labor, but no intersectoral mobility of capital[5]. Consequently, variations in capital prices differ from sector to sector, whereas variations in wage rates are uniform. The two exceptions here are Bangladesh and Benin, given that these models distinguish numerous labor categories: male and female low, medium and high-skilled workers in Bangladesh, and informal, modern and civil servants in Benin. Thus, wage rate variations are

[5] We examine the long-term effects with capital mobility further on.

weighted averages of the variations in the corresponding wage rates of these labor categories, where the weights differ between sectors.

Generally speaking, we expect that the cost of mobile factors to be less affected than those of fixed factors. The more rigid the market for a factor is, the greater will be the price response and vice-versa. Therefore, it is not surprising to record a smaller fall in wage rate than in capital prices. Although overall returns to capital fall relatively more than wages in most countries, sectoral impacts mimic changes in value added prices. Hence, sectors with in which value added prices fall more will also show a greater decline in the returns to capital. The factor share in value added will determine the degree to which the impact on value added price is transmitted to return to capital. Finally, the overall impact will depend on the sectoral share in overall factor payments.

In the models of India, Nepal and Senegal, land is distinguished. In the case of India and Nepal, constant relative agricultural prices lead to stability in the returns to land relative to the other factors of production. In Senegal, returns to land fall relative to all other factors, reflecting the stronger fall in agricultural value added relative prices in this country. In conclusion, with the exception of Nepal and Senegal (relative gain for capital), trade liberalization leads to an increase in the relative price of labor.

3.4 Household Income Effects

LESSON FIVE: Nominal income tends to fall most in rural areas.

In the preceding section, we saw that nominal returns to all factors fall as a result of trade liberalization. Consequently, it is not surprising that nominal household income also falls in all countries (Table 4). These incomes fall the most for countries where the reductions in nominal factor returns are the strongest: India (-9.7%), Pakistan (-6.7%) and Nepal (-5.9%). Conversely, nominal incomes in the Philippines (-3.0%) and in Bangladesh (-3.1%) – where factor incomes fall least – and Senegal (-3.7%) – where fixed "other income" (inter-household transfers) is a major part of household income – are least affected by trade liberalization.

Table 3
Impact on Factor Prices
(in %)

