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Gains from Trade
Implications for Labour Market Adjustment and Poverty Reduction in Africa

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Abstract

This paper reassesses the gains from trade for sub-Saharan Africa, and draws their implications for labour market adjustment and poverty reduction. It reviews previous studies on multilateral liberalization, focusing on the findings from computable general equilibrium (CGE) models with relevance to African economies. The implications of these findings for poverty reduction are discussed. Our own CGE exercise supports the hypothesis that African countries cannot expect substantial gains from further multilateral liberalization. Moreover, given the sharp contraction of import-competing sectors in response to trade liberalization in many African economies, coupled with insufficient compensation through labour market adjustments in other sectors, this study suggests that the ultimate impact on poverty reduction is likely to be small or even negative.

Keywords: trade, openness, liberalization, poverty reduction

JEL classification: F16, O24

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1   Introduction

Trade is commonly considered as one of the mainsprings driving economic growth and, by implication, poverty reduction. The rationale is two-fold: on the one hand, there is considerable, though not uncontested, evidence that trade has a positive effect on growth in developing countries[1] and, on the other hand, growth is hypothesized to exert a positive impact on poverty reduction.[2] Taking these two separate strands of literature together, the inference is often made that trade is good for both economic growth and poverty reduction.

Nevertheless, in more recent years, a number of scholars have suggested that the gains from trade have been overstated.[3] As one leading trade economist concedes:

> Few economists would doubt the beneficial effects of trade, despite the adverse impact on some groups. Yet the hard evidence supporting such gains from trade – either in a dynamic or static sense – is surprisingly thin. (Feenstra, 2001)

Increasing doubts have also been expressed about the mechanisms by which the poor may benefit from trade expansion,[4] though it is too early to judge the extent to which these concerns may have influenced mainstream debates.

The main purpose of this paper is to contextualize the potential gains that can accrue from trade specifically for sub-Saharan Africa (SSA), and to draw implications for poverty reduction. In the immediately following section of the paper, we provide an overview of the recent empirical and theoretical literature concerning the gains from trade, focusing especially on the evidence for SSA. In the third section, we make preliminary observations regarding the use of Computable General Equilibrium (CGE) models for analysing the gains from trade. The fourth section reviews previous CGE studies, focusing again on the predicted gains for African countries. In the fifth section, we briefly discuss existing work on the implications for poverty reduction based on CGE simulation. In section six, we use a CGE model to simulate some of the potential gains for the most comprehensive form of trade liberalization – the complete elimination of tariff barriers and the suppression of export subsidies. Even under this most favourable of scenarios, our results indicate small benefits accruable to SSA. Finally, one particular area in which trade seems to be failing is in promoting poverty reduction on the continent. We provide some indication as to why this may be so, focusing particularly on trade's failure to create sufficient employment while quite likely reducing wages.

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1   See, inter alia, Dollar and Kraay (2001), Sachs and Warner (1995), and Fosu (1990). Greenaway, Morgan, and Wright (2002) specifically study the link between trade liberalization and growth, distinguishing between the long- and short run impacts, and conclude that whereas the short run effects might be negative, the latter are positive.
2   Inter-linkages between trade and poverty reduction are well delineated in Winters, McCulloch, and McKay (2004).
3   See Ackerman (2005), Birdsall, Rodrik, and Subramanian (2005), Freeman (2004) and Weisbrot et al. (2002 and 2004).
4   See in particular UNCTAD (2004) and Ravallion (2004).

2   The relevance of openness and trade to Africa

The general consensus in the trade literature is that both trade policy openness and a faster expansion of trade are positively correlated with growth, even after controlling for a variety of other growth determinants.[5] For example, a measure of trade openness used by Sachs and Warner (1997) shows that it 'generated the greatest impact among their baseline model variables' (Fosu, 2001: 286). Indeed, Sachs and Warner (1997) estimated that had sub-Saharan Africa adopted the level of East Asian-type openness, its growth would have been 2.4 percentage points more. This is three times the 0.8 per cent mean annual per capita GDP growth for sub-Saharan Africa over the 1965-90 sample period' (ibid., p. 286). With respect to the implications for the poor, Dollar and Kraay (2001) argue that developing countries that have become more open (including China and India), have grown faster, and have reduced their level of poverty more than the less-open group of countries. The evidence seems persuasive as well with respect to the impact of trade expansion on growth in Africa. For example, Fosu (1990a) and Lussier (1993) find a positive impact of exports, and Savvides (1995) reports positive effects of both exports and imports. Reviewing the evidence, Fosu (2001) concludes that the export effect for Africa could be considerable.

Nonetheless, there are several caveats associated with the findings for both the openness and trade expansion. Since Sachs and Warner (1997) present the most persuasive evidence on the former in the case of Africa, their results deserve special attention. In the first place, the Sachs and Warner measure of openness is too inclusive, and it is thus unclear as to which variable really drives the observed favourable impact of openness, for instance, whether it is the overvaluation of the domestic currency or high import tariffs. Nor does their measure of openness take into account the potential problem of sequencing of policies – that is, closed countries that are able to build up their industrial sectors initially and then switch to more openness, as China and other countries have done (Fosu, 2001). In a critical survey of the literature, Rodríguez and Rodrik (2001) suggest that the findings of Sachs and Warner and others are less robust than claimed, due to difficulties in measuring openness. Indeed, using more plausible measures of openness, such as reductions in both tariff and non-tariff barriers, they find little evidence in support of the openness–growth hypothesis.

The Sachs and Warner results and similar studies are also subject to the important empirical criticism that openness itself is fundamentally endogenous (Feenstra, 2004: 360). Several studies have attempted to address the endogeneity (Frankel and Romer, 1999; Lee et al., 2004); the overall finding suggests that the effect of openness is small. Similarly, in a meta-study of cross-country regressions Sala-i-Martin et al. (2004) report that trade volume is a significant variable in two-thirds of the regressions, though it is not amongst their sub-set of 18 robust predictors of economic growth.

Birdsall and Hamoudi (2002) argue that neither the level nor the change in a country's trade/GDP ratio is a good indicator of the 'openness' of the country's trade policy, especially once shifts in terms of trade are accounted for. They argue that the empirical evidence offered by Dollar and Kraay, for instance, overstates the importance of trade policy in economic growth. This is because those countries with low trade/GDP ratios, which are used to identify countries that are less 'open', are also highly dependent on

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[5]   For a review of this evidence for African economies see Fosu (2001).

commodities for their export revenue. And these same countries have experienced stagnant or negative economic growth over the past two decades. By adding a 'commodity dependence' dummy variable to the Dollar and Kraay growth regressions, Birdsall and Hamoudi reduce the magnitude of the apparent 'growth effect' of the 'openness' variable by at least one-half.

