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The Poverty Impacts of the Doha Round in Cameroon:

The Role of Tax Policy

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Abstract

The aim of this paper is to assess the possible impacts of the Doha Round of negotiations on poverty in Cameroon. During the recent period of economic recovery, Cameroon has enjoyed a sharp decline in poverty with the headcount index falling from 53.3 percent of inhabitants in 1996 to 40.2 percent in 2001, mostly thanks to economic growth rather than redistribution. Will the current trade negotiations under the Doha Round reinforce or curb this trend? We apply a CGE microsimulation model which involves 10,992 households in order to address this question.

The Doha Round is found to be poverty reducing for Cameroon. For the whole country, the estimate of the net number of people who are lifted out of poverty is 22,000 following this scenario. Further investigations indicate that more ambitious world trade liberalization leads to greater poverty alleviation at the national level, while Cameroon's domestic trade liberalization has adverse poverty and inequality impacts – despite giving rise to higher aggregate welfare. Under the Doha scenario, the cuts in Cameroon's tariffs are very small (the average tariff rate moves from 11.79 percent in the base run to merely 11.66 percent) so that ROW liberalization effects on world prices more than offset the adverse own liberalization effects in this scenario. If the Rest of the World (ROW) and Cameroon full trade liberalizations are combined, the adverse impacts of own liberalization outweigh the favorable outcomes of the ROW liberalization.

Our results suggest furthermore that the choice of tax replacement instrument can have an important bias in poverty impacts: poverty gets worse in our country-case study when using an imperfect VAT instead of a neutral replacement tax to compensate lost tariff revenue, and gets even worse when using a consumption tax. Key reasons here are the supplementary distortions which are nil in case of a neutral tax and greatest in the case of a consumption tax. In addition, accompanying measures should be considered to avoid poverty increases in the framework of Economic Partnership Agreements currently in negotiation between ACP countries and the EU, which propose a drastic dismantlement of ACP tariffs over the next few years.

Introduction

From 1965 to 1985, Cameroon recorded tremendous economic growth. The yearly average growth rate of per capita GDP amounted to 4 percent during 1965-1976, 13 percent from 1977 to 1981, and 8 percent from 1982 to 1985. By 1985, Cameroon was ranked among middle-income countries, according to World Bank taxonomy (De Monchy and Roubaud 1991). Following this 20-year golden age, Cameroon faced a deep-seated crisis from 1986 to 1994. GDP declined by over 6 percent per annum between 1986 and 1993, producing a 50 percent fall in per capita income (World Bank 1996). Cameroon recovered from 1995 onward, regaining a steady growth path and an annual real GDP growth rate of roughly 4.5 percent. This new expansion phase has been characterized by a sharp decline in poverty. For instance, the headcount index (share of poor population) fell from 53.3 percent to 40.2 percent between 1996 and 2001 (Republic of Cameroon 2003; CNIS 2002b).

In spite of this remarkable improvement, the prevalence of poverty still remains high and widespread in Cameroon. Indicators of human development had considerably deteriorated during the crisis years and recent economic improvements have not been sufficient and sustained enough yet to fully remedy the situation. Consequently, the country still carries the label of a highly indebted poor country (HIPC)[1]. It is thus understandable that Cameroon continues to agonize about whether it can meet the Millenium Development Goal of halving its 1990s level of extreme poverty by 2015.

Economic perspectives, as well as the design and outcomes of economic policies, are now more than ever constrained by international commitments, owing to ongoing globalization. Doha trade negotiations, undertaken under the aegis of the WTO, constitute a major crucible

[1] Cameroon reached the Decision Point in October 2000 and is now making efforts to reach the Completion Point, within the framework of the Enhanced HIPC Initiative.

within this process. The objective of this paper is to assess the possible poverty impacts in Cameroon of the Doha Round of trade negotiations as well as more ambitious world and domestic trade liberalization.

Trade liberalization can affect income opportunities of the poor in a number of ways. In general, the final poverty incidence depends on the relationship between trade liberalization, growth and income distribution.[2] This new round has been heralded since the beginning as the Doha Development Round that should provide major opportunities for developing countries to derive more benefits from trade. However, exposure to increased international competition can be a double-edged sword for developing countries. The contribution of the Doha Round in achieving Cameroon's target on poverty alleviation will depend on the specific details of the new trade agreement.

The remainder of the paper includes seven sections. In section 1, we present some background on trade and poverty in Cameroon. Section 2 is devoted to modeling specificities and data. We then analyze in section 3 the poverty impacts of the successful conclusion of the Doha Round of negotiations. Section 4 is devoted to the analysis of various trade liberalization scenarios using a neutral tax as the replacement mechanism to offset losses in tariff revenues. In section 5, we assess the poverty implications of fixed vs. endogenous terms of trade when Cameroon liberalizes unilaterally. In section 6, we compare the differential impacts of trade liberalization using three alternative replacement taxes. Finally, we make some concluding remarks in section 7.

[2] For a discussion on poverty impacts of trade, see Hertel and Reimer (2004).

1. Poverty and Trade Background

1.1 Poverty trends during the period 1996-2001

Cameroon undertook two household surveys during the last decade, in 1996 and 2001. Between these two years, Cameroon recorded a drastic fall in poverty prevalence. The headcount index, i.e. the proportion of people that are counted as poor, decreased by 13.1 percentage points; from 53.3 percent in 1996 to 40.2 percent in 2001. The poverty gap, which measures the degree to which the poor fall below the poverty line on average, also declined from 19.1 to 14.1 percent during this period. The squared poverty gap, which evaluates the extent of severe poverty among the poor, also declined from 9 to 7 percent.

A breakdown of poverty indicators shows that this sharp poverty alleviation is largely attributable to economic growth, rather than redistribution (Republic of Cameroon 2003). Economic growth contributed about 90 percent of the reduction in the headcount index, supporting the view that "growth is good for the poor", as underlined in studies such as Dollar and Kraay (2000). Indeed, changes in the income distribution are found to have actually increased the poverty gap and squared poverty gap, suggesting that some emphasis on redistribution is required to better alleviate poverty.

The decrease in all three poverty measures was more substantial in urban areas than in rural Cameroon, further increasing the rural-urban poverty divergence. Indeed, the difference between the percentage of poor in rural and in urban areas has risen from 18.2 points in 1996 to 27.8 points in 2001. With regard to the poverty gap, this rural-urban differential has gone from 6.8 to 12 points. Similarly, the squared poverty gap has gone from being 3.2 higher in rural areas in 1996 to 6.6 points higher in 2001.

Needless to say, poverty does not affect people and regions evenly throughout the country. In 2001, the more one moves from the Atlantic coast and southern Cameroon towards the interior and the north, the larger the share of people living below the poverty line.

1.2 Trends in Cameroon's Trade

Cameroon's trade has grown considerably during the three last decades. In domestic currency, imports and exports have increased at average annual rates of 5.49 percent and 6.53 percent, respectively, between 1983 and 2003.[3] This expansion is greatest after 1994, i.e. in the post-devaluation[4] and new economic recovery era. In fact, Cameroon's external trade actually declined during the 1986-1993 economic crisis, with imports and exports falling by an average of 9.7 and 6.0 percent per year, respectively. But the economic recovery beginning in 1994 has been characterized by a significant resurgence of external trade, beyond the devaluation's immediate mechanical effect.

Imports have grown faster than exports during this post-devaluation period. From 1995 to 2003, the current value of imports have increased by a factor of three with a 13.2 percent annual average growth rate, while the current value of exports has increased by a factor of only 1.7 with an average growth rate of 7.0 percent per annum during the same period. This has resulted in a continuous fall in rate of coverage of imports by exports[5] from 164 percent in 1995 to 104 percent in 2003, with a low of 95 percent in 2001. Indeed, 2001 and 2002 are the only year for which Cameroon has recorded a trade deficit since 1988.

However, the net-of-oil trade balance has been in deficit continuously since 1997, reflecting the country's dependency on oil exports. Cameroon has produced crude oil since 1977

[3] If not indicated precisely, statistics presented in this subsection have been processed from Cameroon National Institute of Statistics (2004).
[4] Cameroon and other CFA franc countries experienced a 50 percent devaluation in January 1994.
[5] The coverage rate, that is the ratio of exports over the imports, may be seen as the ability of a country to pay its imports using its export revenues.

and, from 1980 on, crude oil has generally accounted for 40 percent to 60 percent of Cameroon's export revenues. The rapid decline in oil prices in 1985 and 1986 is generally identified as the source of Cameroon's economic crisis.

Cameroon's lack of export diversification is illustrated by the fact that its five principal exports account for 74 to 81 percent of total export revenue over the last five years. All these products are either agricultural (broad-bean cocoa, and raw cotton) or natural resource-based (crude oil, wood processing, and refined petrol).[6] The top five imports in 2003 were hydrocarbons, machinery, chemicals, transport equipment, and flour. During the last five years, the top five product clusters have accounted for 65 to 68 percent of the total value of imports.

The European Union (EU) is by far the most important trading partner of Cameroon. In 2003, 64.5 percent of Cameroon's exports and 54.6 percent of Cameroon's imports were exchanged with the EU.[7] The EU is followed by Africa (13.6 percent of exports and 22.5 percent of imports), Asia (10.3 percent of exports and 15.6 percent of imports), North America (7.6 percent of exports and 5.5 percent of imports) and Latin America (1.4 percent of exports and 2.1 percent of imports).

2. Modeling Features and Data

Our CGE microsimulation model involves 10,992 households, as compiled from the "ECAM II" household survey undertaken in Cameroon in 2001 (CNIS 2002a; 2002b; 2003). Other data were processed from the Cameroon's 2001 Supply and Use Tables (SUT) of Cameroon, and from the underlying Integrated Economic Account Tables (IEAT). The general

[6] Other products that have been among the top five exports for at least one year during the last decade are: crude wood, raw aluminum, coffee and bananas.
[7] The EU is considered here as the 15 member-countries of 2003, before its enlargement to 25 members in 2004.

architecture of the CGE is based on the "EXTER" archetype model (Decaluwé, Martens, and Savard 2001). Microsimulations are carried out following Cockburn (2001) and Cloutier and Cockburn (2002). The way the VAT is modeled is based on Emini (2000a; 2000b).

The model includes ten production sectors, each utilizing a nested production technology. Primary factors of production are combined according to a constant Elasticity of Substitution (CES) functions to constitute value and added, which in turn combines with intermediate consumptions through Leontief functions. There are two agricultural sectors: foodstuff and cash crop agriculture. Both utilize four primary factors of production: agricultural unskilled labor, agricultural skilled labor, agricultural capital, and land. The eight other sectors are non agricultural and use three kinds of primary factors: nonagricultural unskilled labor, nonagricultural skilled labor, and nonagricultural capital. Capital is sector-specific and fixed. Agricultural labor, skilled and unskilled, is mobile between agricultural sectors, just as nonagricultural labor is mobile between nonagricultural sectors, excluding the oil and public sectors where all factors are fixed.

A summary of key parameters and shares for the model in the baseline year of 2001 is provided in Table 1. Services, industry and agriculture represent 47.5, 31.9 and 20.6 percent, respectively, of national value added. But the greatest share of national production goes to industry (44.5 percent), followed closely by services (40.0 percent) and, far behind, agriculture (15.5 percent).

The impacts of trade liberalization crucially depend on sectoral import and export shares and ratios. Foodstuff (18.2 percent of national value added and 13.2 percent of overall production) are almost entirely non tradable (0.8 percent of exports and 1.1 percent of imports). Exports are 79.5 percent industrial, 12.7 percent services and 7.9 percent agricultural goods.

Nearly 70 percent of these exports are composed of agricultural and natural resource-based industrial goods: crude oil (43.6 percent of total exports), wood processing (11.9 percent), cash crops (7.1 percent), and refined petroleum (5.8 percent). These sectors are, indeed, substantially export-oriented with export-orientation ratios (exports as a share of output) of 98.5 percent for crude oil, 43.0 percent for cash crops, 37.1 percent for wood processing, and 28.5 percent for refined petroleum. Cameroon's imports are predominantly composed of industrial goods (84.7 percent of imports). The highest import-penetration ratio (imports as a share of total domestic demand of a good) is recorded for crude oil (95.0 percent), followed by other manufacturing goods (29.1 percent), food processing (12.3 percent), and refined petroleum (10.7 percent).