	Change in		Sectoral shares in factor payments*				Factor shares in value added*				Change in price of:			
	VA price	VA	Labor		Capital	Land	Labor		Capital	Land	Labor		Capital	Land
			Unskilled	Skilled			Unskilled	Skilled			Unskilled	Skilled		
Bangladesh	**-3.3**	**0.0**	**100.0**	**100.0**	**100.0**	**-**	**25.2**	**21.2**	**53.7**	**-**	**-3.1**	**-3.2**	**-3.4**	**-**
Agriculture	-3.1	-0.6	30.0	10.9	23.2	-	33.9	10.4	55.8	-	-2.9	-2.9	-3.3	-
Industry	-2.9	1.2	12.9	13.6	29.8	-	14.7	13.0	72.3	-	-2.6	-3.0	-2.8	-
Services	-3.5	-0.3	57.1	75.4	47.0	-	25.8	28.8	45.4	-	-3.3	-3.3	-3.7	-
Benin	**-3.9**	**0.0**	**100.0**		**100.0**	**-**	**63.1**		**36.9**	**-**	**-2.7**		**-5.3**	**-**
Agriculture	-5.1	-1.0	33.2		41.5	-	57.8		42.2	-	-3.8		-6.9	-
Industry	-7.1	-2.2	10.6		18.3	-	49.9		50.1	-	-2.5		-10.0	-
Services	-2.2	1.3	56.1		40.3	-	70.4		29.6	-	-2.0		-1.6	-
India	-10.0	0.0	100.0		100.0	100.0	48.8		39.2	12.0	-9.8		-10.0	-9.9
Agriculture	-9.9	0.0	30.9		7.9	100.0	50.0		10.2	39.8	-9.8		-9.9	-9.9
Industry	-10.1	0.2	17.6		28.6	0.0	43.4		56.6	0.0	-9.8		-10.4	-
Services	-10.0	-0.1	51.5		63.5	0.0	50.2		49.8	0.0	-9.8		-9.8	-
			Unskilled	Skilled			Unskilled	Skilled			Unskilled	Skilled		
Nepal	**-6.2**	**0.0**	**100.0**	**100.0**	**100.0**	**100.0**	**24.8**	**12.3**	**64.0**	**62.9**	**-6.2**	**-6.4**	**-6.2**	**-6.2**
Agriculture	-6.2	0.0	68.7	36.4	-	100.0	29.4	7.7	-	62.9	-6.2	-6.4	-	-6.2
Industry	-6.2	0.9	2.9	6.3	19.7	0.0	10.8	11.5	77.6	-	-6.2	-6.4	-6.2	-
Services	-6.3	-0.1	28.4	57.3	80.3	0.0	19.9	19.9	60.2	-	-6.2	-6.4	-6.2	-
Pakistan	**-7.3**	**0.0**	**100.0**		**100.0**	**-**	**39.3**		**60.7**	**-**	**-6.4**		**-7.9**	**-**
Agriculture	-6.7	-0.3	44.3		18.6	-	60.7		39.3	-	-6.4		-7.2	-
Industry	-8.6	0.7	15.5		22.1	-	31.2		68.8	-	-6.4		-9.5	-
Services	-7.2	-0.2	40.2		59.4	-	30.5		69.5	-	-6.4		-7.6	-
Philippines	**-3.1**	**0.0**	**100.0**		**100.0**	**-**	**44.9**		**55.1**	**-**	**-3.0**		**-3.1**	**-**
Agriculture	-4.0	-1.0	21.2		19.0	-	47.7		52.3	-	-3.0		-4.8	-
Industry	-1.8	1.3	21.6		24.6	-	41.7		58.3	-	-3.0		-0.7	-
Services	-3.3	-0.2	57.2		56.5	-	45.2		54.8	-	-3.0		-3.5	
Senegal	**-3.8**	**0.0**	**100.0**		**100.0**	**.100,0**	**62.0**		**34.2**	**3.9**	**-3.9**		**-3.4**	**-6.7**
Agriculture	-5.1	-2.6	18.2		12.5	100.0	58.1		22.0	19.9	-3.9		-6.7	-6.7
Industry	-3.4	0.1	21.1		37.4	0.0	50.6		49.4	-	-3.9		-2.9	-
Services	-3.6	0.9	60.7		50.1	0.0	68.7		31.3	-	-3.9		-2.8	-

** Initial shares*

Table 4
Impact on Income
(in %)