The Birdsall and Hamoudi result suggests that the composition of exports matters. Would primary exports generate as much growth as manufacturing exports, for example? According to Fosu (1990b, 1996), for example, the answer is no. Manufacturing exports apparently drive the export effect, especially as far as diffusion to the non-export sector is concerned. Using panel data for a sample of 41 African countries, Baliamoune (2002) also identifies the existence of certain 'convergence clubs' within Africa, and concludes that openness helps 'relatively rich' countries in Africa more than it does poor countries. Thus greater openness to international trade may actually be harmful to economies with very low per capita income. To benefit from international trade, a country apparently has to reach a certain threshold in terms of income and human capital.

An additional concern about the above findings of the positive impacts of trade expansion is the issue of causality. In a study of 47 African countries, for example, Ahmad and Kwan (1991) find no evidence of a causal link running from exports to growth. Indeed, the only evidence that they uncover of a causal relationship runs in the opposite direction, from growth to exports. Nonetheless, reviewing the literature, Fosu (2001: 595) concludes that 'the issue of causality may not by itself be that important', after all, as long as the relevant variables similarly affect both exports and domestic output.

The *composition* of imports may also matter when it comes to openness. In principle, trade deficits should not impact negatively if they are being used to finance the import of intermediate capital goods and other technologies which will help spur growth. The evidence on the composition of imports to SSA by end-use is sketchy, but suggests that much of the growth in the deficit is taken up by consumer goods, rather than capital goods – particularly food crops (Ackah and Morrissey, 2005). Food imports for SSA have gone from negligible amounts in the early 1970s to as much as US$10 billion over the last 10 years. Thus levels of imports are likely to impact negatively on import-competing sectors, and to have negative repercussions for both employment and poverty reduction.[6]

Summarising the evidence, it is entirely likely that even though trade expansion could positively affect economic growth, the relatively small manufacturing content of

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[6] Illustrative of the complexity of the relationship between imports, income growth, employment and poverty reduction are the contemporary concerns over rising imports into SSA from other developing countries like China and India. On the one hand, these imports provide cheaper goods which benefit consumers. On the other hand, however, if they compete with domestic producers, then they may reduce employment. The impacts on poverty depend on whether the poor consume the goods that are imported from Asia, and on whether there is a negative effect on employment opportunities for unskilled workers. In some countries where a relatively high proportion of basic consumer goods are imported from China and India, such as Ghana, Uganda and Tanzania, the imports are primarily at the expense of other exporters rather than domestic producers, thus raising the real income of the poor (DFID, 2005). In the case of Ethiopia and Nigeria, however, there may have been negative effects on domestic output and employment as a result of increased import competition.

African exports might imply that the growth impact would not be that large. Moreover, both the volume and composition of imports need to be factored into any evaluation of the relative merits of openness. In the following sections, we provide evidence on the openness impact using the CGE model, one of the most tractable tools available for this kind of analysis. We then assess how poverty may be affected through the labour market.

3 Modelling the impact of trade liberalization on Africa – past studies

Over the last decade or so, CGE modelling has become an increasingly popular tool for evaluating the impacts of trade reform on economic growth and its distribution across sectors. However, because the framework tends to be long run that often abstracts from short run realities of structural rigidities in developing countries, such as 'missing' or inefficient factor markets, some scholars have argued that they may not be appropriate for analysing the problems of the typical developing country (e.g., De Maio et al., 1999: Charlton and Stiglitz, 2004).

Nonetheless, CGE models were used to estimate large welfare gains from the trade liberalization achieved under the Uruguay Round. The OECD, along with others, predicted welfare gains in the order of US$200 billion, approximately a third of which would accrue to developing countries.[7] In hindsight, as we document below, it appears that these estimates were excessively optimistic. According to subsequent estimates, 70 per cent of the gains from the Uruguay Round would go to the developed countries; more importantly, the remaining 30 per cent would be captured by few large export-oriented developing countries. Indeed, the 48 least-developed countries (LDCs) could be worse off by some US$600 million a year within the first six years of the Uruguay Round (1995–2001), with SSA worse off by US$1.2 billion (UNDP, 1997, cited by Charlton and Stiglitz, 2005: 47). As Sachs (2005: 281) puts it:

> When huge gains are attributed to trade reforms (hundreds of billions of dollars per year), we need to look at the fine print: almost all of those gains accrue to the richest countries and the middle-income countries, not the poorest countries, and especially not the poorest countries in Africa. How, after all, could trade alone enable isolated rural villages in Africa to meet their basic needs?

Francois (2000) summarizes three of the major CGE studies of the Uruguay Round, all of which predicted losses for SSA. One principal reason for these losses is the reduction in the terms of trade for African countries generally following the liberalization. A second reason is that the reduction in industrialized-country subsidies embodied in the Round would lead to higher prices for food imports to SSA (Francois, 2000).

Finally, several countries would be hurt by the elimination of quotas in sectors like textiles and sugar which allowed them to sell a fixed amount of exports at a price that

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7 Some observers went even further. During the early 1990s, when the Uruguay Round was on the verge of collapse, the United States' trade team reportedly suggested that gains might be in the order of US$6 trillion dollars over fifteen years (Dunkley, 2000: 134).

exceeded the competitive market price.[8] This is the case for countries like Mauritius, where the IMF (2004) has predicted a loss as high as -11.5 per cent due to the erosion of preferential market access in both the sugar and textiles sectors. The IMF study identifies a group of countries where the estimated losses through preference erosion will be in excess of 2 per cent of export unit values (Table 1). Of the SSA countries identified, Mauritius aside, the most notable losers are Malawi (-6.6 per cent) and Mauritania (-4.8 per cent). Other countries negatively affected include the Seychelles, Swaziland, Cape Verde, Sao Tomé and Principe, Tanzania, Côte d'Ivoire, and Comoros.

The downscaling of ex ante gains from trade liberalization, as estimated from CGE models, is shown in Table 2. These figures are generated on the basis of multilateral negotiations achieving total liberalization of trade (i.e., the complete elimination of tariffs). Whereas the Global Trade Analysis Project (GTAP) simulations in 2002 were producing estimated gains of US$108 billion for developing countries, that figure was reduced to only US$22 billion in 2005. The World Bank's Linkage model (also based on GTAP but allows for possible dynamic changes emanating from productivity increases of exporting) provides an even more dramatic scaling-down of the benefits for developing countries – from US$539 billion in 2003 to only US$90 billion in 2005. Furthermore, it is noteworthy that the main beneficiaries are the developed countries, and the developing country share has indeed been progressively falling.