We use this model first to examine the likely impacts of a successful conclusion to the Doha Round. In the subsequent section, we analyze outcomes from more ambitious world and Cameroon free trade scenarios. In a third section, we use the model to assess the poverty implications of fixed vs. endogenous terms of trade in the framework of Cameroon free trade ("own liberalization"). Finally, we compare the impacts of alternative tax mechanisms the government can adopt to compensate for losses in tariff revenues.

3. Impacts of the Doha Scenario

The Doha scenario involves a reduction in world and domestic tariffs, exports subsidies and domestic support. Tables 2 – 7 report the impacts of the Doha scenario on Cameroon. These tables cover changes in macroeconomic variables (12.2), changes in household income and poverty (12.3 – 12.5) and the impacts on sectors and factor markets (12.6 – 12.7). For Cameroon, changes in tariff rates under the Doha scenario are minimal (Table 6, second group of columns) with the average tariff level falling from 11.79 percent to 11.66 percent. Results from global

simulations using the GTAP model indicate that implementing the expected Doha agreement would lead to a small increase in average world import prices for Cameroon (0.47 percent) and practically no change in its world export prices (0.04 percent). Variations in export prices do not exceed 0.2 percent in any sector. The food processing and foodstuff sectors are the only sectors where the increase in world import prices exceeds 1 percent: 3.2 and 2.2 percent, respectively. The largest tariff cuts are also observed in these two sectors (8.7 and 2.7 percent, respectively).

3.1 Macro and sectoral effects

At the aggregate level, the Doha scenario has practically no impact on Cameroon. The real exchange rate appreciates by one tenth of 1 percent and wage rates stay practically constant with a small increase (0.5 percent) in agricultural labor markets (Table 2, first column).

At the sectoral level (Table 6), impacts are also weak. In the food processing industry, for which the increase in world import prices is greatest (3.2 percent), effects are mitigated by the counteracting fall in domestic tariffs (a reduction from 23.8 to 21.7 percent). The combined effect leads nevertheless to a 1.57 percent increase in the domestic import price and a 4.42 percent fall in import volumes. The resulting increase in local demand for domestic production leads to a small expansion of output and producer prices in the food processing industry (0.50 percent), despite a small reduction in its exports. Indeed, as the world export price for food processing rises by only 0.1 percent, the fact that producer prices increase more reduces the sector's export competitiveness.

In the agriculture sectors, the cash crop industry faces a fall in both world import prices (0.28 percent) and world export prices (0.18 percent), although the variations are very small. This leads to a drop in both exports and domestic output and an increase in cash crop imports.

The GTAP simulation of the Doha scenario predicts a relatively large increase in the world import price for foodstuffs (2.23 percent), which is partially offset by a reduction in the tariff rate from 12.2 to 11.9 percent. This leads to a significant drop in foodstuff imports (6.34 percent) in favor of locally-produced substitutes (increase of 0.09 percent).

On the whole, the Doha scenario involves a rise in world import prices (0.47 percent) and a resulting substitution of local demand toward domestically-produced substitutes: imports and exports decline (by 0.64 and 0.25 percent respectively) and locally-sold production expands (by 0.06 percent). The food-processing and foodstuff sectors are the most affected and strongly influence the overall impacts on the economy.

In terms of impacts on factor markets (Table 7), we first note that agricultural labor moves from cash crops to foodstuff, while food processing draws non-agricultural labor from most of the other non-agricultural sectors. All factor remuneration rates increase, although the changes are very small. Wage rates rise more for unskilled labor (0.33 percent) than for skilled labor (0.19 percent). Average returns to capital and land increase respectively by 0.21 and 0.40 percent. On average, changes in remuneration rates are more favorable to agricultural factors (+0.50 percent for agricultural labor; +0.44 percent for agricultural capital; and +0.40 percent for land) than to nonagricultural factors (+0.13 percent for nonagricultural labor; and +0.19 percent for nonagricultural capital).

3.2 Household income effects

These small increases in factor remunerations result in a slight rise (0.21 percent) in household gross income at the national level (Table 2). On the basis of the initial factor endowments of household groups and changes in the remuneration rates of various factors, total

factor income for urban households increases by 0.16 percent, while rural households enjoy a relative substantial 0.40 percent increase due to greater rise in skilled and unskilled agricultural wage rates, as well as rates of return to agricultural and non agricultural capital, which account altogether for about 66 percent of rural household factor income (Table 3). Factor incomes in male-led households grow very slightly more (0.27 percent) than in female-led households (0.24 percent) given their larger shares of labor and agricultural capital income. Factor incomes of households that were initially poor rises more (0.37 percent) than for the initially non poor (0.25 percent) as a result of much higher shares of labor income. In general, households enjoying greater improvement in income are those more endowed with skilled and/or unskilled agricultural labor, or with agricultural capital. Those experiencing smaller improvement are households mainly endowed with nonagricultural labor.

3.3 Poverty effects

The implementation of the Doha agreement appears likely to slightly reduce poverty and inequality (Table 4). The national headcount index (the percentage of poor) falls from 40.22 to 40.08 percent, the poverty gap from 13.76 to 13.75, poverty severity from 6.38 to 6.37, and the Gini index from 0.458 to 0.457. Even though a small improvement, this implies a non negligible net reduction in the number of poor (22,000 people; Table 5). Rural households benefit more than urban households, notably in terms of the poverty gaps and severity and the Gini index, as a result of stronger income gains. In the same way, male-led households benefit slightly more than female-led households, and those who are initially poor benefit more than the initially non-poor.

Indeed, the headcount index of the initially non poor household group increases from 0.00 to 0.02 percent, implying that 1,000 individuals become poor. At the same time, the

headcount index of the initially poor household group shifts from 100.00 to 99.64 percent, indicating that 23,000 formerly poor people have escaped from poverty. People who escape poverty belong to households whose head is involved in agriculture, fishing, hunting, food industry, or in public service. Households entering poverty have a head who is involved in transports or miscellaneous services. Headcount indices of all other household groups (according to the main activity of the head) remain unchanged (Table 4).

4. World and Domestic Free-Trade Simulations

Three scenarios are performed in this section and involve the complete elimination of import tariffs: first in the ROW, then in Cameroon, and then in both regions. The macroeconomic closure of the model for these scenarios is the following: employment, real investment, real public expenses and the trade balance are fixed. To compensate lost tariff revenue, we introduce a neutral production tax evenly levied on locally sold production and imports. Moreover, we assume endogenous terms of trade (FOB price possibly different to corresponding world export price).

Tables 8 – 9 compare the impacts of full liberalization in ROW with that of domestic trade reform in Cameroon – focusing on prices and volumes of goods and services flows, as well as factor markets. According to results from the GTAP world model (Table 8), a complete liberalization in ROW would lead to a non negligible increase in world import prices, especially for foodstuff agriculture (7.08 percent) and food processing (4.76 percent), as well as an increase in export prices of foodstuff agriculture (3.20 percent), cash crops (1.86 percent) and of food processing (1.75 percent). On the other hand, unilateral liberalization by Cameroon means a 100 percent reduction in domestic tariffs from an average tariff rate of 11.79 percent and a maximum

rate of 28 percent and 23 percent respectively for the wood processing and food processing industries. Finally, the full liberalization scenario, where ROW and Cameroon both eliminate their respective barriers to trade, simultaneously involves an increase in world import and export prices and a complete removal of domestic tariffs. Depending on the sector and the initial level of tariffs, this tariff removal can completely offset the increase in world import prices.

4.1 Macro effects

We observe (Table 2) dramatically opposing price effects in the ROW free-trade scenario compared to Cameroon's own-liberalization (CAM-1). While prices uniformly increase under ROW free-trade as a result of increases in world import and export prices, they fall substantially with domestic liberalization. The movement in domestic prices for imports and exports is also substantially different. In the ROW liberalization scenario, the increase in import prices (0.67 percent) is less important than the increase in export prices (0.75 percent). When Cameroon liberalizes alone, import prices drop substantially (-9.83 percent), while export prices drop much less (-2.43 percent). When we combine both scenarios, impacts of Cameroon own-liberalization dominate ROW impacts. Indeed, the real exchange rate depreciation (8.76 percent) is nearly equal to the own-liberalization scenario (9.23 percent). In contrast, increases in both import and export prices under ROW free trade leads to a small real appreciation of the exchange rate (0.42 percent).

Concerning effects on trade and production, Cameroon and ROW liberalization also have opposing impacts. Under ROW liberalization, changes in world prices have nearly no impact on aggregate imports, exports and locally-sold production. On the contrary, Cameroon's unilateral liberalization creates a substantial increase in imports (14.76 percent) and exports (15.14 percent) and consequently a reduction in local production exchanged on the domestic market (-2.59

percent). In the combined scenario, once more, the expansion of trade is nearly identical to the situation under Cameroon own-liberalization (14.85 percent for imports and 15.11 percent for exports).

4.2 Sectoral effects, the labor market and reallocation of resources

In order to understand the transmission mechanisms, we need to look carefully at the sectoral factor reallocation processes in each scenario. Table 8 provides a breakdown of the price and volume effects for the ten sectors of activities, whereas Table 9 presents the impacts on factor markets.

ROW liberalization scenario

Even with very low import-penetration and export-intensity ratios in foodstuff agriculture (Table 1), a strong increase in world prices leads to a fall in foodstuff imports (-15.60 percent) and an increase in their exports (1.09 percent) and producer prices (2.95 percent), as domestic and foreign foodstuffs are considered to be good substitutes (Table 8)[8]. Foodstuff production is very intensive in labor[9] and particularly in unskilled agricultural workers (69 percent of labor; Table 1). Indeed, markets for skilled and unskilled agricultural workers are dominated by the foodstuff sector (nearly 93 percent of agricultural workers; Table 9). Thus, the increase in domestic foodstuff prices pushes up unskilled and skilled agricultural wages (3.60 percent each), as well as the returns to land.

In turn, the increase in the cost of agricultural labor and land drives costs and, consequently, producer prices (1.94 percent) in the cash crop sector (Table 8). The increase in

[8] Elasticity of substitution is equal to 4.3 for this product, both on the export and import sides (Table 1).
[9] Given a value added rate of 73% and a capital/labor ratio as low as 0.26 (Table 1).

the world export price of cash crops (1.86 percent) is not sufficient to cover the extra costs[10] and thus cash crop exports fall (-0.72 percent). As the cash crop market is export oriented, a reduction in exports (combined with an increase in import competition) negatively affect this sector, reducing domestic production by 0.20 percent and moderating the domestic price increase (2.01 percent). As a result, land and agricultural labor move toward the foodstuff sector, whereas the returns to immobile capital increase more in this sector.

In the non-agricultural sectors, the GTAP model predicts an increase in the world import price of (agricultural-based) food processing (4.79 percent) and a much less important increase on the export side (1.49 percent). In the other sectors the change in prices are less than 1 percent. The food processing sector represents 11 percent of total output, 25 percent of the industrial sector and is linked to the international market with an export-intensity rate of 7 percent and import-penetration ratio of 12 percent (Table 1). Domestic and imported processed foods are considered to be close substitutes (elasticity of 6.49).

Under these conditions, the increase in world prices creates upward pressure on producer and consumer prices in the food processing sector (2.30 percent and 2.60 percent respectively) and contributes to a rise in domestic production (1.15 percent). The cost-based, contractionary impact on the other nonagricultural sectors is small but widespread, between almost zero in the wood processing industries to a maximum fall of 0.52 percent in miscellaneous industries. As a result, there is a reallocation of labor toward the food processing sector. Given the lower than average share of unskilled (vs. skilled) labor in food processing, there is a bigger increase in non-agricultural skilled wage rates (0.78 percent) relative to unskilled wage rates (0.61 percent).