	Change in rate			Share in Total income			Contribution to change in income		
	Rural	**Urban**	**All**	**Rural**	**Urban**	**All**	**Rural**	**Urban**	**All**
Bangladesh									
Unskilled wage	-3.1	-3.1	-3.1	36.5	12.0	24.2	-1.1	-0.4	-0.7
Skilled wage	-3.2	-3.2	-3.2	18.4	22.3	20.4	-0.6	-0.7	-0.7
Capital	-3.4	-3.4	-3.4	43.7	59.6	51.7	-1.5	-2.0	-1.7
Other income	0.0	0.0	0.0	1.5	6.0	3.8	0.0	0.0	0.0
TOTAL	-	-	-	100.0	100.0	100.0	-3.2	-3.1	-3.1
Benin									
Wage	-2.7	-2.7	-2.7	79.0	47.4	61.5	-2.1	-1.3	-1.6
Capital	-5.3	-5.3	-5.3	19.8	36.6	29.1	-1.1	-2.0	-1.5
Other income	-1.9	0.0	-0.1	1.2	16.0	9.4	-2.4	0.1	-1.0
TOTAL	-	-	-	100.0	100.0	100.0	-5.5	-3.1	-4.2
India									
Wage	-10.5	-10.5	-10.5	47.6	48.6	48.1	-4.7	-4.8	-4.7
Capital	-10.6	-10.6	-10.6	21.3	40.8	30.0	-2.1	-4.1	-3.0
Land	-10.5	-10.5	-10.5	20.4	0.3	11.5	-2.0	0.0	-1.1
Other income	0.0	0.0	0.0	10.6	10.2	10.5	-1.0	-0.6	-0.8
TOTAL	-	-	-	100.0	100.0	100.0	-9.8	-9.5	-9.7
Nepal									
Unskilled wage	-6.1	-6.8	-6.2	22.6	14.8	21.4	-1.4	-1.0	-1.3
Skilled wage	-6.1	-7.0	-6.4	8.4	23.0	10.6	-0.5	-1.6	-0.7
Capital	-5.8	-7.2	-6.2	15.1	23.8	16.4	-0.9	-1.7	-1.0
Land	-6.2	-5.9	-6.2	34.7	8.2	30.6	-2.1	-0.5	-1.9
Other income	0.0	-0.1	0.0	19.3	30.2	21.0	-0.9	-1.6	-1.0
TOTAL	-	-	-	100.0	100.0	100.0	-5.8	-6.4	-5.9
Pakistan									
Wage	-6.4	-6.4	-6.4	53.1	34.0	42.8	-3.4	-2.2	-2.7
Capital	-7.9	-7.9	-7.9	37.0	46.0	41.8	-2.9	-3.7	-3.3
Other income	-0.1	0.0	0.0	9.9	20.1	15.3	-0.5	-0.8	-0.7
TOTAL	-	-	-	100.0	100.0	100.0	-6.8	-6.6	-6.7
Philippines									
Wage	-3.0	-3.0	-3.0	48.4	53.2	51.6	-1.5	-1.6	-1.6
Capital	-3.1	-3.1	-3.1	37.2	31.0	33.0	-1.1	-1.0	-1.0
Other income	0.0	0.0	0.0	14.4	15.8	15.4	-0.5	-0.3	-0.4
TOTAL	-	-	-	100.0	100.0	100.0	-3.1	-2.9	-3.0
Senegal									
Wage	-3.9	-3.9	-3.9	22.4	55.4	48.4	-0.9	-2.1	-1.9
Capital	-3.4	-3.4	-3.4	29.0	10.5	14.4	-1.0	-0.4	-0.5
Land	-6.7	-6.7	-6.7	14.1	0.0	3.0	-1.0	0.0	-0.2
Other income	0.0	0.0	0.0	34.5	34.1	34.2	-1.0	-1.2	-1.2
TOTAL	-	-	-	100.0	100.0	100.0	-3.8	-3.7	-3.7

In all but Nepal, rural households experience a larger nominal income reduction than urban households. Thus, we conclude that trade liberalization tends to be pro-urban or anti-rural. Different explanations underlie this result, depending on the country analyzed. In Bangladesh, Benin, the Philippines and Pakistan, urban households are less affected due to their greater reliance on relatively stable other (non-factor) income such as government transfers and domestic or foreign

remittances. In the cases of India and Senegal, rural income losses can be traced primarily to the reduction in returns to land in these countries. Finally, in the case of Nepal, the nominal income of urban households fall more than their rural counterparts, as skilled wages, returns to capital and "other income" decline more for urban households than for rural households. These results follow the greater price reductions in the service sector, which uses skilled labor and capital more intensively.

Once again, the use of full-scale realistic models has led us to a surprising conclusion concerning the important positive impact of non-factor income for households and the substantial negative impact of land income for rural households. These two effects outweigh the more traditional labor and capital income share effects.

3.5 Consumer price effects

LESSON SIX: Nominal consumer prices fall more in industry than agriculture or services.

The analysis in the preceding section suggests that trade liberalization is pro-urban in terms of its impacts on nominal income. However, by reducing import prices and local competing goods, trade liberalization may also substantially reduce consumer prices. These impacts may also differ between households according to their consumption patterns. It is the net impact of these income and consumer price effects that ultimately determine the welfare and poverty impacts of trade liberalization.

