Inequality and Poverty Impacts of Trade Distortions in Mozambique

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Abstract

Although Mozambique has considerable agricultural potential, rural poverty remains extremely high. This paper examines the extent to which global and domestic price distortions affect agricultural production and national poverty. We develop a computable general equilibrium (CGE) and micro-simulation model of Mozambique that is linked to the results of a global model. This framework is used to examine the effects of eliminating global and national price distortions. Model results indicate that agriculture is adversely affected by current trade distortions due to policies in the rest of the world. While a removal of all merchandise trade distortions would reduce import prices, it would also raise agricultural production and reduce poverty. By contrast, removing only agricultural price distortions abroad would have little effect on Mozambique's agricultural sector. Model results indicate that Mozambique's own distortions are also biased against agriculture, with producers of processed agricultural products enjoying high protection levels. Removing these distortions causes a significant expansion of agricultural GDP and a reduction in both poverty and inequality. Our findings therefore suggest that removing own-country and rest-of-world distortions would have positive implications for agriculture and for the overall economy in Mozambique, and in particular it would reduce its poverty and inequality.

JEL codes: D30, D58, D63, F13, O53, Q18

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Channing Arndt and James Thurlow

Mozambique has considerable agricultural potential. Only about 20 percent of its vast tracts of decent quality land, and an even smaller share of its water resources, are currently exploited. The country's long coastline contains multiple harbors, which face eastwards towards the dynamic markets of Asia. Regional markets also offer promise in both the short and long term.

Despite this potential, Mozambique earned the unwanted label "poorest country in the world" in the early 1990s. The country's severe poverty and poor economic performance was the result of a number of factors, including the character of Portuguese colonization, a failed socialist experiment, and more than a decade of vicious civil war that lasted until 1992 (Tarp et al. 2002). Since the end of the war, Mozambique has performed much better, and most development indicators have shown substantial improvements (Arndt, Jones, and Tarp 2006). Nevertheless, its low starting point underlines the country's need for substantial growth over an extended period if it is to reach even average conditions for developing countries.

So, while much improved over the past two decades, the current economic situation in Mozambique remains sobering, particularly in rural areas where 70 percent of the population resides. About half of the rural population is considered absolutely poor, meaning that these households have difficulty acquiring even the most basic necessities such as sufficient food for meeting calorie requirements (Arndt and Simler 2004). These rural dwellers, particularly the poor, depend heavily on crop agriculture for their incomes. Technology is generally rudimentary, and agricultural value added remains concentrated in cassava, cereals (particularly maize) and beans. Only a small minority of rural households report using improved seeds, fertilizers and pesticides (Uaiene 2008). Rural households tend to consume most of their production directly with a relatively small share marketed. Overall, approximately three-quarters of the Mozambican population (rural and urban) depend on agriculture for the majority – often the very large majority – of their income. Urban

households also rely on domestically-produced agricultural goods, particularly those households living outside of the capital city, Maputo. Given the weight of agriculture in the economic life of most Mozambicans, growth in agriculture is widely regarded as a potentially powerful lever for reducing poverty (Thurlow 2008, Tarp et al. 2002).

Agriculture is also a potential driver of both exports and economic growth. Mozambique already exports a range of traditional crops, such as tobacco, sugarcane and cotton. These crops also contribute to upstream processing in the manufacturing sector, which has grown rapidly over the last decade. Moreover, the country's underutilized natural resources have attracted considerable foreign investment interest.[1] However, most options for rapid growth in agriculture depend on foreign demand through exports of either primary or processed products.

This critical role of international markets in agricultural growth stems from two facts. First, import penetration in agriculture is relatively low: imports represent only about 4 percent of total demand for agricultural products.[2] While some scope exists to displace processed food imports, the overall scope for growth via import substitution is limited. Second, geographical factors make even the relatively small volume of existing imports difficult to displace. The large majority of agricultural imports are consumed in the south of the country, particularly in the capital city of Maputo. However, agricultural potential in the south is limited. The more favorable growing areas are located 1000 to 2000 kilometers away in the northern and central regions of the country. Due to large distances, inadequate infrastructure and inefficiencies in storage (particularly the high cost of capital), it is generally more favorable to export surplus from the north and import the same product into the south than to attempt to transport surpluses across both space (north to south) and time (from the postharvest period to the 'hungry season' – see, for example, Arndt, Schiller, and Tarp 2001 and Cruz 2006). Hence, for agriculture to grow substantially, an export orientation is crucial. This can be achieved either via the export of primary agriculture or processed farm products.

The link between international agricultural markets, agricultural growth and prospects for overall growth and poverty reduction provides the motivation for this study. Similar to other studies in this volume, this chapter examines whether distortions to agricultural markets hamper prospects for alleviating poverty and income inequality. Two sources of distortions

[1] For a study of the impacts of current biofuel proposals in Mozambique, see Arndt et al. (2008).
[2] Fossil fuels represent more than 10 percent of total imports, making general prospects for import substitution greater for biofuel crops. There is also some room to displace imported processed foods.

are considered: the distortions to domestic agricultural markets imposed by the government of Mozambique, and distortions imposed by other countries that influence Mozambique's export prospects and import prices.

The chapter is structured as follows. The next section provides basic information on the structure of the Mozambican economy and summarizes results from a detailed study of domestic agricultural distortions. We then present the modeling framework employed for the analysis. This is followed by a discussion of the simulations and results. A final section concludes.

Economic structure and agricultural distortions in Mozambique

The structure of the Mozambican economy is summarized in Table 1. Agriculture represents about 26 percent of total GDP and 19 percent of exports. The latter is dominated by fisheries, which generate two-thirds of raw agricultural export earnings. As indicated earlier, import penetration in agriculture is low. This is reflected by the low share of agriculture in total imports and by the low share of imports in total domestic demand for agricultural goods. Agriculture has strong linkages to agriculture-related processing in the manufacturing sector. Sugar processing, for instance, relies on domestically sourced sugarcane, as do cotton and tobacco processing and grain milling. Together these processing sectors represent about 6 percent of total GDP and 5 percent of exports. Agriculture's upstream linkages are therefore an important part of the sector's overall contribution to the economy.

The relatively large share of manufacturing in total exports is driven by aluminum smelting, which accounts for around half of all exports earnings and 5 percent of total GDP. As documented by Andersson (2001), aluminum smelting is largely an enclave sector characterized by very high capital intensity, very specific capital requirements, foreign ownership, limited taxation, expatriate labor, and imported intermediates. All aluminum production is exported, and linkages between the aluminum sector and the rest of the economy are weak. With aluminum removed, agriculture represents 37 percent of exports and 28 percent of GDP.