Table 1: Percentage decrease in average export unit values following a 40 per cent cut in preference margins as a result of multilateral tariff reductions

Least developed countries		Other developing countries			
Malawi	6.6	Mauritius	11.5	Albania	3.3
Mauritania	4.8	St. Lucia	9.8	Nicaragua	3.2
Cambodia	4.1	Belize	9.1	Swaziland	3.0
Bangladesh	3.9	St Kitts and Nevis	8.9	Serbia & Montenegro	2.9
Maldives	3.5	Guyana	7.9	Tunisia	2.2
Haiti	3.3	Fiji	7.8	Côte d'Ivoire	2.2
Cape Verde	3.3	Dominica	5.5	Morocco	2.1
Sao Tomé and Principe	2.7	Seychelles	4.2	Dominican Republic	2.1
Tanzania	2.4	St Vincent & Grenadine	3.4		
Comoros	2.0	Jamaica	3.3		

Source: IMF (2004: 10)

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8 Note, however, that preference erosion could not be an explanation of the losses derived from the models cited in Francois (2000), for preferential tariff rates were not included in the GTAP database at the time.

Model	Year	Developing	Developed	World	Developing country gains as share of global gains
GTAP	2002	108	146	254	42.5%
GTAP	2005	22	62	84	26.2%
LINKAGE	2003	539	293	832	64.8%
LINKAGE	2005	90	197	287	31.4%

Source: based on Ackerman (2005: table 1)

The principal reason for the downscaling of expected gains is the updating of the GTAP database – the GTAP 6 database uses data from 2001 (compared to 1997 for GTAP 5). This incorporates trade agreements reached up until 2005 in the baseline, including China's entry into the WTO, the expansion of the EU in 2004 and the end of the Multifibre Agreement. In this latter database, then, the world has less protectionism to dismantle and so the benefits are correspondingly smaller (Ackerman, 2005: 3). Furthermore, when the erosion under WTO of preferential tariff arrangements is incorporated, SSA's global gains drop by 55 per cent (van der Mensbrugghe, 2005: 64).

4   Implications of CGE modelling for poverty reduction

Attempts to derive poverty-reduction estimates from GTAP results have become increasingly common (Hertel et al., 2003). As this exercise cannot be done directly within the model, rough estimates of poverty impacts may be obtained by extrapolating from the results of income gains based on the patterns of poverty in particular economies. For example, Cline (2004) uses GTAP to estimate the per cent increase in factor prices accruing to households, and then multiplies this per cent change by the poverty elasticity (with respect to income). Using this methodology, Cline estimates from his static CGE model a reduction in the number of the global poor (those earning less than US$2 dollars a day) of between 110 and 120 million, or 4.3 per cent of the world total of 2.74 billion poor people. In the case of SSA, the number of the poor falls by about 16 million, or by 4 per cent. Cline then repeats the exercise using his 'steady-state' model of free trade (i.e., including dynamic gains). The estimated reductions in poverty under this scenario are correspondingly larger: 535 million poor people globally, and 72.6 to 95.8 million in SSA. At its upper bound, these calculations imply a reduction of poverty in SSA of nearly 25 per cent.

Nonetheless, Cline's results have been challenged by Weisbrot et al. (2004). First, they note that Cline's projections are overstated by approximately 20 per cent due to an error in calculation.[9] Second, most of the people lifted out of poverty in these projections have their incomes raised from just below the international poverty level of US$2

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9   To calculate his poverty reduction elasticities from the available Gini coefficients, Cline inadvertently uses the equation for the variance in place of the standard deviation. Cline himself concedes this error in a technical correction to his book, but insists that 'the correction of the error causes a moderate reduction in the estimate for the long-term reduction global poverty from complete free trade, from a central estimate of 540 million people lifted out of poverty to 440 million'. See http://www.iie.com/publications/chapters_preview/379/errataiie3659.pdf

dollars a day to just about this level. Thus Weisbrot et al. (2004: 2) argue that while this gain may correspond to a meaningful improvement in these people's lives, 'most are not being advanced very much from an impoverished living standard, if at all'.

Third, Weisbrot et al. query the use of the Gini coefficient as the basis for fitting the income distribution, arguing that 'this is an arbitrary method that produces very poor fits in many instances' (something which Cline himself concedes in chapter 1 of his book). Using the poverty rate to fit the distribution, instead, yields substantially lower projections, reducing poverty by just 80 million people worldwide. Fourth, Weisbrot et al. argue that the impact of trade liberalization is even less if expected economic growth is accounted for. When this factor is taken into account, Weisbrot et al. calculate that the impact on poverty reduction from trade liberalization will be less than 20 per cent of the Cline estimate. For SSA that would imply a reduction of the poor by less than 5 per cent.

Fifth, Weisbrot et al. argue that less gains would be realizable by developing countries when one excludes gains attributable to their own liberalization, which should be treated separately, since they could independently act to reduce their own barriers. Finally, as Cline derived his calculations on the results of GTAP 5.0, which is based on 1997 data for tariffs and does not include preferential market access, the resulting welfare gains from trade liberalization would be far higher than could be more realistically expected using the GTAP 6.0 based on 2001 data.

Accordingly, the World Bank has down-scaled its earlier estimates of the impact on poverty of freeing international trade of all barriers and subsidies. For example, the Bank had estimated that trade liberalization could reduce poverty in SSA by the year 2015, using the US$2 a day measure of poverty, by as much as 113 million people, higher even than Cline's estimates; however, subsequent revisions placed the estimate at only 20.4 million. Van der Mensbrugghe (2005) explains these downward revisions in the context of three key factors – a shift in the baseline poverty forecast, the incorporation of preference erosion and policy commitments in the GTAP database and, above all, a revision by the World Bank in the expected income-poverty reduction elasticities.[10] In conclusion, studies on the global implications for poverty reduction from trade liberalization are constrained by data limitations, and are somewhat speculative. A more qualitative approach may be preferable. That is, first, what does CGE tell us about the expected production changes from trade liberalization and, second, what are the implications for poverty reduction via labour market adjustments? We answer the first question in the immediately following section using updated CGE results, and then explore the second question in the subsequent section.

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[10] Note that the estimated elasiticity for poverty reduction cited by Van der Mensbrugghe is relatively low in the case of SSA, especially *vis-à-vis* East Asia; for the US$2 per day poverty line, the elasticity for SSA is 0.5, compared to about 2.0 for East Asia. This difference may be attributable to the relatively high level of inequality in SSA (Fosu, 2006).