Observing Table 5, we note that consumer prices fall on average by 3.4% (Senegal) to 9.1% (India) as a result of trade liberalization. In all countries, consumer prices for industrial goods fall substantially more – 5.8% to 10.9% – than for the agricultural and service sectors, reflecting high initial tariff rates and/or high import penetration ratios in the industrial sector.

LESSON SEVEN: Cost of living effects vary.

In all countries but Senegal, rural households devote a larger share of their total consumption to agricultural goods than their urban counterparts, whereas urban households consume relatively more services. It should be stressed that "industrial goods" are defined very

broadly here to include very simple food processing such as milled rice (23% of household consumption in Bangladesh). Consequently, in most countries, rural households benefit less than urban households from the fall in the relative consumer prices of industrial goods, resulting in a smaller reduction in their consumer price indices. In India, Nepal and Pakistan, rural and urban households consume roughly the same share of industrial goods. Although rural households consume relatively more agricultural goods and fewer services, consumer prices in these two sectors vary in roughly the same proportion, and thus there is little urban-rural difference in the variation in consumer price indices. Thus, we can say that trade liberalization, is pro-urban in terms of income, and in terms of consumption as well.

Table 5
Impact on Consumer Price
(in%)

	Import share of cons'n	Compen-satory sales tax	Change in prices			Share in total consumption			Contribution to change in CPI		
			Imports	Dom. sales	Con-sumer	Rural	Urban	ALL	Rural	Urban	ALL
Bangladesh	**9.1**	**1.3**	**-13.3**	**-4.0**	**-3.7**	**100.0**	**100.0**	**100.0**	**-2.8**	**-2.9**	**-2.8**
Agriculture	2.4	1.3	-8.1	-3.3	-2.1	16.8	14.1	15.5	-1.9	-1.8	-1.9
Industry	24.4	1.3	-13.6	-4.7	-5.8	55.1	36.2	46.2	-3.3	-4.0	-3.6
Services	0.0	1.3	-	-3.9	-2.6	28.1	49.7	38.3	-2.2	-2.3	-2.3
Benin	**19.6**	**3.8**	**-14.9**	**-5.4**	**-4.3**	**100.0**	**100.0**	**100.0**	**-2.4**	**-4.1**	**-3.2**
Agriculture	2.7	3.8	-9.6	-4.8	-1.4	34.7	31.2	32.9	-1.5	-1.5	-1.5
Industry	39.7	3.8	-15.8	-5.4	-7.0	51.8	39.8	45.6	-3.1	-7.6	-5.1
Services	3.3	3.8	0.0	-5.8	-2.6	13.5	29.1	21.5	-2.0	-2.0	-2.0
India	**5.5**	**0.9**	**-14.6**	**-10.1**	**-9.7**	**100.0**	**100.0**	**100.0**	**-9.1**	**-9.1**	**-9.1**
Agriculture	0.9	0.9	-11.0	-9.6	-8.9	42.6	29.2	37.1	-8.9	-8.9	-8.9
Industry	12.8	0.9	-15.8	-10.8	-10.9	26.2	27.2	26.6	-9.9	-9.6	-9.8
Services	1.2	0.9	0.0	-9.9	-9.0	31.2	43.5	36.3	-8.9	-8.9	-8.9
Nepal	**15.4**	**1.1**	**-7.9**	**-5.8**	**-5.1**	**100.0**	**100.0**	**100.0**	**-5.2**	**-5.2**	**-5.2**
Agriculture	5.5	1.1	-7.6	-6.0	-5.1	79.3	65.3	77.3	-5.1	-5.1	-5.1
Industry	54.4	1.1	-7.9	-5.9	-6.0	14.3	19.5	15.1	-6.1	-6.1	-6.1
Services	0.0	1.1	0.0	-5.6	-4.5	6.4	15.1	7.7	-4.3	-4.3	-4.3
Pakistan	**11.6**	**2.7**	**-18.0**	**-7.9**	**-6.9**	**100.0**	**100.0**	**100.0**	**-5.6**	**-5.8**	**-5.7**
Agriculture	3.4	2.7	-6.4	-6.6	-4.1	39.7	28.0	34.0	-4.1	-4.2	-4.2
Industry	24.3	2.7	-20.1	-8.6	-9.6	39.9	39.1	39.5	-7.5	-7.6	-7.5
Services	2.5	2.7	0.0	-7.9	-5.2	20.4	32.9	26.5	-5.0	-5.1	-5.1
Philippines	**17.4**	**3.4**	**-16.2**	**-5.2**	**-4.3**	**100.0**	**100.0**	**100.0**	**-2.5**	**-2.5**	**-2.5**
Agriculture	1.8	3.4	-7.0	-4.1	-0.9	14.6	9.8	11.4	-0.9	-0.9	-0.9
Industry	33.3	3.4	-18.0	-6.9	-8.2	52.1	40.6	44.4	-4.2	-5.3	-4.9
Services	4.6	3.4	0.0	-4.3	-0.9	33.3	49.6	44.1	-0.5	-0.5	-0.5
Senegal	**19.7**	**3.1**	**-13.6**	**-4.1**	**-3.4**	**100.0**	**100.0**	**100.0**	**-3.4**	**-2.9**	**-3.1**
Agriculture	14.8	3.1	-11.9	-3.1	-1.6	17.1	20.3	19.2	-1.6	-1.6	-1.6
Industry	26.9	3.1	-17.2	-4.8	-6.0	54.3	43.3	47.1	-5.6	-5.6	-5.6
Services	11.8	3.1	0.0	-3.7	-0.3	28.6	36.4	33.7	-0.3	-0.3	-0.3