In terms of international trade, the increase in world import prices for processed food reduces import demand (-9.94 percent) and increases domestic demand for local production (1.35

[10] Export prices of Cameroonian cash crops increase more than world prices: 1.85 vs. 1.73 percent.

percent). On the export side, the food processing industry is unable to increase its export performance (-1.53 percent) since the increase in world export prices for food processing (1.75 percent) is not high enough to compensate the increase in production costs (2.30 percent). In the other non-agricultural sectors, imports and exports generally increase moderately, with the strongest impacts in "miscellaneous industries" for which world export prices increase by almost 1 percent.

Cameroon unilateral liberalization scenario

The industrial sector is the most protected sector in Cameroon. Initial tariffs in the wood processing, food processing, refined petroleum and miscellaneous industries are, respectively, 28.1, 23.8, 18.3 and 14.6 percent (Table 8). A complete removal of customs barriers results in a reduction in the domestic prices of these imports and an increase in their volume[11]. The food processing and miscellaneous industries are most affected by this increased import competition given their high initial import penetration ratios and degree of substitution with respect to imports (Table 1). Consequently, domestic demand, consumer prices and producer prices for these industries all decline more than in the other industrial sectors (Table 8). Industrial producers respond to falling domestic prices by expanding exports, especially in the food processing and miscellaneous industries. However, this export expansion is insufficient to offset the loss in local sales, such that output declines in all but the export intensive wood processing industry and its main source of inputs, the forestry industry.

On the agriculture side, initial tariffs are higher in the foodstuff sector (12.2 percent) than in the cash crop sector (8.0 percent) and, consequently, trade liberalization leads to a greater

[11] The increase in imports of wood processing is impressive (310.08 percent), but it is important to remember that the initial import penetration ratio is very low (0.2 percent).

reduction in foodstuff import prices. These price variations are passed on to domestic producer and consumer prices in these two sectors, leading local producers to substitute massively toward export markets. In the export-intensive cash crops sector, output consequently expands, whereas it contracts in the inward-oriented foodstuffs industry.

Within industry, the increased competitiveness of imports helps explain the contraction in the food processing industry, refined petroleum and miscellaneous industries.

As a result of these output variations, labor moves toward the expanding export-intensive sectors: cash crops, forestry and wood processing (Table 9). Agricultural wages fall slightly more (-11.70 percent) than industrial wages (-10.07), reflecting greater reductions in agricultural producer prices. As the expanding sectors have roughly the same shares of unskilled labor in composite labor as the aggregate sectors (agriculture and industry), skilled and unskilled wages fall in the same proportion. Returns to land fall less than agricultural wages, as producer prices fall more in the labor-intensive foodstuffs sector than in the land-intensive cash crops sector. The returns to (immobile) capital rise for cash crops (0.40 percent) given that producer prices fall less than wages and returns to land, whereas the contrary is observed for returns to capital in the foodstuffs sector.

Combined full liberalization of Rest of the World and Cameroon

The results from the combined ROW and Cameroon liberalization (upper-half of Tables 10 and 11) are very similar to Cameroon liberalization alone (CAM-1). The increase in world prices due to free world trade is insufficient to offset the reduction in prices resulting from the elimination of Cameroonian tariffs. Results continue to follow the unilateral liberalization outcome. At the macro level for example, the real exchange rate depreciates by 8.76 percent

compared to a 9.23 percent depreciation in case of Cameroon unilateral liberalization (while it appreciates by 0.42 in case of ROW liberalization), the consumer price index is down 7.23 percent compared to 8.53 percent, imports are up 14.85 percent compared to 14.76 percent, exports are nearly at the same level, and wage rates in the agriculture sector decline less.

4.3 Household income effects

Initial income shares and changes in household factor incomes for all scenarios are summarized in Table 3. Variations in factor remunerations affect the income of household groups according to their respective factor endowments in the base run. Urban households derive most of their income from skilled wages and returns to nonagricultural capital (80 percent). Rural households derive a large proportion of income from agricultural factors, even if a non-negligible proportion comes from other income sources. They consequently have more diversified income sources compared to urban households.

ROW free-trade increases rural incomes (2.46 percent) more than urban incomes (1.02 percent), given the larger increase in the returns to agricultural factors (Table 9). Incomes in male-headed households rise slightly less than in female-led households, given the greater dependency on income from agricultural factors in female-headed households. The base-year poor also experience a larger increase in income (2.41 percent vs. 1.53 percent for the base-year non-poor), once again due to a larger share of agricultural factor income.

As expected, we get opposite effects under Cameroon unilateral liberalization. Incomes fall as a result of the import-price led reduction in domestic output and factor prices, especially for agricultural wages. Rural and base-year poor households suffer more, due to their higher shares of agricultural wage income.

In the combined ROW and Cameroon scenario, household incomes fall, although less than under unilateral Cameroonian liberalization. The impacts offset each other in such a way that rural and base-year poor households have only slightly larger falls in their incomes than their urban and base-year non-poor counterparts. The impacts of ROW liberalization imply that incomes fall slightly more for urban and base-run non-poor households than in rural and base-run poor households in the case combined scenario.

4.4 Poverty effects

In the analysis of variations in the Foster-Greer-Thorbecke (FGT) poverty indicators, impacts derive from two sources: (1) the change in household income; and (2) the change in consumer prices, which, in turn, affect the poverty line. Overall, it is clear that free world trade slightly reduces poverty, whereas domestic liberalization substantially increases poverty (Table 4).

As a consequence of ROW liberalization, the poverty headcount index decreases from 40.22 to 39.28 percent for the entire country, the poverty gap falls from 13.76 to 13.28 percent, poverty severity declines from 6.38 to 6.08, and the Gini index goes from 0.458 to 0.454. Free ROW trade reduces poverty in rural areas, where income gains are greatest, but leaves the situation of the urban poor practically unchanged, peculiarly for the poverty gap and poverty severity (Table 4). One of the reasons explaining this stagnation in urban area is the fact that the sharp poverty alleviation in households belonging to food industry (poverty headcount shifts here from 20.54 to 14.15 percent) is strongly mitigated by the poverty worsening among households operating in the textile industry (poverty headcount rise from 29.20 to 31.28 percent), which represent a greater proportion of the total population. Overall, ROW liberalization benefits both

male and female-led households but, as expected, the fall in poverty is more significant in female-led households as a result of the greater increase in their incomes. Free ROW trade allows 2.59 percent of the poor, or roughly 161,000 individuals (Table 5), to escape poverty. However, 0.17 percent of the non-poor (about 16,000 individuals) fall into poverty. In net terms, the total number of poor declines by 145,000 individuals. Those household groups that would most profit from ROW liberalization are those whose head is principally involved in agriculture activities, fishing, hunting, breeding, food industry, wood industry, or in food trade. The greatest losers from ROW liberalization would be households whose head works in the textile industry or transport.

Under Cameroon's unilateral liberalization with neutral replacement tax (scenario CAM-1), aggregate consumption and household welfare improve, by 0.10 and 0.06 percent of initial consumption, respectively. This indicates an overall increase in efficiency in the wake of tariff reform. The welfare gain would have been more substantial if some rigidities were not introduced in labor market[12]. But, notwithstanding this aggregate welfare gain, Cameroon's own liberalization induces a strong increase in poverty. The national headcount index jumps from 40.22 to 41.52 percent. The poverty gap and poverty severity indexes deteriorate considerably, increasing respectively from 13.76 to 14.79 percent and from 6.38 to 7.18 percent. Not surprisingly, inequality increases, with a shift in the Gini index from 0.458 to 0.467.

Given the fact that the reduction in rural income is larger than the reduction in urban income, poverty increases more among rural households than among urban households. Unilateral liberalization enables fewer individuals to escape poverty (110,000, as compared to 161,000 with ROW liberalization), while dramatically increasing the number of base-year non-

[12] We assumed that both skilled and unskilled labor in crude oil sector and public services are exogenous and consequently not mobile across other sectors. The real wage rate of these sectors is also fixed.

poor who fall into poverty (311,000 versus 16,000). In net terms, assuming a neutral replacement tax, Cameroon unilateral liberalization is predicted to raise the number of poor individuals by 201,000. This poverty worsening would be experienced by all household groups except those whose head works in mining, wood industry, metals, energy, gas, and water, or in transport. Particularly strong increases in poverty are noted among households whose head is involved in the food, textile or chemical industry.

Considering the combined Cameroon and ROW liberalization, the poverty-increasing effects of Cameroon's own liberalization dominate. Indeed, the differential poverty impacts of this combined scenario are nearly the same between household groups as those following unilateral Cameroonian liberalization.

5. Decomposing Impacts of Own Trade Liberalization

Given the importance of the impact of own-liberalization on poverty in Cameroon, this issue bears further investigation. In our analysis above, this result may be driven, in part, by the worsening of terms of trade (TOT) for Cameroon as exports increase in the face of inelastic world demand. If, instead, we assume that Cameroon is not required to cut prices in order to expand its exports – in technical terms, the price elasticities of world demand for Cameroon's exports are infinite (the “small country” assumption) – there would be no such TOT effect. We believe that it is more realistic to assume that Cameroon would need to reduce prices to expand exports, but it is not clear by how much. We therefore compare our earlier results (scenario CAM-1) to the present case of infinitely elastic world demand (scenario CAM-2) in order to get an idea of the magnitude of these TOT effects.

Contribution of TOT effects in overall impacts at macro and sectoral level

In the earlier case with TOT effects, the level of Cameroon FOB export prices decrease on the whole by 2.43 percent compared to world export prices, implying a significant worsening of TOT (Table 2). When we assume Cameroon FOB export prices remain equal to world export prices (fixed TOT), producer and consumer prices fall less than before (Table 2): respectively by 5.92 (versus 8.45 percent before) and 6.05 percent (versus 8.53 percent) on average. Household total income and consumption budget also drop, by 5.77 (versus 8.32) and 5.85 (versus 8.43) percent respectively, leading to a higher welfare gain amounting to 0.19 percent (versus 0.06 percent) of the base run consumption budget. Thus, we conclude that the effects of TOT deterioration significantly reduce the revealed potentiality of own free trade to improve welfare in a context of neutral replacement tax. Moreover, the scenario with fixed TOT shows greater increases in export and import volumes – 20.68 (versus 15.14) and 24.72 (versus 14.76) percent, respectively – mainly through rises in exports of industrial goods and imports of processed foods.

As in the endogenous TOT case, the expanding sectors are mainly export-oriented sectors with low initial import-penetration ratios, namely the cash crops and wood processing sectors, as well as the forestry sector, which is the main source of inputs for the expanding wood processing sector. Tradable services also expand slightly as their initial tariff rates are nil. The contracting sectors are chiefly those with high import-penetration ratios and/or high initial tariff rates. It is worth noting that the crude oil sector, which is the most export-oriented sector and has the highest import-penetration ratio, registers no change in output – this is by assumption, since we believe output to be determined exogenously.

Factor remuneration rates fall in both fixed TOT and endogenous TOT scenarios, but the drop is less important when assuming fixed TOT. Indeed, our results show that the deterioration of TOT contributes reduces factor remuneration rates by 32 percent for agricultural unskilled and skilled labor, 48 percent for agricultural capital, 63 percent for land, 28 percent for nonagricultural unskilled labor, and 29 percent for nonagricultural skilled labor and nonagricultural capital.

Contribution of TOT worsening to overall poverty impacts of unilateral liberalization

Even with fixed TOT, unilateral liberalization in Cameroon worsens the initial poverty situation, although the increases in poverty are smaller (Tables 4 and 5). We conclude that the earlier deterioration of TOT contributes 67.66 percent of the total increase in the percentage of poor, 49.51 percent of the increase in the poverty gap, 46.25 percent of the rise in poverty severity, and 41.05 percent of the increase in income inequalities as measured by the Gini index.

The role of the deterioration of TOT is thus clearly important in understanding the increase in poverty following Cameroon's own liberalization. However, it is also clear that the adverse influence of other factors remains high. The expansion of some export-oriented sectors is not enough to balance the contraction of other sectors and the resulting fall in factor remunerations. This implies that own liberalization may have adverse poverty impacts in a commodity-exporting economy, even with exogenous TOT. Key factors in this outcome are the degree of distortion in the initial tariff structure, the relative labor intensity of the export-oriented sectors, and the choice of a replacement tax mechanism – a topic to which we now turn.