5   Modelling the gains for Africa – a simulation exercise

Presented in this section are updated CGE estimates of gains from trade liberalization, especially as they relate to changes in production, which affect derived demand for labour with implications for poverty reduction. The standard GTAP model, which is used in this exercise, is a static, multiregional, multisector, CGE model that assumes perfect competition and constant returns to scale. Input-output tables reflect the links between sectors. However, GTAP 6.0 that is employed here includes data for relatively large numbers of countries and sectors: 87 countries and 57 sectors. Although, for computational simplicity, the sectoral analysis was limited to three standard major aggregations (food, manufacturing and services), the simulation was carried out using the full 87 country disaggregations, instead of the usual regional aggregation (e.g. EU, SSA, etc.). This procedure then obviates the loss of important information. In models with a high level of regional aggregation, the removal of subsidies leading to higher food prices does not appear in the traditional results, as losses are compensated for by the positive welfare gains of other countries in the region. Thus, such CGE simulations could misleadingly show non-existence of losers from liberalization (Piermartini and Teh, 2005: 22).

The standard model closure (i.e., the determination of exogenous and endogenous variables within the model) is adopted in our present simulation. The model assumes that investment adjusts endogenously to changes in savings, although the trade balance can vary, so that at a national level the change in exports need not equal the change in imports. Real exchange rates are implicit in the model and are assumed to be fully flexible, and in the labour market it is presumed that the amounts of economy-wide skilled and unskilled labour are fixed and cannot move between regions (although labour can move readily between sectors). In line with standard neoclassical assumptions, wage rates are assumed to be flexible.

The objective of the simulation is to project, within the static framework of GTAP, the maximum gains accruable to trade liberalization. An 'ideal' scenario is therefore simulated, with a 100 per cent reduction in both tariffs and export subsidies. Unless, of course, African economies respond in a way which is not monotonic to multilateral reductions in trade barriers (i.e., reductions towards zero tariffs do not necessarily enhance welfare for Africa), this is likely to give an idea of the upper bounds of the potential gains from moving towards free trade. Nevertheless, the reality is that, even discounting current pessimistic forecasts for the likely outcome of the Doha Round, the present negotiations will inevitably stop a long way short of free trade.

Table 3 shows the summary of the results on total welfare gains from our simulation. These are measured as the Equivalent Variation (EV) rather than GDP shifts. EV attempts to capture the 'consumer surplus', but except as a source of income EV underplays the impact of liberalization on the productive sectors of the economy. The measure therefore tends to exaggerate the benefits derivable from changes in GDP.

Table 3: Summary of total welfare gains

Region	Million US$	As % of total
Total gains	94248	100.0
Sub-Saharan Africa	259	0.27
SSA minus South Africa	-579	
Losses	21 countries	
Gains	66 countries	

We first note here the relatively small size of the welfare gains for especially SSA. For total world gains, with world GDP in 2001 of US$ 31,022 billion and the predicted welfare increase of only US$ 94.25 billion, the gains from complete liberalization amount to mere 0.3 per cent of world GDP.[11] However, the gains for SSA are even smaller – as a region with a total GDP of US$311.10 billion (i.e., approximately 1 per cent of world GDP), the estimated welfare gain of US$259 million is equivalent to only 0.08 per cent of SSA GDP. In per capita terms, this represents a welfare gain for SSA equivalent to 36 cents per capita on a one-off basis.[12] Moreover, even these results hinge on the inclusion of South Africa within the group of 12 SSA regions. Excluding South Africa, the welfare result is a loss for SSA of US$ 579 million.[13]

If, as our results suggest, SSA stands to gain very little from multilateral liberalization, who does? Table 4 shows the top ten 'winners' from multilateral liberalization, on the basis of the computations for EV. This throws up the typical, but still somewhat surprising and counterintuitive, result that the largest single gains accrue to the 'Rest of North Africa' region, a composite aggregation of the Egyptian, Algerian, and Libyan economies. All three countries are large net-food importers, so *a priori* there would be an expectation of losses (as in the case of SSA) from the increased cost of food imports after liberalization. The only real explanation, though, resides in the degree and structure of the distortions of the domestic economies; the largest gains from multilateral liberalization are likely to occur in those sectors and economies where the distortions are highest. In relative terms the liberalising effect is strongest for those countries exhibiting highly uneven initial protection patterns, such as Korea, AESEAN countries, and the Maghreb (Bchir, Jean, and Labourde, 2005).[14] At the same time, members of the Cairns group of countries, such as Brazil and Argentina, reap benefits from the agricultural liberalization.

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[11] This finding is in line with other comparable studies. The OECD (2003) obtains a benchmark estimate of US$97 billion as annual global static welfare gains from removing all tariffs, 70 per cent of which are accruable to developing countries. Moreover, nearly 80 per cent of these gains come from the removal of protection in industrial-country markets.

[12] This picture of small-scale gains from trade liberalization is corroborated by Mbabzai (2002) using a single country, multisectoral model of the Ugandan economy, a typical sub-Saharan country largely recognized as a front-runner in trade liberalization. In terms of short run welfare impacts of tariff liberalization, the author finds only minimal welfare gains largely accruing to agricultural households.

[13] Note, though, that SSA is not the only region where welfare losses are registered – out of the 87 countries/regions in the dataset, 21 show absolute losses of welfare.

[14] It might seem counter-intuitive that a region like North Africa would be a major winner from trade liberalization. However, our finding is consistent with other recent research. For instance, Bchir et al. (2005: table 4) find, as we do, that welfare gains are largest for the Maghreb region. Bouet (2006:

Table 4: The ten major 'winners' from multilateral liberalization

Position	Country	Million US$
1	Rest of North Africa	13650
2	China	12868
3	Korea	12708
4	Japan	8066
5	Switzerland	5181
6	India	4387
7	Hong Kong (China)	3631
8	Brazil	3535
9	Argentina	2667
10	Malaysia	2654
Total top 10		
Top 10 as % of total		73.6
Total impact		94248

What is perhaps most remarkable is the high degree of concentration of the benefits from multilateral liberalization. Nearly three-quarters (73.6 per cent) of the total welfare gains accrue to only ten countries, a result that is only apparent from our relatively disaggregated model. For instance, Piermartini and Teh (2005: 31) stress the extent to which the welfare gains go towards developing countries in four of the six studies reviewed; however, they fail to reveal the concentration of the gains among few developing countries (principally China, Korea, and India). Our results clearly show the benefits from multilateral liberalization to be highly skewed, and not one SSA country is among the major beneficiaries.