In terms of policy, the agricultural sector has undergone a process of progressive liberalization and elimination of government intervention since 1987. In particular, the

country shifted from central planning towards a market economy. The reform program has substantially reduced government involvement in agriculture. A detailed study of agricultural distortions for Mozambique finds that "since the period of reform from a centrally planned to a market economy there has been hardly any substantial government intervention in the sector and few distortions are observed" (Alfieri, Arndt and Cirera 2009). Government intervention that does exist is primarily through the use of import tariffs. There are a few exceptions, such as the cotton, cashew and sugar sectors, where more complex policies have been implemented. Nevertheless, the overall picture is one of distinctly limited government involvement.

The social account matrix (SAM) employed for this analysis reflects this situation. The only meaningful distortions present in the SAM are import tariffs. These are also shown in Table 1. In order to maintain consistency with other studies in this volume, tariffs employed by the LINKAGE model are imposed on the Mozambique CGE model.[3] Similar to many other least developed countries, Mozambique views tariffs as a tool both for raising revenue and for influencing prices and incentives within the economy (Arndt and Tarp 2008). Consistent with the revenue raising goal, most rates are positive but relatively low. The exceptions are the rates imposed on processed sugar (nearly 100 percent), rice (26 percent), and many processed food commodities (around 20 percent). More recently the sugar tariff, which is implemented as a variable levy, has declined to near zero due to increases in the world price of sugar. Tariffs on rice have also declined. For this study, however, we retain the applied rates from 2004 when estimating the impact of removing domestic price distortions.

The modeling framework

The computable general equilibrium (CGE) model used in this study contains 56 activities/commodities, including 24 agricultural and 7 food processing sectors.[4] Five factors of production are identified: three types of labor (unskilled, semi-skilled and skilled), agricultural land, and capital. Factor intensities for each sector are shown in table 2. Rural

[3] Estimates of agricultural protection/assistance for Mozambique, based on Alfieri, Arndt and Cirera (2009), are incorporated in the World Bank's global agricultural distortions database (Anderson and Valenzuela 2008). Those estimates cover five decades, but the representative values for developing country agriculture as of 2004 that are used in the global CGE modeling for this study are summarized in Valenzuela and Anderson (2008).
[4] The International Food Policy Research Institute's static model is used for this study (see Lofgren, Harris and Robinson 2002).

and urban labor markets are segmented, such that rural nonfarm and urban non-agriculture are distinguished. Factors in the model are assumed fully employed with flexible real wages. The only exceptions are rural/urban unskilled laborers, who are unemployed with a fixed nominal wage, and capital in the metals and electricity sectors, which is immobile and earning sector-specific returns.[5] The former captures underemployment of lower-skilled workers in Mozambique, while the latter reflects a dependence on foreign direct investment. Using these factors, producers in the model maximize profits under constant returns to scale technology, with the choice between factors governed by a constant elasticity of substitution (CES) function. Factors are then combined with fixed-share intermediates using a Leontief specification. Under profit maximization, factors receive income where marginal revenue equals marginal cost based on endogenous relative prices.

Substitution possibilities exist between production for domestic and foreign markets. This decision of producers is governed by a constant elasticity of transformation (CET) function which distinguishes between exported and domestic goods, so as to capture any time or quality differences between the two products. Profit maximization drives producers to sell in those markets where they can achieve the highest returns. These returns are based on domestic and export prices (where the latter is determined by the world price times the exchange rate adjusted for any taxes). Under the small-country assumption, Mozambique faces perfectly elastic world demand curves at fixed world prices (global liberalization is discussed below). The final ratio of exports to domestic goods is determined by the endogenous interaction of relative prices for these two commodity types.

Further substitution possibilities exist between imported and domestic goods under a CES Armington specification. Such substitution can take place both in final and intermediates usage. These elasticities vary across sectors, with lower elasticities reflecting greater differences between domestic and imported goods. Again under the small country assumption, Mozambique faces infinitely elastic world supply at fixed world prices. The final ratio of imports to domestic goods is determined by the cost minimizing decision-making of domestic demanders based on the relative prices of imports and domestic goods (both of which include relevant taxes).

With respect to global liberalization, results from the World Bank's model of global trade (LINKAGE, see van der Mensbrugghe 2005) are transmitted to the Mozambique model via changes in import prices and export prices and quantities faced by Mozambique. Import

[5] Capital is assumed to be sectorally mobile earning a flexible return, except in the metals and electricity sectors, where it is assumed to be fixed.

price changes are simply applied to the exogenous import prices in the Mozambique model. Export price and quantity changes derived from the LINKAGE model are applied in the manner developed by Horridge (2004). Specifically, export demand functions of the form $Q = (FP/P)^{ES}$ (where *Q* is the quantity exported, *P* is the export price, *ES* is the elasticity of demand for exports, and *FP* is a shift parameter) have been added to the Mozambique model in order to mimic the global LINKAGE model. Horridge (2004) shows that export price and quantity changes generated by LINKAGE can be mimicked in a country model through shocks to the shifter parameter *FP*. Using lower case to indicate percentage change, the percentage change in *FP* applied to the Mozambique model can be derived as follows: $fp = p + q/ES$.

The model distinguishes between various institutions, including enterprises, the government, and ten representative household groups. Households are disaggregated across rural/urban areas and national income quintiles. Households and enterprises receive income in payment for producers' use of their factors of production. Both institutions pay direct taxes to government (based on fixed tax rates), save (based on marginal propensities to save), and make transfers to the rest of the world. Enterprises pay their remaining income to households in the form of dividends. Households use their income to consume commodities under a linear expenditure system (LES) of demand.

Home consumption is important for rural households, representing about half of commodity consumption for all but the top quintile of rural households, whose share of home consumption in total commodity consumption is about one-quarter (table 3). Home consumption is driven in large measure by substantial divergences between farm gate and consumer prices due to high transactions costs. These margins are captured in the model with rates potentially differing between domestic, imported and exported goods. The modeling of home consumption and margins follows Arndt et al. (2000).

The government receives income from imposing activity, sales and direct taxes and import tariffs, and then makes transfers to households, enterprises and the rest of the world. The government also purchases commodities in the form of government consumption expenditure, and the remaining income of government is (dis)saved. All savings from households, enterprises, government and the rest of the world (foreign savings) are collected in a savings pool from which investment is financed.