6. Evaluating the Replacement Tax Alternatives

Impacts of trade liberalization will ultimately depend on the replacement tax used to offset cuts in import tariffs. To capture the possible bias induced by the choice of the replacement tax, we compare the effects of combined ROW and Cameroon liberalization using the previous neutral replacement tax (the "FULL" scenario) to the effects of two other scenarios of combined full liberalization where replacement taxes are alternatively a VAT ("FULL-VAT" scenario) and a uniform consumption tax ("FULL_CON." scenario). Uniform consumption tax is proportional to consumption budget by definition, whereas the VAT implemented in Cameroon is progressive. Both the neutral tax and the consumption tax are used here just as analytical devices, since their implementation in Cameroon would not be feasible in the current institutional environment.

6.1 An overview of the VAT in Cameroon

The VAT is the most likely candidate for the replacement tax in Cameroon, as the community rules adopted within the framework of CACEU dictate that member-states rely on the VAT as the principal domestic indirect tax instrument. Since the 1994 fiscal and customs reform, the VAT has increasingly become the main goods and services tax in Cameroon. In 2001, VAT revenues accounted for 53 percent of total tax revenues levied on goods and services, while imports tariffs contributed for 27 percent, excises and miscellaneous taxes for 19 percent, and export duties for 1 percent.

Notwithstanding its dominant status, the Cameroon VAT remains very "imperfect", compared to a "pure" VAT[13], mainly because of the narrowness of the VAT base and the partial and delayed deductibility of VAT paid upstream on inputs. Indeed, refunds of VAT credits are statutorily delayed in Cameroon; owing to the "one month latency rule" according to which companies must wait one month before finally recovering their refundable VAT. There is a coexistence of two VAT regimes: a normal regime and a simplified regime. Companies that belong to the simplified regime cannot claim any VAT credits on their input purchases. Moreover, VAT applied to products subject to the simplified regime is not refundable, even for the companies belonging to the normal regime.

The VAT base is narrow as many activities are exempted, either because their sales revenue is below the minimal threshold or, more generally, because they operate in the informal sector. In 2001, the informal sector represented 77 percent of total employment and 50.6 percent of total value added in Cameroon. The narrowness of the VAT base has led to low effective VAT rates. While the official nominal VAT rate was 18.7 percent in 2001, the average effective VAT rates were 1.64 percent for non deductible products sold on the domestic market, 7.29 percent for non deductible imports, and 2.38 percent for all non deductible products.

The above three VAT effective rates are somewhat theoretical, since the VAT bases used for their computation include input purchases, which are in principle exempted. The real VAT base is composed of purchases by households, government and firms not involved in the VAT system. With this base (63.47 percent of total demand) yields an average effective VAT rate of 3.74 percent for 2001. This implies that only 20 percent of purchases made by final VAT taxpayers supported the 18.7 percent VAT nominal rate.

- [13] VAT systems vary from "embryonic" to asymptotic "pure" types. All non pure VAT systems are qualified as imperfect VATs. Shoup (1990) counts 576 VAT types. For more information on VAT modalities and types, see Shoup (1990) and Cnossen (1991).

VAT revenues and effective rates are inversely linked to the share of informal activities for a given sector or product. This share is greatest in the agricultural sector (96 percent) and services, and it is smaller in the industrial sector. So it is hardly surprising that industrial products, representing 40.46 percent of purchases made by final VAT taxpayers, generate 74.93 percent of VAT revenues, while agricultural products, representing 14.42 percent of purchases made by final VAT taxpayers, contribute only 0.43 percent of total VAT revenues.

In 2001, rural households devoted 61 percent of their household expenditures to agricultural goods, versus only 29 percent for industrial goods. Consequently, rural households are much less subject to the VAT than urban households. Given that over 80% of the poor are located in rural areas, the VAT system is therefore progressive, on average. Indeed, while the poor represent 40.22 percent of total population, consuming 11.36 percent of total household consumption, they contributed only 9.43 percent of VAT revenues on household consumption, with an effective VAT rate equal to 2.89 percent. In contrast, the non poor paid an effective VAT rate of 3.58 percent.

6.2 Comparative macro and sectoral effects

On the whole, the three tax replacement scenarios shift macro variables in the same direction (Table 2), but the magnitude of changes are generally smaller in the VAT case and greater in the case of consumption tax. The rise in VAT rates partly offsets the fall in market prices, especially where initial real effective VAT rates are high. Consequently, the consumer prices fall less following the FULL-VAT scenario (by 1.91 percent on average) than in the cases of consumption tax and neutral tax (on average by 7.36 and 7.23 percent respectively). In fact, while all consumer prices fall in the cases of FULL-CON. and FULL scenarios, in the VAT case,

there is an increase in consumer price in all sectors for which the real effective rate of VAT is higher than the mean (3.74 percent) in the base run, i.e. in wood processing, refined petroleum and miscellaneous industries. As expected, in the scenario with VAT the reduction in household demand is smaller for goods with lower initial real effective VAT rates and larger for goods with high initial effective VAT rates. In addition, the VAT is less biased against sectors with high household consumption shares. The replacement of tariffs with the neutral tax does not induce additional distortions (household consumption and welfare remain practically unchanged) contrary to the replacement by VAT or by consumption tax. Additional distortions are smaller when replacing tariffs with the VAT than with consumption tax (the decline in household welfare represents 2.69 and 4.72 of initial the consumption budget, respectively).

6.3 Comparative household income effects

In accordance with the differential falls in factor returns, the average reduction in household incomes is smaller with VAT: -4.41 percent, as compared to 7.12 percent fall with neutral tax and 7.18 percent fall with consumption tax (Table 2). Regardless of the household group considered in Table 3 (urban vs. rural households, male-led vs. female-led households, base-year poor vs. non poor), the losses in household factor incomes are roughly 40 percent smaller with the VAT compared to the two other scenarios. In the three scenarios, the loss in nominal income remains slightly larger in urban, and in base-run non-poor households than in their respective counterparts. Taking into account changes in consumer price indices, as reflected through changes in consumption, the disposable real income for household consumption remains almost unchanged with the neutral replacement tax (+0.02 percent) whereas it fall with the VAT (-2.61 percent) and the consumption replacement tax (-4.69 percent).

6.4 Comparative poverty effects

Full liberalization with a neutral replacement tax clearly increases poverty less than with VAT or the household consumption tax. This is due to the overall efficiency improvement following replacement of the tariffs with a non-distorting tax. When we use the neutral replacement tax, the headcount index rises from 40.22 to 40.78 percent at national level; while it climbs to 42.14 percent with the VAT and to 43.44 percent with a consumption tax. The VAT's outcome is more favorable than the consumption tax due to the progressive nature of the VAT. While a smaller number of base-year non-poor people fall into poverty with neutral replacement tax (193,000 vs. 327,000 with VAT and 540,000 with consumption tax), the number of base-year poor people who escape from poverty with this neutral tax is on the contrary greater (106,000 vs. 24,000 with VAT and 42,000 with consumption tax). The extrapolated increase in the net number of poor individuals is equal to 87,000 in neutral tax case, as compared to 303,000 and 498,000 if we use VAT and consumption tax, respectively.

The magnitude of the changes in the poverty gap and severity is also always smaller with the neutral tax than with the VAT, and even smaller than with consumption tax, whether considering urban, rural, male-led or female-led households. However, the smallest increase in inequality as measured by Gini index is noted in the case with VAT as replacement tax, thanks to the progressive nature of the Cameroonian VAT. The base-run poor who escape poverty in the three scenarios are mostly those belonging to households where the head is employed in wood products industry.

7. Concluding Remarks

The general conclusion that emerges from this study is that the Doha Development Round is likely to alleviate poverty in Cameroon. The Doha scenario considered in this study results in a fall in overall poverty and a decline in income inequalities, allowing 22,000 people to escape from poverty in net terms. Of course poverty alleviation within the entire nation does not exclude the possibility that some initially non poor people become poor and this is indeed the case under the Doha scenario.

Further experiments on trade liberalization show that free trade in the ROW strongly alleviates poverty, at least at the national level, whereas Cameroon's own liberalization worsens poverty and inequality. When ROW and own liberalization are combined, the adverse impacts of own liberalization prove to strongly outweigh the favorable outcomes of the ROW liberalization. This result is very worrying given that, besides the Doha scenarios, the Economic Partnership Agreements (EPA) currently negotiated between ACP countries and the EU propose a sharp reduction in domestic tariffs in ACP countries. Our study shows also that own liberalization has adverse poverty impacts, even when we abstract from potential deterioration in the terms of trade.

Our results also underscore the importance of the choice of tax replacement instrument for the poverty impacts of trade liberalization: poverty worsens in our country case study when using an imperfect VAT and becomes worse yet when using a consumption tax instead of a neutral replacement tax. In fact, it arises that the more the replacement tax induces supplementary distortions, the more the adverse poverty effects of own liberalization are strengthened.

In the end, it appears from our analysis that the Doha Development Agenda could indeed contribute to further poverty alleviation in Cameroon. However, policymakers should be aware of the importance of choosing appropriate replacement taxes and the potentially adverse impacts of eliminating domestic tariffs. They should also be aware that some households will lose out and possibly fall into poverty, even if national poverty rates fall. This underscores the need for targeted safety net programs to accompany any significant trade reforms in Cameroon.

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Table 1: Key elasticities and parameter values in the model

Production Sectors	**Production**				**Trade**								
					Exports* %					Imports* %			
	VA* share %	X* share %	VA/X* %	Cap-Lab ratio**	Share %	Export intensity % ***	CET elasticities % *****	Export demand elasticities	Export tax rates %	Share %	Import intensity %	Armington elasticities *****	Import tariff rates %
Foodstuff agriculture	18.2	13.2	73.0	0.26	0.8	0.9	4.3	6.0	0.22	1.1	0.9	4.3	12.2
Cash crops agriculture	2.3	2.3	53.1	1.13	7.1	43.0	6.5	6.0	0.00	0.0	0.1	6.5	8.0
AGRICULTURE	***20.6***	***15.5***	***70.0***		***7.9***	***7.2***				***1.1***	***0.9***		
Forestry	1.1	2.7	22.8	0.94	1.1	6.0	5.0	6.0	8.67	0.1	0.5	5.0	7.4
Crude oil	9.6	6.3	80.9	51.87	43.6	98.5	14.2	6.0	0.25	17.2	95.0	14.2	3.2
Food processing	7.8	11.6	35.5	1.74	5.7	6.9	5.0	6.0	0.23	13.0	12.3	5.0	23.8
Wood processing	2.2	4.5	25.7	2.81	11.9	37.1	6.8	6.0	0.31	0.0	0.2	6.8	28.1
Refined petroleum	0.5	2.9	9.9	9.57	5.8	28.5	4.2	6.0	0.03	2.1	10.7	4.2	18.3
Miscellaneous industries	10.6	16.5	33.9	1.08	11.3	9.7	7.3	6.0	0.29	52.1	29.1	7.3	14.6
INDUSTRY	***31.9***	***44.5***	***37.9***		***79.5***	***25.2***				***84.7***	***22.9***		
Tradable services	42.9	36.2	62.6	0.90	12.7	4.9	3.8	6.0	0.00	14.3	4.6	3.8	0.0
Public services	4.6	3.8	64.4	0.47	0.0	0.0	1.5	6.0	0.00	0.0	0.0	1.5	0.0
SERVICES	***47.5***	***40.0***	***62.8***		***12.7***	***4.5***				***14.3***	***4.2***		
ALL SECTORS	**100.0**	**100.0**	**52.8**		**100.0**	**14.1**				**100.0**	**12.0**		

Source: Authors' construction:

* Based on the 2001 SAM; VA = Value added; X = Production.
** Capital/Labor ratio.
*** Export intensity = exports as a share of output.
**** Import intensity = import as a share of domestic demand
***** Armington elasticities calculated from GTAP for our commodity aggregations. We symmetrically use these values for CET elasticities.