Welfare losses are also highly skewed (Table 5). Among the largest losers are the United States and Canada, as well as Mexico. This to some extent reflects the erosion of benefits from NAFTA, but the three economies also suffer major terms of trade losses, as their export values fall in world markets after liberalization. Gains from increased allocative efficiency through liberalization are simply insufficient to offset these losses. The 'Rest of sub-Saharan Africa' is a major loser in much the same way, allocative efficiency gains being completely overshadowed by terms of trade losses. Furthermore, these losses constitute a far larger share of GDP than in the case of the United States (1.17 per cent *vis-à-vis* 0.02 per cent). With 93 per cent of the losses accruing to these ten countries/regions, and around 75 per cent of gains to the top ten 'winners', trade liberalization in its most ambitious form in reality hardly affects the welfare of the countries involved – the majority are neither significant winners nor losers from trade liberalization.

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figure 13) reaches similar conclusions about large efficiency gains for North Africa. Apparently, due to the relatively high level of tariffs in North Africa, the initial distortions to be removed, and hence potential gains from liberalization, are correspondingly large.

Table 5: The ten major 'losers' from multilateral liberalization

Position	Country	Million US$
1	United States	-2192
2	Canada	-1960
3	Rest of sub-Saharan Africa	-1843
4	Russia	-1831
5	Rest of Middle East	-1299
6	Mexico	-981
7	Venezuela	-656
8	Columbia	-337
9	Czech Republic	-172
10	Chile	-161
Total top 10 losses		-11431
Total top 10 losses as % of total losses		93.8

Table 6: Summary results for SSA countries

	Welfare change %	GDP change %	Terms of trade change %	Imports change %	Exports change %	Change in trade balance (Million US$)	Change in welfare (Million US$)
Botswana	1.9	0.7	2.0	3.9	0.8	-5.4	101.0
South Africa	0.5	0.2	0.3	15.7	7.2	-1587.5	615.2
Rest of South Africa	16.3	2.3	22.1	44.0	5.3	-588.2	838.3
Malawi	4.7	1.2	8.8	37.2	13.0	-86.4	82.5
Mozambique	-0.9	0.4	-2.8	5.0	10.2	-1.6	-32.9
Tanzania	-1.1	0.3	-4.2	12.3	24.2	13.5	-99.7
Zambia	-0.3	0.0	-1.2	9.9	7.8	-39.5	-12.5
Zimbabwe	2.2	0.4	6.4	36.8	17.6	-179.9	196.2
Rest of SADC	2.4	2.6	-0.3	27.7	18.6	-891.2	464.8
Madagascar	0.3	0.1	0.5	11.0	13.0	-14.6	14.9
Uganda	-1.2	0.0	-4.5	-1.5	8.3	55.3	-66.7
Rest of SSA	-1.3	1.0	-4.8	17.2	23.8	-1317.2	-1842.6

Table 6 reports the disaggregated simulation results for SSA. Out of the twelve countries/regions, five report absolute losses of welfare (Mozambique, Tanzania, Zambia, Uganda, and the 'Rest of SSA'). The welfare loss equivalent to -1.3 per cent of GDP for the 'Rest of Africa' is particularly significant, even if the negative result is mitigated by positive growth of GDP of 1 per cent. Furthermore, excluding the gains accruable to South Africa implies a net loss for the whole region of US$559 million. Not a highly significant amount in the context of the US$311 billion GDP of SSA, but a loss nonetheless. Welfare gains are large for only two countries/regions – the 'Rest of South Africa' (which comprises tiny Lesotho and Swaziland) and Malawi. Losses would once again seem to accrue principally due to large-scale terms of trade

deterioration. While terms-of-trade changes have a relatively minor impact on income in economies where exports and imports are small relative to GDP, even moderate terms-of-trade changes have a sizeable impact on national income in very open economies, which is typically the African case (UNCTAD, 2005: 101).

Another important finding to highlight from our results is that while many countries in the region enjoy rather large increases in exports, in nearly all cases (Madagascar, Mozambique and Uganda and 'Rest of Africa' are exceptions), the growth of imports is considerably faster, resulting in a deteriorating trade balance. To some extent, therefore, this corroborates the hypothesis put forward by Santos-Paulino and Thirlwall (2004) regarding the impact of liberalization on the trade balance. Furthermore, in view of their political commitment to regional integration, many African countries may deem it undesirable that complete liberalization does not encourage intra-regional exports, which actually fall slightly despite the removal of all (tariff) barriers to trade (Annex Table 2).

Nevertheless, one of the clearest potential negative impact of liberalization is that it could compound Africa's difficulties with its sectoral specialization in commodities.

Table 7: Trade balance by sector

	Food	Manufactured	Services	Total
Botswana	595.6	-587.0	-14.0	-5.4
South Africa	1486.9	-3090.8	16.4	-1587.5
Rest of South Africa	1685.3	-1794.4	-479.1	-588.2
Malawi	75.1	-128.6	-32.8	-86.4
Mozambique	-13.5	-27.9	39.8	-1.6
Tanzania	-50.9	-30.2	94.6	13.5
Zambia	45.0	-111.9	27.3	-39.5
Zimbabwe	711.2	-765.9	-125.2	-179.9
Rest of SADC	1414.2	-2258.7	-46.8	-891.2
Madagascar	-44.9	39.0	-8.7	-14.6
Uganda	-20.3	12.1	63.5	55.3
Rest of SSA	-488.4	-2522.1	1693.3	-1317.2
SSA total	5395.3	-11266.4	1228.3	-4642.7
SSA – SA	3908.4	-8175.6	1211.9	-3055.2
World	-9759.2	-23561.4	33320.6	0.0

Table 8: Effects of a 100 per cent cut in tariffs and export subsidies on real incomes (percentage changes)

	NAFTA	EU	Japan	Latin America	SSA	China	ROW
Land	8.53	-3.26	-12.73	21.17	2.84	3.67	-4.62
Unskilled labour	0.15	0.42	0.96	1.97	3.52	4.33	2.89
Skilled labour	0.07	0.48	1.08	1.64	4.15	4.66	3.44
Capital	0.23	0.41	0.97	1.66	3.48	4.43	3.27
Natural resources	-0.61	0.78	2.79	-4.65	1.79	3.93	4.14

Because of greater specialization, the CGE models almost invariably predict for Africa an increase in the production of primary commodities and a fall in manufacturing value-added.[15] This is reflected in both a sharp increase in manufactured imports and a dramatic drop in manufactured value added (Table 7 and Annex Table 1).