3.6 Welfare and poverty effects revisited

Having now followed the channels of impact of trade liberalization through these different economies, we are in a position to return to the original poverty and welfare results to better understand the underlying mechanisms. As mentioned earlier, there are two main channels of impact linking trade liberalization to household welfare and poverty: Income effects and consumer price effects. To examine these effects, we reproduce the income and consumer price changes discussed in the preceding two sections in the first two columns of Table 1. We also reproduce total consumption of households since the closure chosen in the models implies that household savings should vary to equilibrate the investment-saving condition.

It becomes quite clear that the generally positive welfare effects of trade liberalization can be explained by the fact that the reduction in consumer prices is greater than the fall in total consumption, which accounts for variation in income and savings. We also note that the welfare effects of trade liberalization favor rural households over their urban counterparts only in Senegal. This result comes despite greater nominal income reductions among rural households and can be attributed to the greater fall in total consumption for urban households. In this model, rural savings are maintained fixed. Consequently, compensation for lower governmental saving must be entirely covered by urban households. In all other country, the higher decline in income is mirror by a higher decline in total consumption. Except in the Philippines and Senegal, urban households therefore gain from trade liberalization whereas rural households experience a slight reduction in welfare. Urban welfare gains can be traced primarily to their greater reliance on stable "other income" sources and their proportionately smaller consumption of agricultural goods, for which prices fall least.

Poverty reductions are greatest in Benin, although overall welfare declines slightly. Gains in welfare thus principally reached poorest households while losses are concentrated among rich households. In India, Nepal and Pakistan, poverty reductions are very small. It is quite understandable in India where welfare slightly decreases and in Nepal where welfare gains are inexistent. It suggests, in Pakistan, that the welfare gains from trade liberalization accrue primarily to richer households.