Table 2: Changes in selected macro variables (in percent)

SCENARIOS / VARIABLES	DOHA	ROW	CAM-1	CAM-2	FULL	FULL-VAT	FULL-CON.
AGGREGATE FEATURES OF SCENARIOS							
Index of world prices of exports	0.04	0.77	0.00	0.00	0.77	0.77	0.77
Index of world prices of imports	0.47	0.76	0.00	0.00	0.76	0.76	0.76
Overall tariff rate in Cameroon	-1.10	0.00	-100.00	-100.00	-100.00	-100.00	-100.00
PRICE EFFECTS							
Real exchange rate (*)	-0.17	-0.42	9.23	6.29	8.76	5.70	8.85
Terms of trade (TOT)	0.04	-0.02	-2.43	0.00	-2.40	-1.60	-2.41
Producer price index	0.21	1.19	-8.45	-5.92	-7.35	-4.66	-7.42
Producer price index of exports	0.08	0.75	-2.43	0.00	-1.64	-0.84	-1.65
Producer price index of locally sold production	0.23	1.26	-9.55	-7.01	-8.38	-5.33	-8.47
Market price index of locally sold production	0.27	1.26	-7.84	-5.54	-6.70	-4.23	-8.49
Market price index of imports	0.36	0.67	-9.83	-10.18	-9.06	-5.55	-10.89
Total absorption price index	0.29	1.18	-8.11	-6.26	-7.05	-4.39	-8.85
Consumer price index	0.41	1.37	-8.53	-6.05	-7.23	-1.91	-7.36
VOLUME EFFECTS							
Output	0.02	0.01	-0.10	-0.10	-0.09	0.08	-0.05
Exports	-0.25	0.07	15.14	20.68	15.11	9.96	15.16
Locally sold output	0.09	0.01	-2.59	-3.52	-2.57	-0.77	-2.53
Imports	-0.64	0.31	14.76	24.72	14.85	9.82	14.92
Total demand of composite goods	0.00	0.04	-0.52	-0.14	-0.49	0.50	-0.45
Household consumption	-0.20	-0.05	0.10	0.21	0.02	-2.61	-4.69
REMUNERATION OF FACTORS							
Wage rate of agricultural labor	0.50	3.60	-11.70	-7.67	-8.50	-5.40	-8.00
Wage rate of skilled agricultural labor	*0.50*	*3.60*	-11.70	-7.60	*-8.50*	*-5.40*	*-8.00*
Wage rate of unskilled agricultural labor	*0.50*	*3.60*	-11.70	-7.70	*-8.50*	*-5.40*	*-8.00*
Wage rate of nonagricultural labor	0.13	0.74	-9.98	-7.14	-9.24	-5.53	-9.52
Wage rate of skilled nonagricultural labor	*0.14*	*0.78*	-9.95	-7.09	*-9.18*	*-5.44*	*-9.45*
Wage rate of unskilled nonagricultural labor	*0.10*	*0.61*	-10.08	-7.29	*-9.47*	*-5.84*	*-9.77*
Average wage rate of composite labor	0.24	1.60	-10.49	-7.30	-9.02	-5.49	-9.06
Wage rate of agricultural labor	*0.50*	*3.60*	-11.70	-7.67	*-8.50*	*-5.40*	*-8.00*
Wage rate of nonagricultural labor	*0.13*	*0.74*	-9.98	-7.14	*-9.24*	*-5.53*	*-9.52*
Rate of return to capital	0.21	1.29	-7.75	-5.36	-6.69	-4.43	-6.80
Rate of return to agricultural capital	*0.44*	*3.56*	-9.58	-4.99	*-6.43*	*-3.97*	*-5.81*
Rate of return to nonagricultural capital	*0.19*	*1.04*	-7.55	-5.40	*-6.72*	*-4.48*	*-6.90*
Rate of return to land	0.40	3.50	-8.00	-3.00	-4.90	-3.00	-3.00
HOUSEHOLD BUDGET AND WELFARE							
Household gross income	0.21	1.30	-8.32	-5.77	-7.12	-4.41	-7.18
Household consumption budget	0.21	1.32	-8.43	-5.85	-7.22	-4.47	-11.71
EV (**) as percentage of initial consumption	-0.20	-0.05	0.06	0.19	0.00	-2.69	-4.72

Source: Authors' construction based on simulation results. Aggregate features of scenarios are compiled from GTAP global model results.

DOHA = Doha scenario; **ROW** = Rest Of the World (ROW) liberalization; **CAM-1** = Cameroon liberalization with neutral replacement tax and **endogenous Terms Of Trade (TOT)**; **CAM-2** = Cameroon liberalization with neutral replacement tax and **fixed TOT**; **FULL** = Combined ROW and Cameroon full liberalization with neutral replacement tax; **FULL-VAT** = Combined ROW and Cameroon full liberalization with VAT as replacement tax; **FULL-CON.** = Combined ROW and Cameroon full liberalization with consumption replacement tax.

(*) Real exchange rate = Ratio of the nominal exchange rate multiplied by the index of world export prices, divided by the domestic output price index.
(**) EV = Hicksian Equivalent Variation. A positive value implies a welfare improvement and a negative value indicates a welfare worsening.

Table 3: Sources of household factor income and changes following simulations

	Household groups and factor incomes	Shares in the base run (in percent)	Changes following simulations of scenarios (in percent)						
			DOHA	ROW	CAM-1	CAM-2	FULL	FULL-VAT	FULL-CON.
Urban households	Wages earned on skilled agricultural labor	1.86	0.55	3.63	-11.77	-7.71	-8.54	-5.40	-8.08
	Wages earned on unskilled agricultural labor	2.54	0.55	3.63	-11.77	-7.72	-8.54	-5.40	-8.07
	Wages earned on skilled nonagricultural labor	56.24	0.12	0.75	-9.87	-7.01	-9.15	-5.46	-9.42
	Wages earned on unskilled nonagricultural labor	12.21	0.08	0.53	-10.16	-7.29	-9.58	-5.82	-9.84
	Returns to agricultural capital	4.99	0.52	3.61	-11.28	-6.99	-8.05	-5.07	-7.57
	Returns to nonagricultural capital	22.01	0.15	0.86	-10.38	-7.58	-9.57	-6.13	-9.93
	Returns to land	0.15	0.36	3.46	-7.95	-2.02	-4.78	-2.98	-4.15
	Total factor income	**100.00**	**0.16**	**1.02**	**-10.17**	**-7.19**	**-9.21**	**-5.63**	**-9.42**
Rural households	Wages earned on skilled agricultural labor	13.41	0.55	3.63	-11.69	-7.61	-8.46	-5.35	-7.99
	Wages earned on unskilled agricultural labor	33.12	0.55	3.63	-11.72	-7.65	-8.49	-5.36	-8.02
	Wages earned on skilled nonagricultural labor	20.99	0.28	1.06	-10.22	-7.45	-9.14	-5.49	-9.43
	Wages earned on unskilled nonagricultural labor	10.78	0.10	0.63	-10.07	-7.18	-9.37	-5.90	-9.64
	Returns to agricultural capital	12.39	0.50	3.59	-10.87	-6.52	-7.65	-4.81	-7.15
	Returns to nonagricultural capital	7.51	0.24	1.23	-10.85	-8.11	-9.81	-6.54	-10.25
	Returns to land	1.80	0.36	3.46	-8.04	-1.66	-4.87	-3.03	-4.24
	Total factor income	**100.00**	**0.40**	**2.46**	**-10.98**	**-7.42**	**-8.75**	**-5.51**	**-8.63**
Male-led households	Wages earned on skilled agricultural labor	7.20	0.55	3.63	-11.70	-7.62	-8.47	-5.35	-8.00
	Wages earned on unskilled agricultural labor	14.71	0.55	3.63	-11.73	-7.67	-8.50	-5.37	-8.04
	Wages earned on skilled nonagricultural labor	42.29	0.18	0.86	-9.96	-7.12	-9.11	-5.49	-9.38
	Wages earned on unskilled nonagricultural labor	11.65	0.09	0.55	-10.16	-7.29	-9.57	-5.76	-9.79
	Returns to agricultural capital	5.73	0.51	3.60	-11.07	-6.75	-7.84	-4.94	-7.35
	Returns to nonagricultural capital	17.58	0.19	0.99	-10.53	-7.75	-9.64	-6.23	-10.01
	Returns to land	0.85	0.36	3.46	-8.00	-1.61	-4.83	-3.00	-4.20
	Total factor income	**100.00**	**0.27**	**1.63**	**-10.52**	**-7.30**	**-9.01**	**-5.57**	**-9.08**
Female-led households	Wages earned on skilled agricultural labor	5.46	0.55	3.63	-11.72	-7.64	-8.48	-5.36	-8.02
	Wages earned on unskilled agricultural labor	20.00	0.55	3.63	-11.69	-7.62	-8.46	-5.35	-8.00
	Wages earned on skilled nonagricultural labor	35.82	0.05	0.59	-9.88	-7.04	-9.35	-5.39	-9.61
	Wages earned on unskilled nonagricultural labor	11.39	0.07	0.65	-9.96	-7.07	-9.20	-6.23	-9.60
	Returns to agricultural capital	7.51	0.51	3.59	-11.03	-6.70	-7.81	-4.92	-7.32
	Returns to nonagricultural capital	18.91	0.15	0.88	-10.49	-7.69	-9.66	-6.33	-10.06
	Returns to land	0.92	0.37	3.46	-8.16	-2.05	-4.99	-3.11	-4.36
	Total factor income	**100.00**	**0.24**	**1.68**	**-10.54**	**-7.24**	**-9.01**	**-5.60**	**-9.07**
Poor in base run	Wages earned on skilled agricultural labor	13.30	0.54	3.62	-11.66	-7.60	-8.43	-5.33	-7.96
	Wages earned on unskilled agricultural labor	35.34	0.54	3.62	-11.65	-7.57	-8.42	-5.32	-7.95
	Wages earned on skilled nonagricultural labor	21.94	0.22	0.98	-10.31	-7.54	-9.29	-5.91	-9.67
	Wages earned on unskilled nonagricultural labor	15.37	0.06	0.57	-9.90	-7.01	-9.27	-5.89	-9.58
	Returns to agricultural capital	5.58	0.49	3.58	-10.71	-6.27	-7.49	-4.71	-6.99
	Returns to nonagricultural capital	6.56	0.24	1.22	-10.59	-7.66	-9.56	-6.33	-9.97
	Returns to land	1.91	0.37	3.47	-8.20	-0.39	-5.02	-3.13	-4.40
	Total factor income	**100.00**	**0.37**	**2.41**	**-10.90**	**-7.28**	**-8.70**	**-5.53**	**-8.59**
Non poor in base run	Wages earned on skilled agricultural labor	5.95	0.55	3.63	-11.72	-7.63	-8.48	-5.36	-8.02
	Wages earned on unskilled agricultural labor	13.02	0.55	3.63	-11.75	-7.69	-8.52	-5.38	-8.05
	Wages earned on skilled nonagricultural labor	43.67	0.15	0.80	-9.92	-7.08	-9.14	-5.44	-9.40
	Wages earned on unskilled nonagricultural labor	11.06	0.09	0.57	-10.16	-7.30	-9.54	-5.84	-9.79
	Returns to agricultural capital	6.15	0.51	3.60	-11.10	-6.80	-7.88	-4.96	-7.39
	Returns to nonagricultural capital	19.43	0.18	0.96	-10.52	-7.74	-9.65	-6.25	-10.03
	Returns to land	0.72	0.36	3.46	-7.97	-2.19	-4.80	-2.99	-4.17
	Total factor income	**100.00**	**0.25**	**1.53**	**-10.47**	**-7.29**	**-9.05**	**-5.58**	**-9.15**

Source: Authors' constriction based on their simulation results. **DOHA** = Doha scenario; **ROW** = ROW liberalization; **CAM-1** = Cameroon liberalization with neutral replacement tax and **endogenous TOT**; **CAM-2** = Cameroon liberalization with neutral replacement tax and **fixed TOT**; **FULL** = Combined ROW and Own full liberalization with neutral replacement tax; **FULL-VAT** = Combined ROW and Cameroon full liberalization with VAT as replacement tax; **FULL-CON.** = Combined ROW and Own full liberalization with consumption replacement tax.