To highlight the expected returns to the different factors of production from complete liberalization, Table 8 shows the results from a simulation scenario on an aggregated group for SSA *vis-à-vis* other regions of the world. The returns to land increase massively for Latin America (by 21.17 per cent), which presumably has a comparative advantage in agricultural production, but not so in the case of sub-Saharan Africa, where the gains are far more modest. Although the returns to unskilled labour improve by 3.52 per cent, the improvements in the returns to skilled labour are higher by 4.15 per cent, suggesting that the gains from trade may again be skewed in favour of skilled labour.

Finally, one point that is not always emphasized in CGE studies is the importance of the loss of tariff revenue by government. Despite more than a decade of reform in many SSA countries, government revenue from trade taxes is still one of the most important ways of financing public expenditure for basic social services, infrastructure and the like. According to the latest World Bank Development Indicators, for countries like Uganda, Côte d'Ivoire, and Senegal, trade taxes still represent 50 per cent, 42 per cent and 37 per cent of total government revenues, respectively (Table 9). Our 'complete liberalization' scenario would of course entail the total loss of these revenues. Moreover, as the World Bank acknowledges, country-wide safety nets seem more appropriate than special safety net programmes for trade-related problems.

Table 9: Import duties as a share of total tax revenue in selected African countries, 2001

Country	Share (%)	Country	Share (%)
Burundi	16.4	Madagascar	53.5
Cameroon	31.6	Mauritius	29.3
Congo, D.R.	33.7	Senegal	36.5
Congo	23.2	Sierra Leone	49.8
Côte d'Ivoire	41.8	Swaziland	54.7
Ethiopia	26.3	Uganda	49.8
Guinea	42.9		

Source: Development Indicators online and South Centre (2004)

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[15] See, for instance, Anderson, Martin, and van der Mensbrugghe (2005). Of course, this is a static characteristic of the CGE model, which cannot predict the use of the rents accruing from increased exploitation of natural endowments (given the assumption of perfectly competitive markets, profits are by definition excluded from the model). Subramanian and Roy (2003), for example, document how the Mauritian business class ploughed the windfall gains accrued from the preferential arrangement based on EU sugar quotas into the export processing zone, investing in textiles and the like. The failure of CGE models to capture this kind of interaction between rents in one sector and the expansion of another is of course a major limitation, and makes them poor tools for predicting comparative advantage, being based as they are on a static assessment of current comparative advantage. In the final analysis, therefore, whether such specialization is harmful or not would depend on the ability of African countries to transform the gains accruable from commodities to an economy-wide structural change.

Fundamentally, it is difficult to justify safety net programs to poor people who suffer from trade reform and deny assistance to other poor people who suffer from unemployment from other disruptions such as technological change, or domestic-demand shifts. As the main need for the poor during a difficult transition period is likely to be food, one approach is a time limited food subsidy and distribution program (World Bank 2002: 59).

The problem is how such country-wide programmes can be financed unless alternative sources of income can be found. So far, the evidence suggests that other forms of revenue collection have been problematic. As Buffie (2001: 207) notes, 'it is correct but not particularly helpful to object that the safety net should be financed by reducing other expenditures or by raising taxes'. Moreover, while social safety nets can mitigate the losses suffered by the newly unemployed, it also worsens the trade balance if higher spending on unemployment compensation or public sector employment schemes drives up the fiscal deficit (ibid.). This is potentially particularly problematic in the SSA context.

6   Trade liberalization and labour market outcomes for SSA

As argued above, while the CGE can be useful in estimating expected gains from trade, it is rather inadequate in terms of shedding light on poverty reduction. However, as shown, the methodology can also estimate changes in the levels and composition of production. Thus, it can provide implications for labour market adjustments via derived demand, and hence for poverty reduction. The current section explores this process.

The above exercise suggests that the anticipated production increases in terms of the growth of GDP, or of exports relative to imports, from trade liberalization are likely to be small for SSA. It must be underscored that these CGE estimates tend to be long run in nature and may actually exaggerate the short run more realistic outcomes involving much smaller expected export expansion. Nevertheless, trade liberalization was undertaken in anticipation that much of the improvement in growth would emanate from the exportable sector in the face of a declining importable sector. Indeed, there is evidence that the importable sector in many SSA countries has been weakened by trade liberalization, leading to substantial employment losses and de-industrialization (Lall, 1995). Some examples include (Buffie, 2001: 190–192):

— Senegal experienced large job losses following a two-stage liberalization program that reduced the average effective rate of protection from 165 per cent in 1985 to 90 per cent in 1988. By the early nineties, employment cuts had eliminated one-third of all manufacturing jobs.

— The chemical, textile, shoe, and automobile assembly industries virtually collapsed in Côte d'Ivoire after tariffs were abruptly lowered by 40 per cent in 1986. Similar problems afflicted liberalization attempts in Nigeria. The capacity utilization rate fell to 20–30 per cent, and adverse effects on employment and real wages provoked partial policy reversals in 1990, 1992, and 1994.

— In Sierra Leone, Zambia, Zaire, Uganda, Tanzania, and the Sudan, liberalization in the eighties brought a surge in consumer imports and sharp

cutbacks in foreign exchange available for purchases of intermediate inputs and capital goods. The effects on industrial output and employment were 'devastating'. In Uganda, for example, the capacity utilization rate in the industrial sector languished at 22 per cent while consumer imports claimed 40–60 per cent of total foreign exchange.

—   Manufacturing output and employment initially grew rapidly in Ghana after liberalization in 1983 and generous aid from the World Bank greatly increased access to imported inputs. But when liberalization spread to consumer imports, manufacturing employment plunged from 78,700 in 1987 to 28,000 in 1993.

—   Following trade liberalization in 1990, formal sector job growth slowed to a trickle in Zimbabwe and the unemployment rate jumped from 10 to 20 per cent. Adjustment in the nineties has also been difficult for much of the manufacturing sector in Mozambique, Cameroon, Tanzania, Malawi, and Zambia. Import competition precipitated sharp contractions in output and employment in the short run, with many firms closing down operations entirely.

Against such a discouraging backdrop, we present in this section theoretical discussions within the neoclassical framework to shed light on the likely labour market adjustments in many SSA countries following trade liberalization. We shall then show implications for poverty reduction. Even within this framework, we find that any reductions in poverty emanating from trade liberalization would likely be minimal.

Much of the work focusing on the labour market impact of trade in developing countries adopts a short run perspective, implicit in the fixed-factor model of international trade. Conversely, studies focusing on industrialized countries are often based on the long run framework of the neoclassical model of comparative advantage. The rationale is that while trade-related changes in developing countries are usually associated with one-time reforms in trade policy, most of the trade developments in advanced countries reflect long run tendencies in transport and communication costs, technology and factor endowments (Turrini, 2002: 12).

