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Who benefits from South Africa's Bilateral Trade Agreements?

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indigenous **growth**

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Abstract

Trade liberalisation is a key component of South Africa's post-Apartheid development strategy, aimed at accelerating growth and creating employment. There is evidence suggesting that multilateral reforms over the last decade have been successful. However, the government's emphasis has shifted in favour of bilateral free trade agreements, thus raising concern that rapid increases in competition in the domestic market may overwhelm any gains from preferential access into foreign markets. This paper estimates the impact of these bilateral trade agreements on growth, employment and poverty in South Africa. This is achieved using a dynamic applied general equilibrium and microsimulation model. The findings suggest that free trade agreements encourage growth and employment. However, while the gains from future reforms are positive, they will not have large effects on the country's high levels of poverty and unemployment. Furthermore, bilateral agreements may worsen inequality, especially if they involve more developed trading partners. Adjustment costs are also associated with reforms, and these fall more heavily on lower-skilled female and African workers. Therefore, while trade liberalisation should remain part of the country's development strategy, we caution against an overemphasis of its potential benefits and offsetting interventions may be necessary.

1. Introduction

Trade liberalisation has been an important part of South Africa's policy agenda since the end of Apartheid. The emphasis during the 1990s was on multilateral liberalisation, with both import tariffs and quantitative restrictions falling dramatically. However, the pace of multilateral reforms slowed at the end of the last decade and the country shifted its liberalisation efforts in favour of bilateral agreements with major trading partners. While the 1990s was a period of unprecedented liberalisation, it was also a period of sluggish growth and rising unemployment and poverty. There is understandable concern that past liberalisation may have contributed to these trends. Furthermore, since regional trade is typically more concentrated within particular sectors, there is also concern that the potential costs and benefits of bilateral agreements may impact on particular population groups. On the one hand, advocates of further reforms suggest that recent and potential trade agreements can lead to accelerated growth and improved employment opportunities. On the other hand, their opponents suggest that opening the economy to foreign competition can undermine employment, adversely affecting unskilled workers and the poor. This paper contributes to this debate by examining the economy-wide impact of South Africa's recent and proposed free trade agreements on growth, employment and poverty.

Section two reviews the current and proposed regional trade agreements and examines the broad pattern of protection facing South African imports and exports. Section three describes the applied general equilibrium and microsimulation model used in this paper to capture some of the more important and complex linkages between trade policies, growth and poverty. The results from the simulated free trade agreements are presented in Section four. The final section summarises the findings and their implications for South Africa's trade and development policies.

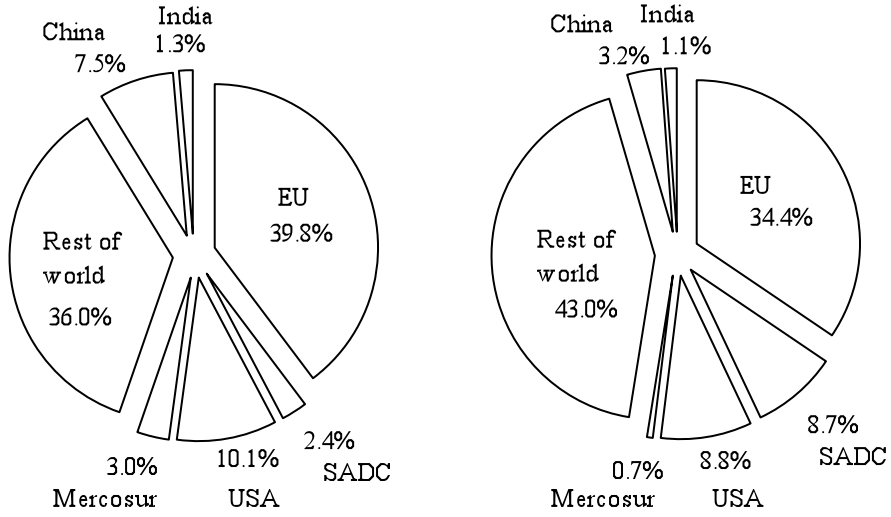
2. South Africa's bilateral trade agreements

South Africa has undergone substantial liberalisation of its trading regime over the last 15 years. The 1990s began with the removal of import surcharges and a 'tariffication' of quantitative restrictions, which were a legacy of protectionist policies during the 1970s and 1980s and a response to trade sanctions. The pace of these reforms quickened when South Africa made its offer to the World Trade Organisation (WTO) in 1995. This consisted of a five-year tariff reduction program and a proposed rationalisation of the system of protection. Although the mid-1990s was undoubtedly the country's most pronounced liberalisation episode to date, the pace of these multilateral reforms had slowed dramatically by the end of the decade. This coincided with a general slowdown in WTO negotiations and the beginning of a period of bilateral trade agreements.