Table 4: Poverty and inequality indices before and after simulations

Poverty (in percent) and inequality indices	Scenarios	Baseline	DOHA	ROW	CAM-1	CAM-2	FULL	FULL-VAT	FULL-CON.
Cameroon	Poverty headcount	40.22	40.08	39.28	41.52	40.64	40.78	42.14	43.44
	Poverty gap	13.76	13.75	13.28	14.79	14.28	14.33	14.85	15.58
	Poverty severity	6.38	6.37	6.08	7.18	6.81	6.82	7.07	7.54
	Gini index	0.4575	0.4570	0.4542	0.4670	0.4631	0.4630	0.4609	0.4624
Urban area	Poverty headcount	17.97	17.90	17.86	18.59	18.47	18.90	19.78	21.33
	Poverty gap	4.56	4.59	4.56	4.97	4.84	4.93	5.15	5.70
	Poverty severity	1.75	1.77	1.75	2.08	1.98	1.98	2.05	2.33
	Gini index	0.4538	0.4537	0.4533	0.4612	0.4595	0.4602	0.4573	0.4606
Rural area	Poverty headcount	52.17	52.00	50.79	53.85	52.56	52.54	54.16	55.32
	Poverty gap	18.70	18.68	17.97	20.07	19.36	19.39	20.06	20.89
	Poverty severity	8.86	8.84	8.41	9.92	9.40	9.43	9.77	10.34
	Gini index	0.3906	0.3904	0.3885	0.3974	0.3946	0.3944	0.3930	0.3941
Male-led households	Poverty headcount	40.54	40.37	39.65	42.00	41.10	41.28	42.60	44.08
	Poverty gap	14.01	14.00	13.50	15.23	14.66	14.73	15.18	15.98
	Poverty severity	6.51	6.49	6.19	7.45	7.03	7.05	7.27	7.78
	Gini index	0.4615	0.4610	0.4581	0.4711	0.4672	0.4670	0.4648	0.4664
Female-led households	Poverty headcount	39.18	39.16	38.10	39.99	39.19	39.18	40.68	41.38
	Poverty gap	12.95	12.96	12.58	13.39	13.09	13.06	13.77	14.29
	Poverty severity	5.97	5.97	5.75	6.33	6.11	6.09	6.45	6.76
	Gini index	0.4443	0.4438	0.4412	0.4535	0.4498	0.4499	0.4478	0.4494
Poor people in base run	Poverty headcount	100.00	99.64	97.41	98.23	98.28	98.30	99.62	99.33
	Poverty gap	34.20	34.19	33.02	36.50	35.36	35.49	36.76	38.30
	Poverty severity	15.86	15.84	15.12	17.80	16.90	16.94	17.57	18.69
	Gini index	0.1777	0.1775	0.1764	0.1918	0.1866	.1865	0.1828	0.1866
Non poor people in base run	Poverty headcount	0.00	0.02	0.18	3.37	1.87	2.09	3.48	5.84
	Poverty gap	0.00	0.00	0.00	0.19	0.11	0.10	0.10	0.30
	Poverty severity	0.00	0.00	0.00	0.04	0.02	0.01	0.01	0.04
	Gini index	0.3709	0.3705	0.3684	03791	0.3759	.3760	0.3737	0.3756
Poverty headcount (FGT_0):	Agriculture, Fishing, Hunting	57.05	56.82	55.23	59.51	57.96	57.94	59.35	60.49
	Breeding	51.02	51.02	49.78	54.58	53.48	53.48	53.90	55.69
	Mining	24.31	24.31	24.31	24.31	24.31	24.31	24.31	24.31
Households categorized by sector of activity of the head of household	Food Industry	20.54	18.55	14.15	42.37	40.98	35.64	37.78	42.73
	Textile Industry	29.20	29.20	31.28	34.52	34.52	34.74	32.05	37.98
	Wood Industry	22.19	22.19	21.31	16.16	14.26	16.16	19.86	18.12
	Chemical Industry	13.19	13.19	13.19	19.92	19.92	29.58	19.92	29.58
	Industry of Building Material	11.71	11.71	11.71	14.15	14.15	14.15	14.15	14.15
	Metals, Mechanics, Repairing	26.10	26.10	26.10	25.89	25.89	27.78	25.53	30.84
	Energy, Gas, and Water	19.68	19.68	19.68	17.86	19.68	19.68	19.68	19.68
	Building and Public Works	30.59	30.59	30.59	32.24	31.95	32.12	33.92	33.92
	Transport	19.61	19.69	20.12	19.29	19.29	19.29	21.11	24.25
	General Trade	18.44	18.44	18.44	18.91	18.91	19.10	21.03	22.05
	Food Trade	22.64	22.64	22.03	23.97	23.63	23.97	25.64	28.45
	Other Trades	29.28	29.28	29.28	28.94	28.92	28.96	30.46	32.37
	Hotel and Restaurant	25.09	25.09	25.09	25.09	25.09	25.09	26.15	26.15
	Banks and Insurance	1.93	1.93	1.93	3.67	1.93	3.67	3.67	3.67
	Public Service	13.45	13.26	13.26	13.58	13.66	13.58	14.03	15.85
	Miscellaneous Services	24.67	24.77	24.84	26.86	25.65	26.66	27.83	29.51
	Not Classified	28.36	28.36	28.47	25.87	26.08	26.66	28.56	28.43

Source: Authors' construction based on simulation results and the 2001 Cameroon household survey.

DOHA = Doha scenario; **ROW** = Rest Of the World liberalization; **CAM-1** = Cameroon liberalization with neutral replacement tax and **endogenous Terms Of Trade (TOT)**; **CAM-2** = Cameroon liberalization with neutral replacement tax and **fixed TOT**; **FULL** = Combined ROW and Cameroon full liberalization with neutral replacement tax; **FULL-VAT** = Combined ROW and Cameroon full liberalization with VAT as replacement tax; **FULL-CON.** = Combined ROW and Cameroon full liberalization with consumption replacement tax.

Table 5: Estimates of changes in the number of poor

Scenarios performed	Number of former poor people who escape from poverty A	Number of former non poor people who become poor B	Net change in the number of poor people (*) C = B – A
DOHA: Doha scenario with VAT as the replacement tax	**23,000**	**1,000**	**– 22,000**
ROW: ROW full liberalization only	161,000	16,000	– 145,000
CAM-1: Cameroon own full liberalization only, with neutral production tax as the replacement tax, and endogenous Terms Of Trade (TOT)	110,000	311,000	+ 201,000
CAM-2: Cameroon own full liberalization only, with neutral production tax as the replacement tax, and fixed TOT	107,000	172,000	+ 65,000
FULL: Combined ROW and Cameroon full liberalization, , with neutral production tax as the replacement tax, and endogenous TOT	106,000	193,000	+ 87,000
FULL-VAT: combined ROW and Cameroon full liberalization, with VAT as the replacement tax	**24,000**	**327,000**	**+ 303,000**
FULL-CON.: Combined ROW and Cameroon full liberalization, , with consumption tax as the replacement tax, and endogenous TOT	42,000	540,000	+ 498,000

Source: Authors' construction based on simulation results and poverty profiles in 2001 (CNIS 2002a; 2002b).
(*) A negative sign "–" implies a fall in overall number of poor people; and a positive sign "+" indicates a rise in the overall number of poor people.

Table 6: Doha scenario with VAT as the replacement tax – Sectoral effects on Prices and Volumes of goods and services

Production Sectors	Percent changes in world prices from GTAP simulations		Tariffs (in percent)			Percent changes in domestic market prices							Percent changes in volumes					
	World Export Prices	World Import Prices	Original tariffs	Cut in original tariffs in Percent	New tariffs	Producer prices	Export prices	Import prices	Prices of locally sold output (*)	Prices of locally sold output (**)	Prices of composite goods (**)	Consumer prices (**)	Output	Exports	Imports	Locally sold domestic output	Total demand of composite goods	Household consumption
Foodstuff agriculture	0.015	2.233	12.2	-2.77	11.9	0.46	0.19	2.02	0.46	0.46	0.48	0.48	0.06	-1.07	-6.34	0.09	0.03	-0.10
Cash crops agriculture	-0.177	-0.284	8.0	-0.49	8.0	0.18	0.04	-0.32	0.27	0.28	0.27	0.28	-0.45	-1.28	4.23	0.25	0.26	-0.03
Forestry	-0.122	-0.108	7.4	-1.83	7.3	0.07	-0.01	0.18	0.08	0.08	0.08	0.08	-0.23	-0.64	-0.69	-0.19	-0.19	-0.04
Crude oil	0.111	0.114	3.2	0.00	3.2	0.11	0.11	0.11	0.11	0.11	0.11	0.00	0.00	0.00	-0.06	-0.01	-0.05	0.00
Food processing	0.115	3.234	23.8	-8.70	21.7	0.50	0.24	1.57	0.52	0.53	0.68	0.89	0.58	-0.74	-4.42	0.70	0.07	-0.44
Wood processing	-0.061	-0.064	28.1	-0.54	27.9	0.00	-0.02	0.18	0.01	0.16	0.16	0.42	-0.18	-0.27	-0.17	-0.07	-0.07	-0.23
Refined petroleum	0.105	0.073	18.3	-0.27	18.3	0.07	0.10	0.17	0.06	0.16	0.16	0.23	-0.06	0.04	-0.14	-0.11	-0.11	-0.13
Miscellaneous industries	0.103	0.017	14.6	-0.74	14.5	0.14	0.12	0.24	0.14	0.20	0.21	0.38	0.07	-0.08	-0.16	0.11	0.03	-0.20
Tradable services	-0.064	-0.024	0.0	-0.00	0.0	0.11	0.01	-0.02	0.12	0.17	0.16	0.18	-0.11	-0.46	0.67	-0.06	-0.03	-0.13
Public services	0.000	0.000	0.0	-0.00	0.0	0.39	0.00	0.00	0.39	0.39	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00
All sectors	**0.044**	**0.471**	**11.79**	**-1.10**	**11.66**	**0.21**	**0.08**	**0.36**	**0.23**	**0.27**	**0.29**	**0.41**	**0.02**	**-0.25**	**-0.64**	**0.09**	**0.00**	**-0.20**

Source: Authors' construction based on simulation results (for changes in domestic prices and volumes) and on GTAP results (for changes in world prices and tariffs).

(*) Exclusive of taxes (**) Inclusive of all taxes on goods

Table 7: Doha scenario with VAT as the replacement tax – Sectoral effects on production factor markets

Production Sectors	Unskilled labor			Skilled labor			Composite labor			Capital		Land	
	Share	Percent change in demand	Percent change in wage rate	Share	Percent change in demand	Percent change in wage rate	Share of unskilled labor on composite labor	Percent change in demand	Percent change in wage rate	Percent change in demand	Percent change in rate of return	Percent change in demand	Percent change in rate of return
Foodstuff agriculture	53.82	0.06	0.50	13.36	0.07	0.50	69.73	0.06	0.50	0.00	0.60	0.34	0.40
Cash crops agriculture	3.80	-0.91	0.50	0.97	-0.91	0.50	69.22	-0.91	0.50	0.00	-0.10	-0.64	0.40
AGRICULTURAL	***57.62***	***0.00***	***0.50***	***14.32***	***0.00***	***0.50***	***69.70***	***0.00***	***0.50***	***0.00***	***0.44***	***0.00***	***0.40***
Forestry	1.04	-0.41	0.10	1.26	-0.46	0.10	32.20	-0.45	0.10	0.00	-0.20	-	-
Crude oil	0.32	0.00	0.40	0.38	0.00	0.40	32.21	0.00	0.40	0.00	0.10	-	-
Food processing	2.62	1.64	0.10	7.43	1.59	0.10	16.80	1.60	0.10	0.00	1.20	-	-
Wood processing	0.31	-0.64	0.10	1.64	-0.69	0.10	9.66	-0.68	0.10	0.00	-0.30	-	-
Refined petroleum	0.05	-0.66	0.10	0.13	-0.68	0.10	18.61	-0.67	0.10	0.00	-0.30	-	-
Miscellaneous industries	7.02	0.19	0.10	11.94	0.14	0.10	25.16	0.15	0.10	0.00	0.20	-	-
INDUSTRIAL	***11.37***	***0.44***	***0.11***	***22.78***	***0.51***	***0.11***	***22.20***	***0.50***	***0.11***	***0.00***	***0.32***	**-**	**-**
Tradable services	30.73	-0.16	0.10	53.19	-0.22	0.10	24.83	-0.20	0.10	0.00	0.00	-	-
Public services	0.29	0.00	0.40	9.71	0.00	0.40	1.66	0.00	0.40	0.00	0.80	-	-
SERVICES	***31.01***	***-0.16***	***0.10***	***62.90***	***-0.19***	***0.15***	***21.99***	***-0.18***	***0.14***	***0.00***	***0.05***	**-**	**-**
NON AGRICULTURAL	***42.38***	***0.00***	***0.10***	***85.68***	***0.00***	***0.14***	***22.05***	***0.00***	***0.13***	***0.00***	***0.19***	**-**	**-**
ALL SECTORS	**100.00**	**0.00**	**0.33**	**100.00**	**0.00**	**0.19**	**36.38**	**0.00**	**0.24**	**0.00**	**0.21**	**0.00**	**0.40**

Source: Authors' construction based on their simulation results and Cameroon SAM.