The model includes three broad macroeconomic accounts: the government balance, the current account, and the savings and investment account. In order to bring about balance between the various macro accounts, it is necessary to specify a set of 'macroclosure' rules,

which provide a mechanism through which macroeconomic balance can be achieved. Consistent with other analyses in this volume, a savings-driven closure is assumed in order to balance the savings-investment account. Under this closure, the marginal propensities to save of households and enterprises are fixed, while investment adjusts to changes in incomes to ensure that the level of investment and savings are equal. For the current account it is assumed that a flexible exchange rate adjusts in order to maintain a fixed level of foreign savings. In other words, the external balance is held fixed in foreign currency terms. Finally, in the government account, the fiscal deficit is assumed to remain unchanged, with government revenues and expenditures balanced through changes in direct tax rates on households and enterprises.

The CGE model is calibrated to a 2003 social accounting matrix (Thurlow 2008), which was constructed using information from national accounts, trade and tax data, and household income and expenditure data from the 2002 national household survey (INE 2004). Trade elasticities are taken from the Global Trade Analysis Project (Dimaranan, 2006). The model is calibrated so that the initial equilibrium reproduces the base-year values from the SAM. Results from the CGE model are passed back down to the household survey on which the model is based and where poverty measures are calculated. More specifically, changes in each representative household's real commodity expenditures in the CGE model are applied to corresponding households' expenditures in the survey. Total expenditures are compared to real expenditure poverty lines and standard poverty measures are recalculated.

Simulations and results

In this section we present the results from four simulations. The first two simulations assess the impact of removing distortions in the rest of the world (ROW), without making any changes to Mozambique's own tariffs and subsidies. This is done for all commodities (Scenario 1) and then only for agriculture and agriculture-related processing (Scenario 2). As with other case studies in this volume, the impact of global liberalization is taken from the LINKAGE model (see van der Mensbrugghe, Valenzuela and Anderson 2010). These include changes in world import and export prices, as well as changes in demand for Mozambican exports (table 4). As indicated above, the implications of global liberalization as derived from the LINKAGE model are imposed as in Horridge (2004). These two simulations, therefore,

model the impact on Mozambique if the rest of the world removes its agricultural and nonagricultural distortions.

The remaining two simulations assess the impact of Mozambique removing its own distortions. As mentioned previously, these include import tariffs and, to a much lesser extent, export and output taxes and subsidies. In both of these national simulations there are no changes in the rest of the world's distortions. World prices therefore remain unchanged as we retain the small country assumption for Mozambican exports.

Simulation 1: Global liberalization for all commodities

The results from the LINKAGE model indicate that Mozambique's terms of trade improve by 1.3 percent once the rest of the world removes distortions on all of its commodities (table 5). World demand for Mozambique's main exports increase, which is a strong driver in the results that follow. As well, world import prices decline for Mozambique's main imported goods, such as clothing and other heavier manufactures (together these account for more than half of total imports). Import prices do rise for some commodities such as processed foods, but these are less important import commodities with relatively low import penetration ratios (table 1).

Rising export prices encourage producers to increase production for foreign markets, thereby causing an appreciation of the real exchange rate, of 2.8 percent (table 5). Import demand, which already increases due to falling world prices, increases further as a result of the appreciation, while the expansion of exports is only partially offset. The appreciation of the exchange rate also reduces the value of foreign inflows (mostly the value of foreign assistance measured in local currency), and hence lowers investment demand. However, the real appreciation and cheaper imported goods drive down consumer prices, causing a large increase in private consumption. Overall, the increase in exports and consumer spending outweighs any additional import penetration and there is an increase in total GDP, of 0.9 percent.

The increase in GDP is driven by agriculture and agriculture-related processing (table 6). Higher agricultural production comes mainly from increased fisheries exports, which already dominate exports (table 7), and is due to price rises and demand increases for Mozambican fish following global liberalization (table 4). There is also an expansion in cotton processing, whose import and export prices and export demand rise. Some other traditional exports also benefit and contribute to increased upstream production of processed

goods. However, sectoral linkages work against sugarcane production, as sugar processing declines as a result of falling world prices and increased import competition (tables 7 and 8). Finally, the overall increase in Mozambique's international trade generates additional demand for domestic trade and transport sectors, which together drive most of the rise in service sector GDP under this simulation.

Improved terms of trade and the stimulus to export demand for primary and processed agricultural products resulting from global liberalization increase the demand for unskilled workers (increased employment) and the returns to the other (fully employed) factors. Because agricultural production uses unskilled rural labor and land intensively (factor intensities are listed in table 2), employment of unskilled rural labor rises by 3.2 percent, while real land returns increase by 3.0 percent (table 9). Increases in demand for urban labor and more highly skilled labor are less pronounced, resulting in less pressure on factor prices. In addition, skilled workers are often employed by the government, and we are assuming that recurrent and wage bill expenditures are unaffected by rest of world liberalization (see unchanged government spending in table 5). Capital returns rise slightly in nominal terms, alongside mild increases in production in the industry and services sectors.

All households in the model benefit from full global liberalization. However, the main beneficiaries are lower-income and rural households (measured by equivalent variation). This is because these households derive a larger share of their incomes from agricultural production and processing, and those sectors are stimulated by rest of world liberalization. By contrast, higher-income urban households receive a larger share of their incomes from capital earnings and skilled labor. Increased household welfare is also reflected in changes in the poverty headcount. The share of the population falling below the US$1-a-day poverty line falls by 1.4 percent. The decline in poverty is only slightly larger for rural households, and there is no significant change in the inequality measures. Thus, the removal of global distortions on all commodities increases GDP and household welfare and reduces poverty in Mozambique, but has little impact on national inequality.

Simulation 2: Global liberalization for agricultural commodities only

In this simulation, we model the impact of the rest of world removing only their agricultural distortions while Mozambique still leaves its own distortions unchanged. Unlike the previous full liberalization simulation, the country now experiences a deterioration of 0.6 percent in its

terms of trade. However, demand rises for certain agricultural exports, while demand for processed commodities, such as processed tobacco, cotton and sugar, all decline.

In terms of the principal macroeconomic, the overall effects of global agricultural liberalization are small and typically of opposite sign compared to the results from the previous simulation (compare columns 2 and 3 of table 5). Changes at the sectoral level are correspondingly small (table 4), reflecting the relatively mild price and quantity changes which occur in global markets for products of importance to Mozambique as a result of rest of world agricultural trade liberalization (table 4). Not surprisingly, the impacts on factor rewards, welfare and poverty are also relatively small (table 9).

Simulation 3: Domestic liberalization for all commodities

In this third simulation we assess the impact of Mozambique removing all of its own distortions while the rest of the world's distortions remain unchanged. As mentioned earlier, Mozambique's largest distortions are through import tariffs (table 1). There is also a small export subsidy on cotton processing and output taxes on groundnuts and raw sugarcane. Given the relatively few non-tariff distortions, it is the reduction in import tariffs that dominates the results.