3.7 Compensation mechanisms

Liberalizing trade implies a change (generally negative) in government revenue since tariff revenue represents a more or less important part of it. Government income being fixed, this revenue loss must be compensated and the adjustment variable chosen can influence the results. The simulation described previously specifies a sale compensatory tax, increasing between 0.9% in India and 3.8% in Benin, which directly affects consumption prices. To understand this influence, we compare results of the same trade liberalization scenario using other compensation mechanism: direct compensatory tax on households' income and a production tax.

a) Direct compensatory tax

Using a direct compensatory tax does not significantly alter overall welfare, still marginally positive in most countries. Poverty, on the other hand, even if marginally, now increases instead of decreasing in most countries. Moreover, rural and urban relative gains are often changed and more definite than with a sale tax, except in India where rural-urban difference in welfare variations is less important. This is as expected since a sale tax, mostly influencing resources allocation, compared to a income tax, directly influencing households welfare, should bring more equalized results if we believe income taxation rates to be more differentiated among households than income sources and consumption patterns.

In terms of allocation of resources, the same decrease in import prices (except in India where quotas are present) drives a higher demand for agricultural and industrial imports (except for Benin industrial imports) since, without the sale tax, import price on the market is lower. Qualitative results concerning exports, output and domestic prices are unaffected by the compensation mechanism while, quantitatively, domestic and output prices often decline more in industry and less in agriculture and services, and domestic and output supplies increase more. A notable difference is Bangladesh where domestic demand now increases by 0.7%. Interestingly, Nepal and Benin are more in line with other countries in terms of agricultural vs. industrial magnitude of responses, indicating that the sale tax has significant impact in these countries. In Nepal, this is explained by the extremely small difference between tariff rates (and thus import price decline) in agriculture and industry while in Benin, it follows from the important level of compensation tax. Impacts on services go in the same direction but are generally weaker than with a sales tax.

On the factor market, value-added prices do not follow output prices as closely but still generally decrease. Exceptions are Benin, Philippines and Senegal where overall and some sectoral value-added prices increase. Being directly linked to value-added prices, wage rates decrease in every country except Benin, the Philippines and Senegal. Capital return generally exaggerates, more than it mirrors, value-added price variation to compensate for the increase or insufficient decrease in wages while a land return decrease is diminished. In other word, in absence of a sale compensation tax, return to labor and service sector capital experience a higher relative gain because of the lower decrease in value-added price. Following changes in wage and return rates, households' income still decline (less than with sale tax) in every country except in Benin, the Philippines and Senegal, where wage rates increase. Rural households' disadvantage in India, the Philippines and Senegal, is again explained by changes in other income and in land return that again largely compensate for wage rates benefits. In all other countries, a small relative income gain to rural households is observed. In other words, before tax income changes are more equally distributed than in the presence of a sale tax. Consumer price variations are still negative but stronger in most countries, as the fall in prices is not compensated by increased indirect taxes.

Even if consumer prices decline more and incomes decline less, overall welfare effect is still marginal since decline in total consumption (including changes in savings and, especially, in direct tax) is more important, showing the significance of the compensation mechanism. Income tax increases significantly in Benin, Pakistan, the Philippines and Senegal. Highly taxed urban households in Benin, Senegal and Philippines experience an especially important decline in total consumption compared to the increase in income. Despite this result, and mostly because of important fall in consumer prices, urban households still benefit more from trade liberalization than their rural counterpart in terms of welfare. Households benefiting from a rise (decline) in welfare also benefit from a decline (rise) in poverty. Overall, poverty increases compare to trade liberalization using sale tax compensation, but changes in overall poverty level are marginal. Compared to the sale tax situation, urban-rural welfare and poverty effects are unchanged.

b) Production compensatory tax

When using a production tax instead of a sale tax, most results are roughly unchanged. In effect, contrary to the income tax, a production tax and sale tax both affect allocation of resources directly. Therefore, the end results also look much alike.

First, the decreases in import prices being the same, import demand, domestic sales and prices as well as export and output responses are qualitatively and quantitatively quite similar as when a sale tax is used. Industry-agriculture is maintained and Benin and Nepal are still exceptions in most cases[6]. A significant difference when using production tax is the much more important decrease in output price. In effect, this price includes the production tax while the sale tax affects the consumption price but its value is not included in it. Services reaction is similar when using a production tax in all countries.