Table 8: ROW vs. Domestic Liberalization – Sectoral effects on Prices and Volumes of goods and services

Production Sectors	Percent changes in world prices from GTAP simulations		Tariffs (in percent)			Percent changes in domestic market prices							Percent changes in volumes					
	World Export Prices	World Import Prices	Original tariffs	Cut in original tariffs	New tariffs	Producer prices	Export prices	Import prices	Locally sold output prices (*)	Prices of locally sold output (**)	Prices of composite goods (**)	Consumer prices (**)	Output	Exports	Imports	Locally sold domestic output	Total demand of composite goods	Household consumption
ROW LIBERALIZATION ONLY																		
Foodstuff agriculture	3.39	7.31	12.2	0.00	12.2	2.95	3.20	7.08	2.95	2.95	2.99	2.97	0.02	1.09	-15.60	0.02	-0.13	-0.25
Cash crops agriculture	1.73	0.51	8.0	0.00	8.0	1.94	1.86	0.51	2.01	2.01	2.00	2.00	-0.20	-0.72	10.30	0.23	0.24	0.16
Forestry	0.80	0.54	7.4	0.00	7.4	0.62	0.73	0.57	0.61	0.61	0.61	0.61	-0.11	0.43	0.04	-0.14	-0.14	0.16
Crude oil	0.49	0.44	3.2	0.00	3.2	0.49	0.49	0.44	0.47	0.47	0.44	0.00	0.00	0.01	-0.02	-0.39	-0.04	0.00
Food processing	1.49	4.79	23.8	0.00	23.8	2.30	1.75	4.76	2.34	2.33	2.68	2.60	1.15	-1.53	-9.94	1.35	-0.04	-0.54
Wood processing	0.70	0.24	28.1	0.00	28.1	0.67	0.68	0.23	0.67	0.66	0.66	0.67	0.03	0.10	0.34	-0.01	-0.01	-0.06
Refined petroleum	0.53	0.33	18.3	0.00	18.3	0.41	0.49	0.34	0.38	0.39	0.39	0.38	-0.06	0.24	0.02	-0.19	-0.16	0.18
Miscellaneous industries	0.96	-0.15	14.6	0.00	14.6	0.39	0.69	-0.15	0.36	0.36	0.18	0.35	-0.52	1.64	3.05	-0.74	0.36	0.36
Tradable services	0.67	0.36	0.0	0.00	0.0	0.70	0.69	0.36	0.70	0.71	0.69	0.69	-0.08	-0.12	1.24	-0.08	-0.01	0.04
Public services	0.00	0.00	0.0	0.00	0.0	2.10	0.00	0.00	2.10	2.10	2.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
All sectors	**0.77**	**0.76**	**11.79**	**0.00**	11.79	**1.19**	**0.75**	**0.67**	**1.26**	**1.26**	**1.18**	**1.37**	**0.01**	**0.07**	**0.31**	**0.01**	**0.04**	**-0.05**
CAM-1: DOMESTIC LIBERALIZATION ONLY - WITH NEUTRAL REPLACEMENT TAX																		
Foodstuff agriculture	0.00	0.00	12.2	-100	0.00	-11.02	-4.64	-9.80	-11.08	-9.30	-9.30	-10.98	-1.32	33.02	0.81	-1.60	-1.58	0.42
Cash crops agriculture	0.00	0.00	8.0	-100	0.00	-6.53	-4.19	-5.97	-8.51	-6.67	-6.67	-8.50	10.00	29.31	-8.65	-4.15	-4.15	-0.06
Forestry	0.00	0.00	7.4	-100	0.00	-8.13	-4.20	-6.14	-8.39	-6.58	-6.58	-8.35	4.96	29.40	1.09	3.52	3.50	-0.15
Crude oil	0.00	0.00	3.2	-100	0.00	-0.08	-0.06	-1.15	-1.60	0.38	-1.08	0.00	0.00	0.34	0.04	-19.49	-0.94	0.00
Food processing	0.00	0.00	23.8	-100	0.00	-10.75	-4.77	-17.77	-11.28	-9.55	-11.06	-9.07	-3.32	34.11	51.65	-6.16	0.97	0.15
Wood processing	0.00	0.00	28.1	-100	0.00	-5.24	-3.39	-20.28	-6.42	-4.50	-4.56	-6.31	7.87	23.02	238.41	-0.92	-0.53	-0.75
Refined petroleum	0.00	0.00	18.3	-100	0.00	-3.31	-1.20	-13.84	-4.20	-2.70	-4.14	-3.55	-1.77	7.52	57.44	-5.52	1.22	-1.90
Miscellaneous industries	0.00	0.00	14.6	-100	0.00	-9.24	-4.98	-11.34	-9.79	-8.04	-9.27	-5.85	-2.95	35.89	21.39	-7.15	1.14	-1.21
Tradable services	0.00	0.00	0.0	-100	0.00	-8.89	-3.63	2.01	-9.20	-7.36	-7.00	-8.87	0.76	24.80	-30.99	-0.47	-1.88	0.74
Public services	0.00	0.00	0.0	-100	0.00	-8.46	0.00	0.00	-8.46	-8.46	-8.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00
All sectors	**0.00**	**0.00**	**11.79**	**-100**	**0.00**	**-8.45**	**-2.43**	**-9.83**	**-9.55**	**-7.84**	**-8.11**	**-8.51**	**-0.10**	**15.14**	**14.76**	**-2.59**	**-0.52**	**0.10**

Source: Authors' construction based on their simulation results (for changes in domestic prices and volumes) and on GTAP results (for changes in world prices and tariffs).

(*) Exclusive of taxes (**) Inclusive of all taxes on goods

Table 9: ROW vs. Domestic Liberalization – Sectoral effects on production factor markets

Production Sectors	Unskilled labor			Skilled labor			Composite labor			Capital		Land	
	Share	Percent change in demand	Percent change in wage rate	Share	Percent change in demand	Percent change in wage rate	Unskilled share in composite labor	Percent change in demand	Percent change in wage rate	Percent change in demand	Percent change in rate of return	Percent change in demand	Percent change in rate of return
ROW LIBERALIZATION ONLY													
Foodstuff agriculture	53.82	0.03	3.60	13.36	0.03	3.60	69.73	0.03	3.60	0.00	3.70	0.15	3.50
Cash crops agriculture	3.80	-0.40	3.60	0.97	-0.40	3.60	69.22	-0.40	3.60	0.00	3.10	-0.28	3.50
AGRICULTURAL	*57.62*	*0.00*	*3.60*	*14.32*	*0.00*	*3.60*	*69.70*	*0.00*	*3.60*	*0.00*	*3.56*	*0.00*	*3.50*
Forestry	1.04	-0.12	0.60	1.26	-0.26	0.70	32.20	-0.21	0.67	0.00	0.40	-	-
Crude oil	0.32	0.00	1.40	0.38	0.00	1.40	32.21	0.00	1.40	0.00	0.50	-	-
Food processing	2.62	3.31	0.60	7.43	3.17	0.70	16.80	3.19	0.69	0.00	5.00	-	-
Wood processing	0.31	0.22	0.60	1.64	0.09	0.70	9.66	0.10	0.68	0.00	0.90	-	-
Refined petroleum	0.05	-0.49	0.60	0.13	-0.72	0.70	18.61	-0.67	0.67	0.00	-0.20	-	-
Miscellaneous industries	7.02	-0.98	0.60	11.94	-1.11	0.70	25.16	-1.08	0.68	0.00	-0.80	-	-
INDUSTRIAL	***11.37***	***0.15***	***0.62***	***22.78***	***0.44***	***0.71***	***22.20***	***0.38***	***0.69***	***0.00***	***1.19***	**-**	**-**
Tradable services	30.73	-0.06	0.60	53.19	-0.19	0.70	24.83	-0.16	0.68	0.00	0.50	-	-
Public services	0.29	0.00	1.40	9.71	0.00	1.40	1.66	0.00	1.40	0.00	6.20	-	-
SERVICES	***31.01***	***-0.06***	***0.61***	***62.90***	***-0.16***	***0.81***	***21.99***	***-0.14***	***0.76***	***0.00***	***0.89***	**-**	**-**
NON AGRICULTURAL	***42.38***	***0.00***	***0.61***	***85.68***	***0.00***	***0.78***	***22.05***	***0.00***	***0.74***	***0.00***	***1.04***	**-**	**-**
ALL SECTORS	**100.00**	**0.00**	**2.33**	**100.00**	**0.00**	**1.19**	**36.38**	**0.00**	**1.60**	**0.00**	**1.29**	**0.00**	**3.50**
CAM-1: DOMESTIC LIBERALIZATION ONLY – WITH NEUTRAL REPLACEMENT TAX													
Foodstuffs agriculture	53.82	-1.50	-11.70	13.36	-1.53	-11.70	69.73	-1.51	-11.70	0.00	-12.60	-7.37	-8.00
Cash crops agriculture	3.80	21.21	-11.70	0.97	21.17	-11.70	69.22	21.20	-11.70	0.00	0.40	13.99	-8.00
AGRICULTURAL	***57.62***	***0.00***	***-11.70***	***14.32***	***0.00***	***-11.70***	***69.70***	***0.00***	***-11.70***	***0.00***	***-9.58***	***0.00***	***-8.00***
Forestry	1.04	9.81	-10.10	1.26	9.73	-10.10	32.20	9.76	-10.10	0.00	-4.40	-	-
Crude oil	0.32	0.00	-8.80	0.38	0.00	-8.80	32.21	0.00	-8.80	0.00	1.90	-	-
Food processing	2.62	-8.87	-10.10	7.43	-8.93	-10.10	16.80	-8.92	-10.10	0.00	-15.50	-	-
Wood processing	0.31	32.28	-10.10	1.64	32.18	-10.10	9.66	32.19	-10.10	0.00	8.30	-	-
Refined petroleum	0.05	-17.63	-10.10	0.13	-17.63	-10.10	18.61	-17.63	-10.10	0.00	-21.00	-	-
Miscellaneous industries	7.02	-6.02	-10.10	11.94	-6.08	-10.10	25.16	-6.07	-10.10	0.00	-13.80	-	-
INDUSTRIAL	***11.37***	***-4.07***	***-10.06***	***22.78***	***-3.35***	***-10.08***	***22.20***	***-3.51***	***-10.07***	***0.00***	***-5.95***	**-**	**-**
Tradable services	30.73	1.51	-10.10	53.19	1.44	-10.10	24.83	1.45	-10.10	0.00	-9.20	-	-
Public services	0.29	0.00	-8.80	9.71	0.00	-8.80	1.66	0.00	-8.80	0.00	-9.20	-	-
SERVICES	***31.01***	***1.49***	***-10.09***	***62.90***	***1.21***	***-9.90***	***21.99***	***1.28***	***-9.94***	***0.00***	***-9.20***	**-**	**-**
NON AGRICULTURAL	***42.38***	***0.00***	***-10.08***	***85.68***	***0.00***	***-9.95***	***22.05***	***0.00***	***-9.98***	***0.00***	***-7.55***	**-**	**-**
ALL SECTORS	**100.00**	**0.00**	**-11.01**	**100.00**	**0.00**	**-10.20**	**36.38**	**0.00**	**-10.49**	**0.00**	**-7.75**	**0.00**	**-8.00**

Source: Authors' construction based on their simulation results and 2001 Cameroon SAM.