Removing import tariffs causes a 4.8 percent increase in import demand. Highly protected sectors see greater import penetration. Imports more than double for the most highly protected commodity, processed sugar (table 8). However, as emphasized earlier, highly protected commodities represent only a small share of total imports. Thus, even though import tariffs on manufactures are low, it is the increased domestic demand for these manufactured goods that drives the overall increase in imports. Furthermore, rapidly rising import demand places pressure on the current account, thereby inducing a 5.2 percent depreciation of the real exchange rate.

The depreciation improves export competitiveness. Recall that the major export, aluminum, is highly capital intensive and tied to existing manufacturing facilities. As a result, aluminum exports effectively do not respond to exchange rate signals, transferring the onus of export supply response on the second-largest exporting sector, primary and processed agriculture. Agricultural exports grow by 28 percent. Strong increases in exports cause agricultural GDP to increase by 2.9 percent. By contrast, the manufacturing sector contracts almost across the board, with particularly marked declines in sugar processing and a 2

percent decline overall. This is, however, insufficient to offset the expansion of agriculture, and real GDP rises by 0.9 percent under full domestic liberalization.

Cheaper imported capital goods reduce the cost of investment, while the depreciating exchange rate increases the domestic value of foreign inflows. This causes an increase in investment demand and explains the 1.5 percent increase in construction value added. Cheaper imports also lower consumer prices, which would typically increase consumer spending. However, in order to replace lost tariff revenues the government must raise personal and corporate tax revenues. Thus, even with the increase in GDP, the share of direct taxes in GDP more than doubles, from 2.1 to 5.3 percent.

We assume that tax rates adjust proportionally such that most of the additional tax burden falls on enterprises and higher-income, urban households. This is realistic. Obtaining direct tax revenue from rural and urban poor households is effectively impossible. This causes welfare outcomes to be negative for the top quintile urban household due to rising direct tax rates (Table 9), despite the relatively large increases in the real return to skilled labor and capital. Growth in agricultural exports and output drives a 3.0 percent gain in employment for unskilled rural labor and increases twice as large in factor prices for rural skilled labor and land. Welfare improves for rural households and all but the richest quintile of urban households.

Assumptions about tax incidence strongly influence the distributional impact of removing domestic distortions. If each household in Mozambique experiences the same percentage point increase in their tax rate, then the gains are distributed much more evenly across households. If, on the other hand, tax rates increase proportionally (as we have assumed) then most of the tax burden falls on high-income urban households. As noted earlier, the latter is the only feasible direct tax policy. Sensitivity analysis reveals that other policies, such as increasing activity taxes or sales taxes, also tend to concentrate incidence on urban households due to the strong dependence of rural households on home consumption, which evades taxation. As a result, under all feasible revenue replacement options rural and lower income urban households tend to gain more than proportionately from own-country trade liberalization. Moreover, a larger reduction in rural vis-à-vis urban household incomes and poverty causes national inequality to decline slightly, as reflected by the Gini coefficient.

Simulation 4: Domestic liberalization for primary and processed agricultural commodities

In the final simulation, we consider the impact of Mozambique removing distortions only on its agricultural sector including agricultural processing and textiles. As in the previous scenatio, we assume that other countries do not alter their own distortions. In many ways, the results are similar to but somewhat smaller than those of the previous simulation (table 5). Reducing tariffs causes imports to rise, the real exchange rate to depreciate, and exports to expand. Total GDP increases by 0.7 percent, due in part to an expansion in unskilled employment. However, there is a notable difference in the components of GDP compared with the previous simulation. The combination of a less pronounced nominal depreciation (with implications for the pool of foreign savings), increases in taxes on high-income urban households and enterprises, and price rises in the construction sector imply that real investment actually declines. This allows the consumption aggregate to increase by more than in the previous simulation.

Because the largest distortions (import tariffs) are in agricultural processing (textiles also enjoyed fairly significant protection at 19 percent), the primary impact of the liberalization is to expand imports of processed products, which are treated as part of industry in table 5. Primary agricultural imports actually decline slightly in the aggregate, despite the reduction in protection. As agriculture is the major source for exports at the margin, agriculture, processed agriculture, and textile liberalization actually stimulates agricultural production, with the strongest production gains registered in fisheries and groundnuts (which had very low initial protection).

Commensurate with the consumption aggregate, aggregate household welfare improves by slightly more than under full liberalization. Distributional outcomes are driven by the expansion of agriculture, which generally favors rural labor and land, and the mechanism employed to replace lost tariff revenues, which most strongly impacts the highest-earning urban household. Because the aggregate stimulus to agriculture is less in this simulation compared with also liberalizing non-agricultural markets, consumption gains are more evenly distributed across factors and hence across households. That results in slightly less-pronounced reductions in poverty than in the previous scenario (table 9). There is, however, a similar reduction in national inequality as a result of larger income gains and poverty reduction amongst rural as opposed to urban households.

Conclusions

Agriculture is adversely affected by current global distortions, which are biased against some of Mozambique's key export sectors, such as fisheries. Removing all global distortions would also reduce prices for important imported commodities. It would, however, increase imported food prices, dampening the terms of trade gains. Overall, Mozambique's terms of trade improve. Production responses to a new global environment favor agriculture because of the stimulation of agricultural exports and import-competing food sectors. Agricultural GDP rises once all trade distortions in the rest of the world are eliminated, which reduces poverty in Mozambique. By contrast, removing only agricultural price distortions abroad has little effect on Mozambique's agricultural sector. Gains for traditional export crops, such as cotton and tobacco, are offset by heightened import competition for processed foods, with adverse affects on downstream food crop farmers. Thus, the net effect is a small decline in agricultural GDP and a very small increase in national poverty when only agricultural distortions are removed in the rest of the world.

Mozambique's own distortions are also biased against agriculture. Producers of processed agricultural products enjoy high levels of protection. Removal of these barriers causes a significant expansion of agricultural GDP despite concomitant elimination of tariffs on primary products. Primary agricultural sectors lose little from these tariff reductions, due to relatively low initial protection rates and import penetration. The rise in agricultural GDP is driven by increased agricultural exports, especially fisheries. Full liberalization nevertheless provides a bigger stimulus to the agricultural sector. Poverty reduction is greater in the full liberalization case due to a more pro-poor distribution of the welfare gains to households. Inequality also declines with a reduction in domestic distortions.

The model results suggest that removing domestic and global distortions has positive implications for agriculture and for the expansion of Mozambique's overall economy. It would also contribute to reducing poverty, which is particularly severe in rural areas. Thus, while improving agricultural productivity and rural infrastructure remain the most pressing challenges for stimulating pro-poor agricultural growth in Mozambique, there are also gains to be made from removing the bias against agriculture caused by existing price distortions at home as well as abroad.