On the factor market, value added prices decreases roughly in the same proportion as output and therefore decrease more than with a sale tax. The industrial-agricultural is inversed in five of the seven countries[7]. As a consequence, variation in the wage rates, capital return and land return are also qualitatively similar but quantitatively more important. The relative gain to labor is maintained, again with the exception of Senegal. This higher fall in factor return brings a higher income loss for every household. Rural-urban share of this loss is similar. The pro-urban income effect of trade liberalization, except in Nepal, is therefore maintained in presence of a production tax. It is explained by the same factors except in Nepal where the urban loss is principally link to skilled wages. Consumer prices also decrease more in every sector and for every household in presence of a production tax and the pro-rural consumption effect of trade liberalization is also maintained.

Income and consumer price both decreasing more but in similar proportions as with a sale tax compensation mechanism, impacts on welfare and poverty are quite comparable. Overall welfare is still negligible and poverty generally falls. Urban households gain in welfare except in Nepal and Senegal. As a result, urban poverty increases in Senegal and Nepal.

3.8 Long term versus short term

Choosing to consider trade liberalization in a long or short term perspective can lead to different conclusions. In effect, capital mobility assumed in the long run, allows firms to react more adequately and to adapt to changes in the economic environment more smoothly: capital goes where it is needed the most and does not create artificial scarcity.

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[6] They are no more exceptions in import demand for Nepal and in domestic prices in Benin.
[7] Bangladesh, Benin, Nepal, the Philippines and Senegal.

With this idea in mind, simulations of trade liberalization specifying capital mobility are compared to the base simulations (using the three compensatory mechanisms) where capital immobility is required. Results show that capital mobility has almost no differential impact on overall welfare neither than overall poverty impact compared to capital immobility. The sole exception is Nepal where rural and urban households relative position changes. With sales and production compensatory taxes, rural (urban) Nepalese households' lose (gain) welfare, in absolute term, and poverty, in relative term, when capital is mobile while they gain (lose) or are unaffected when capital is sector-specific. With direct compensatory taxes, they become relative winners (losers). Therefore, in every country, welfare and poverty results are slightly pro-urban in the presence of the sales and production taxes and they are pro-rural in the presence of the income taxes, no matter what time frame is used.

These results follow from the fact that mobility of capital allows both consumer prices and income to decrease less than when capital is sector specific but in a more or less similar proportion. Income decreases less since capital is allowed to go in industry where demand is higher and then consequently competes less intensively with labor allowing the overall wage rate and the overall return rate on capital to drop by a smaller amount. An interesting case is Bangladesh where both wage rate and capital return even increase. This indicate that in this country, trade liberalization considerably affect factors and, especially, capital demand. Consumer prices decrease less since import price changes are the same and domestic prices decrease less following the important export push of the more competitive production sectors permitted by the mobile capital.

The principal exception here is India where income and consumer prices both decreases more than in the reference simulation but have no differential impact in term of welfare and poverty either. In India, land return is highly affected by trade liberalization. The positive capital return in agriculture because of the presence of the land being replaced by a negative (same in every sector) return rates and combined with a still negative (and in 2/3 case even more negative than with immobile capital) land return (land is still specific to the agricultural sectors) implies a important decrease in value-added, output, domestic as well as consumer prices of agriculture. Consequently, both income and consumer price index decrease more in the mobility case. This effect is not as influential in Nepal and in Senegal since the decrease in land return is not as important.

4. Conclusions

As we are economists, it may not be surprising that the main conclusion of this study of the impacts of trade liberalization on poverty is that there is no general relationship between trade liberalization and poverty; "it depends". As this detailed analysis based on disaggregated large-scale CGE models shows, trade liberalization is more complicated than policy makers may want to admit, with numerous complex and opposing impacts on these economies that channel through the output, factor and product markets to influence household income and consumer prices. The main contribution of this paper is to point out some general trends and to explain carefully on what factors the poverty impacts of trade liberalization "depends".