Based on neoclassical theory, trade liberalization was touted in the 1980s as a solution for the rapidly deteriorating economic conditions in many African countries beginning in the late 1970s. The idea was that liberalization would allow countries to shift production from the inefficient import-substitution industries to the exportable sector where they had comparative advantage. In theory, relatively unskilled workers, which African countries had in relative abundance, would benefit in terms of higher wages and employment, according to the well-known Hecksher–Ohlin–Samuelson (HOS) framework. Unfortunately, this outcome is yet to be realized in many of these countries undertaking the trade liberalization reforms. Why?

To appropriately answer this question, one needs to first appreciate the underlying dictates of the neoclassical model, especially as they relate to labour market adjustments. The basic framework modelling the realities of developing economies like those of African countries is a three-sector economy comprising importables (M), exportables (X) and non-tradables (N).[16] All three sectors are assumed to use labour (L) and capital (K) in their respective productions. However, it is further assumed that the

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16   See, for instance, Edwards (1988).

importable sector is the most capital-intensive, followed by the non-tradable sector, with the exportable sector the least capital-intensive. That is, $(K/L)_M > (K/L)_N > (K/L)_X$. The usual assumption of positive but diminishing marginal products of labour and capital applies. There is also a distinction between the short and long runs, with sector-specific fixed capital in the short run but mobile across-sector labour. In the long run, all factors are mobile across sectors but labour supply is perfectly inelastic. The equilibrium conditions in the long run are:

$$VMPj^M = VMPj^X = VMPj^N \text{, where } j = L, K$$

where VMP represents the value of the marginal product. For the short run, however, only $j = L$ necessarily holds.

Assuming no specialization (non-zero production in each sector), the qualitative results on employment and wages in response to trade liberalization in the form of a tariff reduction, based on comparative statistics, are summarized in Table 10. The results are provided separately for the cases of (1) no wage rigidities, and (2) the existence of wage rigidities in the form of a wage floor, such as a minimum wage in the importable sector.[17] As expected, the long run results in the case of the absence of wage rigidities are consistent with the predictions of HOS, in that the wage increases in all sectors; meanwhile, though not apparent in the table, the increase in employment in the exportable sector is expected to exceed the decline in the importable sector and the indeterminate change in the non-tradable sector. Thus, in the long run, one should expect both wage and employment to increase economy-wide, resulting in poverty reduction.[18]

For Africa, however, the more interesting case appears to be the short run. Available data show that following trade liberalization in many African countries there has not been a significant increase in especially private investment economy-wide or in the export sector. Hence, capital shifts to the exportable sector have been minimal, consistent with the short run underlying conditions. The short run results presented in Table 10, however, are not encouraging. They suggest that the wage will fall in all sectors (see the case of no-wage rigidities). Hence, the only hope for poverty reduction is a disproportionately high compensation in terms of employment expansion in the exportable or non-tradable sectors. Unfortunately, the expected employment change in the latter sector is indeterminate, so that the key to poverty reduction would appear to rest with employment increases in the exportable sector. Thus, we shall concentrate next on the employment adjustment in this sector.

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[17] The long run results are explained by the process of adjustments in capital as well as labour across sectors, with both demand and supply of labour increasing in the exportable sector while decreasing in the importable sector. The direction of change in employment is indeterminate in the non-tradable sector, though, arising from a simultaneous increase in demand from real income effects due to the tariff reduction and a decrease in labour demand resulting from capital deepening. The short run effects are explained by a decrease in labour supply in the importable sector but an increase in the exportable sector, while there is indeterminacy of employment change in the non-tradable sector due to a possible decrease in labour demand if the non-tradable is a substitute in consumption to the importable. For details, see for example Fosu (2002).

[18] This statement assumes that labour supply is not perfectly inelastic, contrary to the assumption underlying the long run scenario; otherwise, there would be no adjustment in employment. However, the more interesting case is the short run that approximates the SSA situation.

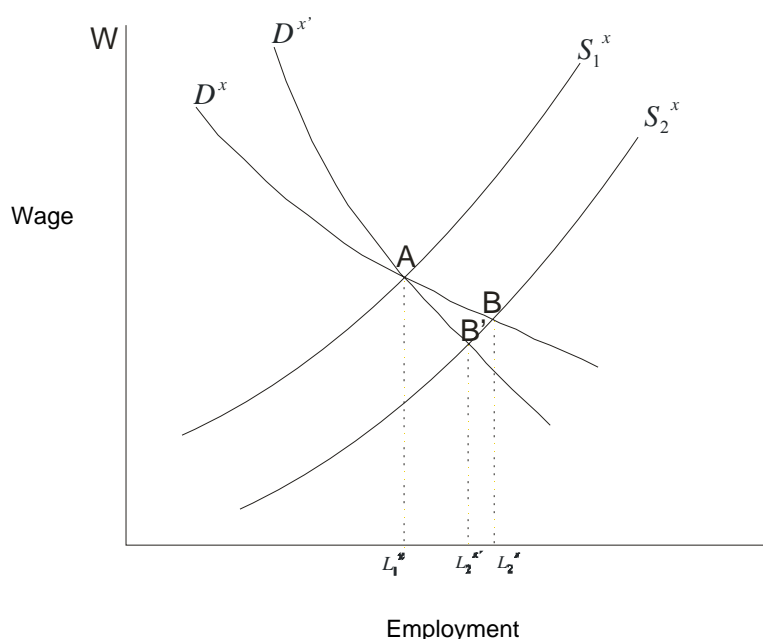Table 10: Sectoral (employment, wage) changes after trade liberalization

	No wage rigidities		Wage rigidities	
	Short run	Long run	Short-run	Long-run
Exportables	(+,-)	(+,+)	(+,-)	(+, ?)
Importables	(-,-)	(-,+)	(-,+)	(-,+)
Non-tradables	(?,-)	(?,+)	(?,-)	(+, ?)

Source: Fosu (2002, table 8.1)

Notes: The table is adapted from Edwards (1988); see also Milner and Wright (1998). 'Wage rigidities' refers to the case of minimum wages. The first and second coordinates in parentheses denote changes in employment and wages, with '+', '-', and '?' indicating respective positive, negative and indeterminate directions. For example, (+,-) shows positive and negative directions of change for employment and wages, respectively. The wage is defined as the nominal wage relative to the price of non-tradables.