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Table 1: Mozambique's economic structure in 2002 and price distortions in 2004

(percent)

	GDP share	Output subsidy	Imports[a]			Exports[a]		
			Share	Intensity	Tariff	Share	Intensity	Tax rate
Total	100.0	0.1	100.0	24.0	9.3	100.0	11.4	-0.1
Agriculture	26.1	0.7	2.9	4.8	5.2	19.0	13.0	
Maize	3.5	-0.1	0.3	4.4	10.0	0.2	1.0	
Sorghum	1.1	-0.1						
Unshelled rice	0.7	-0.2	0.0	0.0	25.9			
Wheat			1.7	100.0	2.5			
Cassava	7.2							
Roots and tubers	0.2		0.0	2.2	10.9	0.0	0.0	
Beans	1.0		0.0	2.2	10.9	0.0	0.3	
Groundnuts	0.9	24.6	0.1	2.1	0.8	0.0	0.0	
Cashews	0.4		0.0	0.2	10.9	1.6	43.6	
Vegetables	1.7	-0.9	0.0	1.5	19.0	0.0	0.0	
Fruits	1.6	-0.9	0.0	1.3	19.0	1.7	19.3	
Leaf tea	0.0							
Tobacco	0.3		0.3	40.4	10.9	0.8	47.7	
Sugarcane	0.1	8.4						
Cotton	0.3	-3.1						
Other crops	0.8	-0.8	0.2	6.5	8.2	0.0	0.1	
Livestock	0.5	-1.4	0.0	2.3		0.0	0.4	
Forestry	2.8	-0.7	0.1	0.6	3.0	1.6	10.7	
Fisheries	2.3	-0.7	0.0	0.0	3.0	12.7	63.6	
Industry	23.2	0.0	76.0	44.6	12.1	67.1	23.6	-0.1
Mining	0.3	-0.7	0.2	6.6	3.0	0.3	4.9	
Manufacturing	13.7	0.0	70.3	57.9	12.4	55.5	35.7	-0.1
Meat processing	1.5		0.3	3.1	21.9	0.0	0.0	
Other food products	1.4		4.2	34.4	18.7	1.6	8.5	
Grain milling	1.6		8.5	45.0	18.7	0.2	0.7	
Sugar processing	0.1		0.7	49.9	98.9	0.5	15.1	
Beverages	0.8		1.3	18.6	18.7			
Tobacco processing	0.1		0.4	36.4	18.7			
Cotton processing	0.4	-0.2	2.5	66.2	18.8	2.7	64.5	-2.0
Textiles & clothing	0.6	-0.2	2.0	40.3	18.8	0.7	10.3	
Wood products	0.8	-0.2	3.1	39.0	18.8	0.5	4.5	
Chemicals	0.4		20.2	86.1	8.2	0.4	6.4	
Non-metals	0.7		2.3	37.8	8.2	0.1	0.7	
Metal products	5.2		5.3	71.6	8.2	48.6	94.8	
Machinery	0.0		17.3	99.4	8.2			
Other manufacturing	0.0		2.4	96.8	8.2	0.2	46.7	
Electricity	1.9		5.5	81.0	8.2	11.3	79.9	
Water	0.3							
Construction	7.1							
Services	50.7		21.1	9.2		13.9	3.2	

[a] Import intensity is the share of imports in each sector's total domestic demand. Export intensity is the share of exports in each sector's total domestic output.

Sources: Mozambique 2002 social accounting matrix (Thurlow 2008), adjusted to reflect the developing country distortions compiled by Anderson and Valenzuela (2008) and concorded with the GTAP and Linkage models in Valenzuela and Anderson (2008).

Table 2: Factor intensities of production in Mozambique, 2002

	Labor				Capital	Land	Total
	Skilled	Semi-skilled	Un-skilled	All			
Total exports	10.7	13.8	39.7	64.1	6.1	29.8	100.0
Agriculture	0.6	1.9	59.6	62.1	23.3	14.6	100.0
Maize	0.6	1.9	58.1	60.6	29.7	9.7	100.0
Sorghum	0.6	2.0	61.6	64.2	26.6	9.2	100.0
Unshelled rice	0.5	1.8	54.5	56.8	30.7	12.5	100.0
Wheat	-	-	-	-	-	-	-
Cassava	0.5	1.8	56.0	58.3	30.3	11.4	100.0
Roots and tubers	0.4	1.3	39.6	41.3	42.1	16.6	100.0
Beans	0.4	1.4	42.7	44.6	38.7	16.8	100.0
Groundnuts	0.6	2.2	65.1	67.9	20.4	11.7	100.0
Cashews	0.3	1.2	35.8	37.3	42.7	20.0	100.0
Vegetables	0.6	2.0	60.2	62.8	26.8	10.5	100.0
Fruits	0.4	1.2	36.5	38.1	43.8	18.1	100.0
Leaf tea	0.4	1.3	38.5	40.1	41.2	18.6	100.0
Tobacco	0.6	1.9	56.2	58.6	29.7	11.6	100.0
Sugarcane	0.1	0.2	7.1	7.4	73.3	19.3	100.0
Cotton	0.4	1.3	38.6	40.2	41.4	18.4	100.0
Other crops	0.5	1.8	56.6	59.0	29.5	11.5	100.0
Livestock	0.8	2.5	78.0	81.3	-	18.7	100.0
Forestry	0.6	2.0	63.2	65.8	-	34.2	100.0
Fisheries	0.8	2.8	87.2	90.9	-	9.1	100.0
Industry	10.7	9.7	20.8	41.2	-	58.8	100.0
Mining	1.4	2.8	11.6	15.7	-	84.3	100.0
Manufacturing	10.9	8.3	17.3	36.6	-	63.4	100.0
Meat processing	18.4	14.1	29.3	61.7	-	38.3	100.0
Other food products	18.4	14.1	29.3	61.7	-	38.3	100.0
Grain milling	24.5	18.8	39.1	82.3	-	17.7	100.0
Sugar processing	15.8	12.1	25.2	53.2	-	46.8	100.0
Beverages	3.3	2.5	5.3	11.1	-	88.9	100.0
Tobacco processing	3.3	2.5	5.3	11.1	-	88.9	100.0
Cotton processing	23.4	17.9	37.3	78.7	-	21.3	100.0
Textiles & clothing	24.0	18.3	38.1	80.4	-	19.6	100.0
Wood products	24.4	18.7	38.8	81.8	-	18.2	100.0
Chemicals	8.9	6.8	14.1	29.8	-	70.2	100.0
Non-metals	3.0	2.3	4.8	10.0	-	90.0	100.0
Metal products	0.2	0.1	0.3	0.6	-	99.4	100.0
Machinery	8.4	6.4	13.3	28.1	-	71.9	100.0
Other manufacturing	8.2	6.3	13.0	27.4	-	72.6	100.0
Electricity	9.0	6.9	14.3	30.2	-	69.8	100.0
Water	6.5	7.7	17.0	31.3	-	68.7	100.0
Construction	11.4	13.5	29.9	54.8	-	45.2	100.0
Services	15.9	21.7	38.0	75.7	-	24.3	100.0

Source: Authors' Mozambique CGE model (see Thurlow 2008).