Table 10: Full liberalization with neutral replacement tax vs. VAT – Sectoral effects on Prices and Volumes of goods and services

Production Sectors	Percent changes in world prices from GTAP simulations		Tariffs (in percent)			Percent changes in domestic market prices							Percent changes in volumes					
	World Export Prices	World Import Prices	Original tariffs	Cut in original tariffs	New tariffs	Producer prices	Export prices	Import prices	Locally sold output prices (*)	Prices of locally sold output (**)	Prices of composite goods (**)	Consumer prices (**)	Output	Exports	Imports	Locally sold domestic output	Total demand of composite goods	Household consumption
FULL LIBERALIZATION WITH NEUTRAL REPLACEMENT TAX																		
Foodstuff agriculture	3.39	7.31	12.2	-100	0.00	-8.37	-1.58	-3.48	-8.44	-6.65	-6.62	-8.33	-1.26	34.41	-14.74	-1.54	-1.67	0.20
Cash crops agriculture	1.73	0.51	8.0	-100	0.00	-4.65	-2.36	-5.54	-6.58	-4.75	-4.75	-6.57	9.50	27.95	1.41	-3.95	-3.94	0.07
Forestry	0.80	0.54	7.4	-100	0.00	-7.44	-3.46	-5.65	-7.70	-5.94	-5.94	-7.67	4.89	29.53	1.88	3.44	3.43	-0.01
Crude oil	0.49	0.44	3.2	-100	0.00	0.41	0.44	-0.77	-1.14	0.79	-0.70	0.00	0.00	0.35	0.04	-19.79	-0.96	0.00
Food processing	1.49	4.79	23.8	-100	0.00	-8.88	-3.24	-13.92	-9.38	-7.66	-8.75	-6.97	-1.65	33.19	36.32	-4.28	0.73	-0.36
Wood processing	0.70	0.24	28.1	-100	0.00	-4.56	-2.70	-20.14	-5.75	-3.87	-3.94	-5.64	7.79	22.91	249.46	-0.98	-0.57	-0.80
Refined petroleum	0.53	0.33	18.3	-100	0.00	-2.85	-0.70	-13.59	-3.77	-2.30	-3.77	-3.13	-1.85	7.63	57.99	-5.68	1.13	-1.73
Miscellaneous industries	0.96	-0.15	14.6	-100	0.00	-8.77	-4.23	-11.51	-9.36	-7.66	-9.11	-5.35	-3.86	37.28	25.35	-8.31	1.47	-0.94
Tradable services	0.67	0.36	0.0	-100	0.00	-8.16	-2.92	2.32	-8.46	-6.66	-6.31	-8.14	0.69	24.36	-29.82	-0.52	-1.87	0.74
Public services	0.00	0.00	0.0	-100	0.00	-6.91	0.00	0.00	-6.91	-6.91	-6.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00
All sectors	**0.77**	**0.76**	**11.79**	**-100**	**0.00**	**-7.35**	**-1.64**	**-9.06**	**-8.38**	**-6.70**	**-7.05**	**-7.23**	**-0.09**	**15.11**	**14.85**	**-2.57**	**-0.49**	**0.02**
FULL LIBERALIZATION WITH VAT AS REPLACEMENT TAX																		
Foodstuff agriculture	3.39	7.31	12.2	-100	0.00	-5.29	-0.33	-0.09	-5.34	-5.34	-5.29	-5.21	-0.78	24.57	-21.00	-0.30	-0.49	-0.74
Cash crops agriculture	1.73	0.51	8.0	-100	0.00	-2.84	-1.27	-7.35	-4.09	-4.07	-4.07	-4.01	5.98	19.73	24.43	-0.78	-0.76	-0.85
Forestry	0.80	0.54	7.4	-100	0.00	-4.70	-2.10	3.06	-4.86	-4.86	-4.82	-4.82	3.59	19.13	-30.77	3.27	3.09	-0.88
Crude oil	0.49	0.44	3.2	-100	0.00	0.42	0.44	-2.67	-1.07	-1.07	-2.60	0.00	0.00	0.33	1.99	-19.04	0.93	0.00
Food processing	1.49	4.79	23.8	-100	0.00	-6.23	-1.94	-13.01	-6.58	-6.38	-7.55	-3.57	-2.52	22.92	39.32	-3.76	1.55	-2.12
Wood processing	0.70	0.24	28.1	-100	0.00	-2.88	-1.67	-13.01	-3.62	0.86	0.80	8.51	4.79	15.37	175.24	0.65	0.93	-5.77
Refined petroleum	0.53	0.33	18.3	-100	0.00	-2.26	-0.43	-11.86	-3.03	-0.22	-1.73	2.41	-2.04	5.89	59.56	-5.23	1.70	-4.03
Miscellaneous industries	0.96	-0.15	14.6	-100	0.00	-4.87	-2.37	-5.02	-5.17	-3.54	-4.06	4.86	0.49	22.27	10.67	-1.25	2.21	-5.69
Tradable services	0.67	0.36	0.0	-100	0.00	-5.30	-1.77	0.36	-5.49	-4.08	-3.90	-3.22	0.00	15.85	-15.80	0.01	-0.72	-2.11
Public services	0.00	0.00	0.0	-100	0.00	-4.26	0.00	0.00	-4.26	-4.26	-4.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00
All sectors	**0.77**	**0.76**	**11.79**	**-100**	**0.00**	**-4.66**	**-0.84**	**-5.55**	**-5.33**	**-4.23**	**-4.39**	**-1.91**	**0.08**	**9.96**	**9.82**	**-0.77**	**0.50**	**-2.61**

Source: Authors' construction based on their simulation results (for changes in domestic prices and volumes) and on GTAP results (for changes in world prices and tariffs).

(*) Exclusive of taxes (**) Inclusive of all taxes on goods

Table 11: Full liberalization with consumption tax vs. VAT tax – Sectoral effects on production factor markets

Production Sectors	Unskilled labor			Skilled labor			Composite labor			Capital		Land	
	Share	Percent change in demand	Percent change in wage rate	Share	Percent change in demand	Percent change in wage rate	Share of unskilled labor on composite labor	Percent change in demand	Percent change in wage rate	Percent change in demand	Percent change in rate of return	Percent change in demand	Percent change in rate of return
FULL LIBERALIZATION WITH NEUTRAL REPLACEMENT TAX													
Foodstuff agriculture	53.82	-1.42	-8.50	13.36	-1.45	-8.50	69.73	-1.43	-8.50	0.00	-9.40	-7.00	-4.90
Cash crops agriculture	3.80	20.10	-8.50	0.97	20.06	-8.50	69.22	20.09	-8.50	0.00	3.40	13.29	-4.90
AGRICULTURAL	***57.62***	***0.00***	***-8.50***	***14.32***	***0.00***	***-8.50***	***69.70***	***0.00***	***-8.50***	***0.00***	***-6.43***	***0.00***	***-4.90***
Forestry	1.04	9.80	-9.50	1.26	9.52	-9.40	32.20	9.61	-9.43	0.00	-3.70	-	-
Crude oil	0.32	0.00	-7.50	0.38	0.00	-7.50	32.21	0.00	-7.50	0.00	2.30	-	-
Food processing	2.62	-4.27	-9.50	7.43	-4.50	-9.40	16.80	-4.46	-9.41	0.00	-12.10	-	-
Wood processing	0.31	32.14	-9.50	1.64	31.81	-9.40	9.66	31.84	-9.42	0.00	8.90	-	-
Refined petroleum	0.05	-18.29	-9.50	0.13	-18.42	-9.40	18.61	-18.39	-9.43	0.00	-20.90	-	-
Miscellaneous industries	7.02	-7.74	-9.50	11.94	-7.97	-9.40	25.16	-7.91	-9.42	0.00	-14.30	-	-
INDUSTRIAL	***11.37***	***-4.08***	***-9.44***	***22.78***	***-2.94***	***-9.37***	***22.20***	***-3.19***	***-9.38***	***0.00***	***-5.10***	***-***	***-***
Tradable services	30.73	1.51	-9.50	53.19	1.26	-9.40	24.83	1.32	-9.42	0.00	-8.60	-	-
Public services	0.29	0.00	-7.50	9.71	0.00	-7.50	1.66	0.00	-7.50	0.00	-5.60	-	-
SERVICES	***31.01***	***1.50***	***-9.48***	***62.90***	***1.06***	***-9.11***	***21.99***	***1.16***	***-9.19***	***0.00***	***-8.40***	***-***	***-***
NON AGRICULTURAL	***42.38***	***0.00***	***-9.47***	***85.68***	***0.00***	***-9.18***	***22.05***	***0.00***	***-9.24***	***0.00***	***-6.72***	***-***	***-***
ALL SECTORS	**100.00**	**0.00**	**-8.91**	**100.00**	**0.00**	**-9.08**	**36.38**	**0.00**	**-9.02**	**0.00**	**-6.69**	**0.00**	**-4.90**
FULL LIBERALIZATION WITH VAT AS REPLACEMENT TAX													
Foodstuff agriculture	53.82	-0.88	-5.40	13.36	-0.90	-5.40	***69.73***	-0.89	-5.40	0.00	-5.90	-4.44	-3.00
Cash crops agriculture	3.80	12.49	-5.40	0.97	12.46	-5.40	***69.22***	12.48	-5.40	0.00	2.40	8.44	-3.00
AGRICULTURAL	***57.62***	***0.00***	***-5.40***	***14.32***	***0.00***	***-5.40***	***69.70***	***0.00***	***-5.40***	***0.00***	***-3.97***	***0.00***	***-3.00***
Forestry	1.04	6.99	-5.90	1.26	7.04	-5.90	***32.20***	7.02	-5.90	0.00	-1.60	-	-
Crude oil	0.32	0.00	-2.00	0.38	0.00	-2.00	***32.21***	0.00	-2.00	0.00	1.60	-	-
Food processing	2.62	-6.82	-5.90	7.43	-6.78	-5.90	***16.80***	-6.79	-5.90	0.00	-10.20	-	-
Wood processing	0.31	19.03	-5.90	1.64	19.09	-5.90	***9.66***	19.09	-5.90	0.00	5.70	-	-
Refined petroleum	0.05	-20.10	-5.90	0.13	-20.11	-5.90	***18.61***	-20.11	-5.90	0.00	-19.00	-	-
Miscellaneous industries	7.02	0.99	-5.90	11.94	1.04	-5.90	***25.16***	1.03	-5.90	0.00	-5.30	-	-
INDUSTRIAL	***11.37***	***0.10***	***-5.79***	***22.78***	***-0.02***	***-5.83***	***22.20***	***0.01***	***-5.82***	***0.00***	***-2.91***	***-***	***-***
Tradable services	30.73	-0.04	-5.90	53.19	0.01	-5.90	***24.83***	0.00	-5.90	0.00	-5.90	-	-
Public services	0.29	0.00	-2.00	9.71	0.00	-2.00	***1.66***	0.00	-2.00	0.00	-8.90	-	-
SERVICES	***31.01***	***-0.04***	***-5.86***	***62.90***	***0.01***	***-5.30***	***21.99***	***0.00***	***-5.42***	***0.00***	***-6.10***	***-***	***-***
NON AGRICULTURAL	***42.38***	***0.00***	***-5.84***	***85.68***	***0.00***	***-5.44***	***22.05***	***0.00***	***-5.53***	***0.00***	***-4.48***	***-***	***-***
ALL SECTORS	**100.00**	**0.00**	**-5.59**	**100.00**	**0.00**	**-5.43**	**36.38**	**0.00**	**-5.49**	**0.00**	**-4.43**	**0.00**	**-3.00**

Source: Authors' construction based on their simulation results and 2001 Cameroon SAM.