South Africa had already made considerable progress in negotiating two free trade agreements (FTA) during the 1990s. The first involved the 12 member-states of the Southern African Development Community (SADC).[1] This SADC Trade Protocol had already been concluded by 1996, although the member states have been slow in ratifying the treaty such that it is yet to be fully implemented (Cassim et al., 2004). The SADC FTA involves an almost complete removal of South African import tariffs by 2005, and a more gradual compliance by other member states until the completion of the FTA in 2012. SADC is an important trading partner. While the region accounts for only 2.4% of South Africa's imports, it generates 8.7% of total export earnings (see Figure 1). Trade in both directions is dominated by unprocessed agricultural goods and processed food, although SADC also provides an important market for South African chemical and machinery exports (see Table A1 in the appendix). While this is the older of South Africa's recent trade agreements it is still uncertain whether it will be fully realised.

[1] The SADC includes Angola, Botswana, Democratic Republic of Congo (DRC), Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Tanzania, Swaziland, South Africa, Zambia and Zimbabwe.

Figure 1: South African trade by origin and destination: 2003



South African imports

South African exports

Source: South African CGE microsimulation model and world analyser

In contrast to the sluggish progress of the SADC FTA, South Africa's agreement with the European Union (EU) has been relatively fast-paced.[2] The FTA was negotiated over a five-year period starting in 1995, and the planned implementation began in 2000. The agreement is scheduled for completion in 2012, with South Africa being given longer than the EU to comply with the agreed tariff reductions. Furthermore, certain 'sensitive' sectors, such as vehicles and textiles, have been allowed a more gradual reduction in tariffs. The EU is South Africa's single largest trading partner, accounting for one-third of the country's exports and two-fifths of its imports. The EU is the main source of imported machinery and vehicles, and an important market for most South African exports, especially raw agricultural goods and processed food. Although the implementation of the FTA has proceeded relatively smoothly, there was conflict in early 2006 over South Africa's compliance with the scheduled tariff reductions on vehicles. Tariff reductions have subsequently resumed and the agreement remains on schedule.

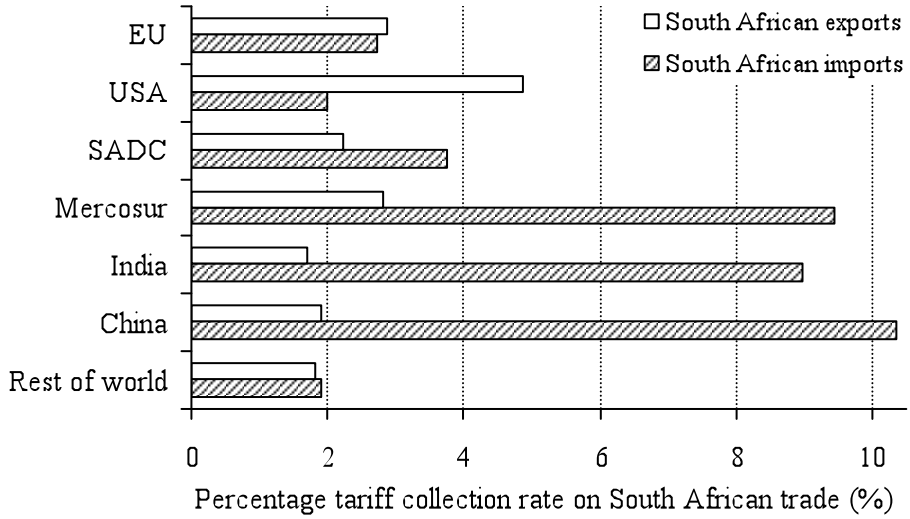
South Africa has also been exploring a number of potential FTAs with other trading partners. In 2005, the Southern African Customs Union (SACU) signed a preferential trade agreement with Mercosur, South America's major trading partnership.[3] While this agreement remains modest, with only a few tariff lines affected, it could potentially lead to a accelerated reduction in tariffs. Mercosur is a more important source of imports than a market for South African exports, with these partner countries accounting for one-tenth

[2] The EU's 15 member-states in 2003 were: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom (UK).

[3] The SACU includes South Africa, Botswana, Namibia, Lesotho and Swaziland; Mercosur includes Argentina, Brazil, Paraguay and Uruguay.

and one-quarter of agriculture and food imports respectively. Imports from Mercosur take place in spite of high imports tariffs imposed by South Africa (see Figure 2). Average tariffs on South African imports from Mercosur are 9.4% although Mercosur imposes much lower tariffs on South African exports.