Table 3: Household income and expenditure shares in Mozambique, 2002

Household income sources	Labor			Capital	Land	Other Income[a]	Total
	Skilled	Semi-skilled	Un-skilled				
All households	11.7	15.0	43.4	22.4	6.7	0.8	100.0
Rural	0.8	5.2	68.6	7.7	17.5	0.2	100.0
Quintile 1	0.1	1.9	84.2	2.5	11.3	0.1	100.0
Quintile 2	0.2	2.4	74.5	3.2	19.6	0.2	100.0
Quintile 3	0.4	3.7	65.8	5.2	24.6	0.1	100.0
Quintile 4	0.2	4.3	69.5	5.8	20.0	0.2	100.0
Quintile 5	2.4	10.2	59.9	16.4	10.8	0.2	100.0
Urban	18.4	21.1	27.9	31.4	0.0	1.2	100.0
Quintile 1	0.1	12.4	77.9	9.5	0.0	0.1	100.0
Quintile 2	2.8	18.9	61.6	16.6	0.0	0.1	100.0
Quintile 3	1.4	15.5	69.8	13.0	0.0	0.3	100.0
Quintile 4	5.1	25.0	46.2	23.3	0.0	0.3	100.0
Quintile 5	23.5	21.3	18.0	35.8	0.0	1.5	100.0

Household expenditures	Own goods[a]		Purchased goods		Taxes	Saving	Total
	Food	Non-food	Food	Non-food			
All households	8.6	6.7	19.0	62.7	1.7	1.3	100.0
Rural	22.6	17.7	12.3	46.5	0.3	0.7	100.0
Quintile 1	36.3	15.6	14.0	34.0	0.0	0.1	100.0
Quintile 2	30.1	16.4	13.3	39.7	0.0	0.5	100.0
Quintile 3	28.2	18.9	12.4	39.8	0.3	0.4	100.0
Quintile 4	20.3	21.5	12.7	45.2	0.1	0.3	100.0
Quintile 5	10.2	14.9	10.4	62.2	0.7	1.6	100.0
Urban	0.0	0.0	23.1	72.7	2.6	1.6	100.0
Quintile 1	0.0	0.0	56.8	42.5	0.3	0.3	100.0
Quintile 2	0.0	0.0	43.1	55.5	0.6	0.9	100.0
Quintile 3	0.0	0.0	44.9	53.1	0.8	1.2	100.0
Quintile 4	0.0	0.0	30.2	66.8	1.7	1.3	100.0
Quintile 5	0.0	0.0	18.1	77.1	3.0	1.8	100.0

[a] 'Other income' refers to government transfers (e.g., pensions) and foreign remittances received; 'Own goods' are goods produced and consumed by a household.

Source: Authors' Mozambique CGE model (see Thurlow 2008).

Table 4: Exogenous demand and price shocks for Mozambique due to liberalization in the rest of the world (ROW)

(percent change from baseline)

	ROW liberalization (all commodities) Scenario 1			ROW liberalization (agriculture only) Scenario 2		
	Import	Export		Import	Export	
	price	Price	Quantity	Price	Price	Quantity
Agriculture						
Maize	2.6	1.1	3.4	4.1	1.4	19.7
Sorghum	2.6	1.1	3.4	4.1	1.4	19.7
Unshelled rice	8.5			9.7		
Wheat	-0.9			-0.8		
Cassava	-0.7	1.1	8.7	0.3	1.4	16.0
Roots and tubers	-0.7	1.1	8.7	0.3	1.4	16.0
Beans	-0.7	1.1	8.7	0.3	1.4	16.0
Groundnuts	-1.2	1.0	-9.7	0.1	1.3	-2.8
Cashews	-1.2	1.0	-9.7	0.1	1.3	-2.8
Vegetables	-2.7	0.6	496.8	-1.5	0.9	567.8
Fruits	-2.7	0.6	496.8	-1.5	0.9	567.8
Leaf tea	-0.7	1.1	8.7	0.3	1.4	16.0
Tobacco	-0.7	1.1	8.7	0.3	1.4	16.0
Sugarcane						
Cotton		0.7	48.4		1.2	56.4
Other crops	-0.7	1.1	8.7	0.3	1.4	16.0
Cattle						
Poultry	-1.7			-0.1		
Other livestock	-1.7			-0.1		
Forestry	0.6	0.8	38.4	0.4	1.1	-3.1
Fisheries	0.6	0.8	38.4	0.4	1.1	-3.1
Industry						
Mining	0.6	0.8	38.4	0.4	1.1	-3.1
Meat processing	-1.3			0.1		
Other food products	1.9	0.4	-5.8	-0.3	0.7	-15.7
Grain milling	1.9	0.4	-5.8	-0.3	0.7	-15.7
Sugar processing	-1.4	0.4	-21.9	-0.1	0.9	-11.9
Beverages	1.9	0.4	-5.8	-0.3	0.7	-15.7
Tobacco processing	0.6	0.8	38.4	0.4	1.1	-3.1
Cotton processing	0.6	0.8	38.4	0.4	1.1	-3.1
Textiles & clothing	-1.3	0.3	22.4	0.6	0.8	-3.2
Wood products	-0.8	0.2	-7.6	0.2	0.7	-5.1
Chemicals	-0.8	0.2	-7.6	0.2	0.7	-5.1
Non-metals	-0.8	0.2	-7.6	0.2	0.7	-5.1
Metal products	-0.8	0.2	-7.6	0.2	0.7	-5.1
Machinery	-0.8	0.2	-7.6	0.2	0.7	-5.1
Other manufacturing	-0.8	0.2	-7.6	0.2	0.7	-5.1
Electricity	-0.3	0.3	1.7	0.3	0.7	1.0
Water	-0.3	0.3	1.7	0.3	0.7	1.0
Construction	-0.3	0.3	1.7	0.3	0.7	1.0
Services	-0.3	0.3	1.7	0.3	0.7	1.0

Source: Results from the World Bank's LINKAGE model (see van der Mensbrugghe, Valenzuela and Anderson 2009).