Figure 1 portrays the labour market of the exportable sector. The initial equilibrium is point A, with employment level $L1^x$. The short run adjustment following trade liberalization leads to an increase in labour supply from $S1^x$ to $S2^x$, resulting in a new equilibrium of B or B′, depending on the nature of the labour demand. For a relatively elastic demand, the level of employment is $L2^x$, and is $L2^{x'}$ for the less elastic demand. From a policy perspective, therefore, it is important to have measures that are likely to augment the elasticity of labour demand, as well as facilitating labour mobility across sectors via reductions in mobility costs (Fosu, 2004).

Figure 1: Trade liberalization and labour market adjustment: The exportable sector

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One of the factors influencing the elasticity of labour demand in the exportable sector (ED) is the supply elasticity of the product that forms the basis of the derived demand in the labour market. Unfortunately, the product supply elasticity is likely to be low for most African countries, mainly as a result of the high costs of doing business due to such factors as dilapidated physical infrastructure (transportation, communications, energy); onerous legal red-tape associated with establishing and running businesses in the formal sector; financial resource constraints; high costs of transmitting information; cumbersome taxation systems; and various forms of instabilities (e.g., political, import, and capital) (Fosu, 2004).

Another factor affecting the wage elasticity of the demand for labour is the price elasticity of demand for the relevant product. Unfortunately, the primary-product nature of the exportable sector implies that the corresponding product demand is relatively inelastic. Hence, the derived demand for labour in the exportable sector would be relatively inelastic as well (ibid.).

Also, the global perspective has now become increasingly relevant. Increased globalization has greatly expanded the investment opportunity set for potential investors. The elasticity of substitution with respect to cross-country investment is therefore likely to be high for most African countries. This relatively high elasticity would in turn lower ED.

In effect, $L2^{X'}$ is the more likely scenario in Figure 1. The employment expansion resulting from a labour supply increase in the exportable sector following trade liberalization is likely to be small. Coupled with an expected reduction in the wage, it is unlikely that wage earnings in the exportable sector will increase much, if at all. Furthermore, as we have illustrated above, employment in the importable sector would fall with a decline of the sector's output in response to trade liberalization. Economy-wide employment would, therefore, likely decrease together with the wage. Thus, it is perhaps unsurprising that following trade liberalization in many African countries, the poverty rate has moved little from its roughly 45 per cent value in 1990.

7   Conclusions

This paper has reassessed for sub-Saharan Africa the welfare gains from multilateral trade liberalization and has drawn implications for labour-market adjustment and poverty reduction. Our CGE exercise supports the view that African countries cannot expect substantial welfare gains from further multilateral liberalization. This is not to suggest that countries could not benefit from further trade reform, but perhaps should reconsider the heavy emphasis placed so far on global trade liberalization policy – for Africa, it is not likely in itself to generate the large windfall gains that many have expected of it. There may indeed be other policies which produce greater benefits over the long run. For instance, policies to enhance technological acquisition may benefit not only the exportable, but also importable and non-tradeable sectors. Winters (2001) suggests that the *gains from international migration may be three times as high as gains from trade liberalization.* Thus a deeper look at the trade-off between different policy options is desirable.

Meanwhile, the expected limited increases in production from trade liberalization in certain sectors, combined with the contraction of others, imply that we cannot anticipate much in terms of employment gains in African economies that have undergone liberalization. Our analysis on the linkages between trade liberalization and labour market adjustments suggests that, without sufficient reforms that render labour demand relatively elastic, these anticipated minimal gains from trade will imply only miniscule positive, and possibly even adverse, impacts on poverty reduction.

Annex

Table 1: Effects of a 100 per cent cut in tariffs and export subsidies on output (millions US$)

DQO	Botswana	South Africa	Rest of SA	Malawi	Mozambique	Tanzania	Zambia	Zimbabwe	Rest of SADC	Madagascar	Uganda	Rest of SSA	Total World	Totals for SSA
Food	634.8	2426.6	1809.9	52.9	-15.2	-85.7	47.4	785.4	1651.9	-62.8	-16.9	-1009.1	-34582.1	6219.2
Mnfcs	-713.5	-3076.9	-2045.3	-64.4	-25.7	-35	-107.9	-894.8	-2107.2	58.4	-7.3	-1319.2	-30127.1	-10338.8
Svces	-37.1	615.3	84.1	7	43	106	6.1	31.9	584.4	8.4	32.9	2183.5	55053.6	3665.5
Total	-115.7	-35.1	-151.3	-4.5	2.1	-14.7	-54.3	-77.4	129.2	4	8.7	-144.8	-9655.6	-453.8

Table 2: Effects of a 100 per cent cut in tariffs and export subsidies on regional trade for SSA (millions US$)

DTOT	Botswana	South Africa	Rest of SA	Malawi	Mozambique	Tanzania	Zambia	Zimbabwe	Rest of SADC	Madagascar	Uganda	Rest of SSA	Total
Botswana	0	-60.2	-0.3	1	-0.1	1.2	0.3	6.9	-1.2	0	0.1	-0.7	-53
South Africa	-240.7	0	131.6	72.5	44.2	7.7	95.3	365.6	103.5	0.6	-5.5	56.6	631.4
Rest of South Africa	-3.6	-620.3	-0.4	-5.8	-19.7	-9.2	-6.3	-1.9	-44	-1.7	-3.9	-32.6	-749.4
Malawi	0.7	52.2	0	0	-11.8	-0.5	-5.9	-3.1	-1	0	-0.2	-12.6	17.8
Mozambique	0	8.6	2.2	20.5	0	-0.1	0.3	8.1	2.2	0	0	0	41.8
Tanzania	0.2	3	0.2	6.4	0.2	0	7	3.4	-2.9	0.5	3.9	36.9	58.8
Zambia	3.9	8.6	4.6	-1.9	0	2.5	0	-4.8	-1.8	0	-0.2	11.9	22.8
Zimbabwe	41	-24.5	184.8	-13	-0.7	-0.4	-41.9	0	-1	0	-0.8	-14.8	128.7
Rest of SADC	0.7	-1.9	1.1	-0.5	0.2	-0.1	-1.8	-7	-0.2	-12	-0.3	-20.5	-42.3
Madagascar	0	1.4	0	0	0	-0.4	0	0	-19.8	0	0	-0.7	-19.5
Uganda	0.1	6.4	0.8	0	0.2	0.8	0.3	0	-4.4	0	0	-8.4	-4.2
Rest of SSA	1.5	43.1	6.4	0.5	0.8	78.7	0.4	0.6	-6.2	0.9	-3.9	-174.9	-52.1
Total	-196.2	-583.6	331	79.7	13.3	80.2	47.7	367.8	23.2	-11.7	-10.8	-159.8	-19.2

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