Nonetheless, it does appear that trade liberalization generally increases welfare and reduces poverty marginally, although some categories of households, and certainly some specific households, clearly lose out. An almost clear conclusion emerges concerning the rural-urban bias in the welfare and poverty impacts: urban households gain in terms of welfare and poverty, while rural households lose from trade liberalization.

When we now examine the channels of impacts, some interesting results emerge. Initial tariffs tend to be higher for industrial imports. As a result, trade liberalization generally reduces import, domestic and output prices of industrial goods with respect to their agricultural and service counterparts. The cases of Pakistan and India are interesting in this regard, as it shows how trade liberalization and ensuing export expansion may lead to a greater fall in export prices where a country faces world demand that is not perfectly elastic (i.e. which demand price reductions as export increase). However, greater export intensities in the industrial sector imply that this sector benefits more from the ensuing export expansion such that industrial output actually increases more than output in the other two sectors in all but Benin.

Another remarkable result of our analysis is the importance of the input cost effects of trade liberalization. As each sector consumes a large share of inputs from within the sector itself, it is the industrial sector - where price reductions are greatest - that gains most in terms of cost reductions from trade. Indeed, these cost savings are so strong that, in most countries, value added prices actually fall less in the industrial sector than in the agriculture sector. However, it is the service sector, which is essentially cut off from international trade, which often experiences the smallest reductions in value added price following the removal of tariffs. As value added prices determine factor remunerations, these results have important welfare and poverty implications.

As labor's principal source of income is the service sector, wage rates tend to fall less than the returns to capital and land. Conversely, the returns to land, where this factor is explicitly taken into account, fall relative to the other factors given its tight links to the agricultural sector where value added prices decline most. Capital is assumed to be sector-specific, so that the returns to capital in the service sector falls less than in the other two sectors.

Surprisingly, it is not the differences in the returns to the two principal factors of production – labor and capital – that drives the household income results. Instead, we find that it is the greater reliance of urban households on relatively stable non-factor income and the greater reliance of rural households on the strongly falling returns to land that explain a general pro-urban bias in the household income effects of trade liberalization.

The impacts of tariff removal on consumer prices also hold a few surprises. Although the effects are about the same for both types of households in most countries, it is rural households that consume relatively more agricultural goods, such that they benefit less from the reduction in the prices of industrial goods than urban households. Finally, we find that positive welfare and poverty effects are driven by consumer price reductions that outweigh the reductions in total consumption, nominal income taking into account variation in savings. However, we note that income effects may dominate consumer effects when we look at the rural-urban bias in specific countries.

References

Cloutier, M., J. Cockburn and B. Decaluwé (2003), "Welfare, Poverty and Distributional Effects of Trade Liberalization: A Review of the CGE literature", mimeo, Université Laval.

Cockburn, J. (2001), "Trade Liberalisation and Poverty in Nepal: A Computable General Equilibrium Micro Simulation Analysis", Discussion paper 01-18, Centre de Recherche en Économie et Finance Appliquées (Universite Laval), October.

Cogneau, D. and A.S. Robillard (2001), "Growth Distribution and Poverty in Madagascar: Learning from a Microsimulation Model in a General Equilibrium Framework", TMD Discussion Paper 61, IFPRI, Washington, DC.

De Janvry, A., E. Sadoulet and A. Fargeix (1991), "Politically Feasible and Equitable Adjustment: Some Alternatives for Ecuador", World Development, 19(11):1577-1594.

Decaluwé, B., A. Patry, L. Savard et E. Thorbecke (1999), "Poverty Analysis within a General Equilibrium Framework", Working paper 9909, Department of Economics, Université Laval, Québec.

Piggott, J. and J. Whalley (1985), UK Tax Policy and Applied General Equilibrium Analysis, Cambridge, Cambridge: Cambridge University Press.

Savard, L. (2003), "Poverty and income distribution in a CGE-household model: a top-down/bottoms-up approach", mimeo, IDRC, Dakar, Senegal.