Table 5: Macroeconomic simulation results of prospective liberalizations abroad and nationally for Mozambique[a]

	Base share (percent)	Change from base (percent)			
		ROW liberalization		Unilateral liberalization	
		Full	Agriculture	Full	Agriculture
Real GDP at market prices	73.5	0.9	-0.1	1.2	0.7
Consumption	59.1	1.4	-0.2	1.0	1.1
Investment	18.8	0.5	-0.2	1.6	-0.9
Government	10.4	0.0	0.0	0.0	0.0
Exports	14.1	3.8	0.1	9.8	6.4
Agriculture	19.0	19.5	0.1	28.4	19.5
Industry	67.1	0.6	-0.2	2.8	1.4
Services	13.9	-2.4	1.5	18.0	12.5
Imports	-28.8	2.6	-0.4	4.8	3.1
Agriculture	2.9	3.5	-1.2	-0.7	-0.1
Industry	76.0	2.6	-0.3	7.2	4.9
Services	21.1	2.2	-0.4	-3.5	-3.0
Consumer price index	-	-0.5	0.0	-2.4	-2.3
Real exchange rate	-	-2.8	0.1	5.2	4.0
World export prices	-	1.0	-0.4	0.0	0.0
World import prices	-	-0.3	0.2	0.0	0.0
Terms of trade	-	1.3	-0.6	0.0	0.0

[a] The domestic price index is the numéraire in the model.

Source: Authors' simulation results using the Mozambique CGE model.

Table 6: Effects of prospective liberalizations abroad and nationally on GDP by sector for Mozambique

	Base share (percent)	Change from base (percent)			
		ROW liberalization		Unilateral liberalization	
		Full	Agriculture	Full	Agriculture
Real GDP at factor cost	100.0	0.9	-0.1	0.9	0.3
Agriculture	26.1	2.6	-0.1	2.9	1.9
Maize	3.5	1.0	0.0	-1.4	-1.6
Sorghum	1.1	2.4	-0.2	2.3	1.4
Unshelled rice	0.7	0.9	-0.4	-3.3	-3.3
Wheat	0.0	0.0	0.0	0.0	0.0
Cassava	7.2	0.8	-0.1	0.2	0.0
Roots and tubers	0.2	0.3	-0.2	-0.9	-0.5
Beans	1.0	0.8	-0.1	0.2	0.2
Groundnuts	0.9	0.9	0.0	21.9	22.0
Cashews	0.4	-4.3	-0.2	10.1	8.3
Vegetables	1.7	1.0	-0.2	-1.0	-0.9
Fruits	1.6	-0.6	-0.2	0.9	0.9
Leaf tea	0.0	0.7	0.2	6.8	6.8
Tobacco	0.3	-3.3	8.9	15.4	9.9
Sugarcane	0.1	0.8	-0.4	-2.3	-2.2
Cotton	0.3	5.3	0.9	2.6	-2.2
Other crops	0.8	0.5	-0.4	-3.5	-3.6
Livestock	0.5	0.3	-0.3	-2.9	-2.5
Forestry	2.8	2.8	-0.1	0.8	0.4
Fisheries	2.3	20.2	-1.0	21.5	13.8
Industry	23.2	0.1	-0.1	-0.7	-1.3
Mining	0.3	0.1	0.0	0.1	0.1
Manufacturing	13.7	0.0	-0.1	-2.0	-1.8
Meat processing	1.5	1.2	-0.2	-1.2	-0.8
Other food products	1.4	0.8	-0.8	-1.9	-2.1
Grain milling	1.6	1.2	-0.3	-3.5	-3.8
Sugar processing	0.1	-6.2	-1.4	-40.1	-40.3
Beverages	0.8	0.5	-0.2	-2.3	-1.8
Tobacco processing	0.1	0.6	-0.1	-1.8	-1.6
Cotton processing	0.4	15.5	1.1	18.8	9.0
Textiles & clothing	0.6	-3.0	0.6	-10.5	-11.1
Wood products	0.8	-3.9	0.2	-11.4	-13.0
Chemicals	0.4	-7.1	0.4	-3.8	7.3
Non-metals	0.7	-3.6	0.2	-1.7	2.6
Metal products	5.2	0.0	0.0	0.0	0.0
Machinery	0.0	-5.8	0.5	-4.8	6.4
Other manufacturing	0.0	-10.7	-0.9	64.6	62.3
Electricity	1.9	-0.1	0.1	0.3	0.2
Water	0.3	-0.5	-0.3	-4.4	-3.2
Construction	7.1	0.5	-0.1	1.5	-0.8
Services	50.7	0.3	0.0	0.6	0.3

Source: Authors' simulation results using the Mozambique CGE model.

Table 7: Effects of prospective liberalizations abroad and nationally on the real value of exports in Mozambique

	Base share (percent)	Change from base (percent)			
		ROW liberalization		Unilateral liberalization	
		Full	Agriculture	Full	Agriculture
Total exports	100.0	3.8	0.1	9.8	6.4
Agriculture	19.0	19.5	0.1	28.4	19.5
Maize	0.2	0.2	12.2	4.8	3.6
Sorghum	0.0	0.0	0.0	0.0	0.0
Unshelled rice	0.0	0.0	0.0	0.0	0.0
Wheat	0.0	0.0	0.0	0.0	0.0
Cassava	0.0	0.0	0.0	0.0	0.0
Roots and tubers	0.0	1.4	11.4	10.0	9.2
Beans	0.0	-0.4	13.8	23.8	20.6
Groundnuts	0.0	402.7	504.8	169.3	162.5
Cashews	1.6	-10.6	-0.3	24.3	20.6
Vegetables	0.0	-8.0	-0.2	5.0	4.2
Fruits	1.7	-10.2	-0.2	13.9	12.0
Leaf tea	0.0	0.0	0.0	0.0	0.0
Tobacco	0.8	-2.1	15.6	33.0	23.8
Sugarcane	0.0	0.0	0.0	0.0	0.0
Cotton	0.0	0.0	0.0	0.0	0.0
Other crops	0.0	-2.1	-0.1	2.0	0.9
Livestock	0.0	-2.4	0.0	4.2	3.0
Forestry	1.6	20.4	0.0	17.1	13.5
Fisheries	12.7	29.5	-1.3	32.6	21.2
Industry	67.1	0.6	-0.2	2.8	1.4
Mining	0.3	15.9	0.2	13.7	11.6
Manufacturing	55.5	0.6	-0.4	2.8	1.5
Meat processing	0.0	-6.1	0.2	19.3	17.4
Other food products	1.6	-6.2	-8.0	6.4	5.2
Grain milling	0.2	-6.7	-8.7	7.3	5.1
Sugar processing	0.5	-18.4	-5.9	-27.7	-29.7
Beverages	0.0	0.0	0.0	0.0	0.0
Tobacco processing	0.0	0.0	0.0	0.0	0.0
Cotton processing	2.7	23.7	1.2	35.7	22.1
Textiles & clothing	0.7	4.7	0.3	12.2	9.2
Wood products	0.5	-10.1	-1.3	8.1	1.6
Chemicals	0.4	-10.6	-1.2	15.3	18.1
Non-metals	0.1	-9.9	-1.4	15.7	14.4
Metal products	48.6	0.0	-0.1	0.5	0.0
Machinery	0.0	0.0	0.0	0.0	0.0
Other manufacturing	0.2	-12.6	-1.7	107.3	92.5
Electricity	11.3	-0.1	0.3	2.5	0.8
Water	0.0	0.0	0.0	0.0	0.0
Construction	0.0	0.0	0.0	0.0	0.0
Services	13.9	-2.4	1.5	18.0	12.5

Source: Authors' simulation results using the Mozambique CGE model.

Table 8: Effects of prospective liberalizations abroad and nationally on the real value of imports in Mozambique

	Base share (percent)	Change from base (percent)			
		ROW liberalization		Unilateral liberalization	
		Full	Agriculture	Full	Agriculture
Total imports	100.0	2.6	-0.4	4.8	3.1
Agriculture	2.9	3.5	-1.2	-0.7	-0.1
Maize	0.3	2.1	-4.4	3.4	4.1
Sorghum	0.0	0.0	0.0	0.0	0.0
Unshelled rice	0.0	-17.1	-36.6	146.1	152.5
Wheat	1.7	0.9	-0.4	-3.3	-3.3
Cassava	0.0	0.0	0.0	0.0	0.0
Roots and tubers	0.0	6.8	-0.7	8.1	9.9
Beans	0.0	11.2	-0.9	14.4	16.3
Groundnuts	0.1	11.1	2.2	-26.9	-25.4
Cashews	0.0	10.3	-0.4	0.3	1.6
Vegetables	0.0	8.0	-0.5	21.3	23.4
Fruits	0.0	7.6	-0.4	16.8	18.5
Leaf tea	0.0	0.0	0.0	0.0	0.0
Tobacco	0.3	9.2	-3.6	4.0	6.6
Sugarcane	0.0	0.0	0.0	0.0	0.0
Cotton	0.0	0.0	0.0	0.0	0.0
Other crops	0.2	7.3	-0.4	1.1	2.0
Livestock	0.0	6.2	-0.3	-6.7	-5.4
Forestry	0.1	4.8	-1.2	-5.6	-3.3
Fisheries	0.0	-0.2	-0.5	-6.6	-4.2
Industry	76.0	2.6	-0.3	7.2	4.9
Mining	0.2	11.0	-1.2	0.3	1.3
Manufacturing	70.3	2.6	-0.3	7.8	5.8
Meat processing	0.3	16.1	-1.1	59.0	64.1
Other food products	4.2	2.4	0.2	15.1	17.1
Grain milling	8.5	2.1	0.1	14.8	16.4
Sugar processing	0.7	8.4	0.0	137.1	142.0
Beverages	1.3	1.5	0.0	9.0	10.9
Tobacco processing	0.4	2.9	-0.6	9.6	11.0
Cotton processing	2.5	3.0	-0.7	12.8	14.2
Textiles & clothing	2.0	10.1	-1.6	25.7	28.0
Wood products	3.1	6.9	-0.7	22.0	23.8
Chemicals	20.2	2.2	-0.2	1.7	-1.8
Non-metals	2.3	6.9	-0.7	6.2	-6.0
Metal products	5.3	1.4	-0.6	3.9	-2.0
Machinery	17.3	1.0	-0.2	1.2	-1.6
Other manufacturing	2.4	2.3	-0.4	-1.3	-4.4
Electricity	5.5	3.0	-0.5	0.7	-5.3
Water	0.0	0.0	0.0	0.0	0.0
Construction	0.0	0.0	0.0	0.0	0.0
Services	21.1	2.2	-0.4	-3.5	-3.0

Source: Authors' simulation results using the Mozambique CGE model.

Table 9: Effects of prospective liberalizations abroad and nationally on employment, welfare and poverty in Mozambique

	Base value	ROW liberalization		Unilateral liberalization	
		Full	Agriculture	Full	Agriculture
		Change from base (percent)			
Real factor returns (index)[a]					
Rural skilled labor	1.0	4.5	-0.2	6.2	4.2
Rural semi-skilled labor	1.0	3.2	-0.2	5.2	3.0
Rural unskilled	1.0	0.5	0.0	2.4	2.3
Urban skilled labor	1.0	1.5	-0.1	4.5	2.2
Urban semi-skilled labor	1.0	1.9	-0.2	3.9	2.0
Urban unskilled	1.0	0.5	0.0	2.4	2.3
Capital	1.0	0.6	-0.5	5.7	3.2
Agricultural land	1.0	3.0	0.1	5.4	3.8
Unskilled employment (index)					
Rural unskilled	1.0	3.2	-0.1	3.0	1.5
Urban unskilled	1.0	1.0	-0.1	1.0	-0.3
Equivalent variation (welfare)	-	1.4	-0.2	0.9	1.0
Rural Quintile 1	-	2.8	-0.1	3.9	2.9
Quintile 2	-	2.8	-0.1	4.3	3.2
Quintile 3	-	2.7	-0.1	4.1	3.2
Quintile 4	-	2.8	-0.1	4.3	3.2
Quintile 5	-	2.6	-0.2	3.1	2.4
Urban Quintile 1	-	0.9	-0.2	2.0	1.4
Quintile 2	-	1.0	-0.2	2.5	2.0
Quintile 3	-	0.9	-0.2	1.8	1.5
Quintile 4	-	0.8	-0.3	0.9	1.1
Quintile 5	-	0.3	-0.3	-1.9	-0.9
Poverty headcount ratio	(percent)	Change from base (percentage points)			
US$1-a-day poverty line	36.2	-1.4	0.0	-1.7	-1.3
Rural	36.0	-1.5	0.0	-2.1	-1.6
Urban	36.5	-1.3	0.0	-0.9	-0.5
Inequality measures		Change from base (percentage point)			
Gini coefficient	0.477	0.1	-0.1	-1.5	-1.2
Theil entropy	0.532	0.3	-0.2	-3.7	-3.2

[a] Real factor returns are adjusted to reflect changes in the consumer price index (hence the change in unskilled wages which are fixed in nominal terms).

Source: Authors' simulation results using the Mozambique CGE model.