Figure 2: Tariff rates on South African trade: 2003



Source: South African CGE-microsimulation model and world trade analyser

More recently South Africa, Brazil and India have explored the possibility of a trilateral FTA. Although this announcement has received considerable coverage, both India and Brazil only account for a small share of South African trade. India is however a direct competitor in the textiles and clothing sectors and an important market for South African chemicals and machinery. While a trilateral agreement would represent a significant south-south alliance, South Africa's membership of other trading agreements, such as SADC and SACU, and Brazil's membership of Mercosur precludes any advancement of this agreement. South Africa has subsequently focused on a bilateral trade agreement with India. However, the gap between tariffs on South African imports and exports is even wider for India than it is for Brazil.

One of the more contentious of South Africa's proposed trade agreements is with China. This proposal has been met with considerable opposition from South Africa's trade unions who are concerned about increased competition and job losses in the textile and clothing sectors. China already accounts for almost half of textile imports, and with whom South Africa generates a four-fold trade deficit. Given these concerns and to ensure further trade negotiations, China agreed in 2006 to constrain its textile exports to South Africa. Negotiations have subsequently resumed but opposition amongst trade unions has not eased (see Morris & Edwards, 2007). Similar contention exists over the proposed FTA between SACU and the United States of America (USA). Negotiations began in 2004, but had faltered by 2006 due to the strict conditionality demanded by the USA on investment and intellectual property rights. The USA has subsequently started exploring the possibility of trade agreements with individual African countries and has

given a range of African countries, including South Africa limited preferential access to its market. However, the granting of this access, in the context of AGOA, is not a bilateral agreement and can be revoked by the US at any time.

In summary, there has been a rapid rise in trade agreements since the first SADC FTA was signed in 1996. This suggests a pronounced shift in South African trade policy away from unilateral reforms. This raises concern that lowering barriers with certain trade partners may lead to overwhelming competition in the domestic market, with negative consequences for employment and poverty. This paper, therefore, attempts to estimate the impact of South Africa implementing bilateral agreements with the above mentioned trading partners (i.e. EU, USA, SADC, Mercosur, India and China).[4] The next section describes the analytical method used to capture South Africa's unique structure of trade and protection with each trading partner.

[4] There are also other agreements that are being signed or negotiated. In 2005, South Africa signed FTAs with the United Arab Emirates (UAE) and Kuwait, and announced that it was considering FTAs with Japan and Singapore.

3. Modelling the impact of trade policies on growth and poverty

The impact of South Africa's trade agreements on growth and welfare has been examined in earlier studies using a range of methods. For example, Holden and Thurlow (2002) focus on the impact of the EU-SA FTA on the Common Market for Eastern and Southern Africa (COMESA) using multi-country partial equilibrium models. The findings suggest that the FTA has negligible welfare-effects on neighbouring countries, and that the EU is more likely to benefit from greater preferential access into South African markets than vice versa. However, while the partial equilibrium approach captures trade creation and diversion at the detailed commodity-level, it does not account for economy-wide impacts within the modelled countries. As an alternative approach, Lewis et al. (2002) use a multi-country computable general equilibrium (CGE) model to examine the impact of the EU-SA and SADC FTAs. The authors find that neither agreement causes large changes in welfare in South Africa or its neighbouring countries, and that South Africa will benefit less than the EU. While a general equilibrium approach is preferable since it captures economy-wide growth linkages, it does sacrifice the disaggregation of the partial equilibrium approach. Furthermore, both of the above studies do not capture the dynamic effects of liberalisation or the effects of reforms on poverty and inequality. This paper, therefore, extends the empirical evidence by developing a dynamic CGE model of South Africa and examining the impact of the country's recent and potential trade agreements. This single-country approach captures growth linkages within the South African economy, but ignores the trade-induced structural changes taking place within its trading partners. However, restricting the analysis to only the South African economy allows for a more detailed assessment of the effects of reforms on poverty and inequality. This is achieved by linking the CGE model to a microsimulation module, thereby retaining as much information as possible on the heterogeneity of household income and expenditure patterns.

The reciprocity of free trade agreements implies that while foreign producers gain greater access to the domestic market through the removal of import tariffs, domestic producers also benefit from improved export competitiveness in foreign markets. Therefore, bilateral agreements both lower import prices and raise export prices in the domestic economy. This would seem to suggest that the net effect of an FTA is simply determined by the relative sizes of these two effects. However, the impact of liberalisation on poverty and inequality is more complex. For example, reducing tariffs may well lead to greater import competition that undermines the profitability of domestic producers, thus lowering wages and employment. However, there is evidence that trade liberalisation has caused an acceleration of growth in South Africa by lowering the cost imported capital goods and improving access to foreign technology (Jonnson and Subramanian, 2001). This has countered the negative effects of foreign competition and may have partially offset the observed rise in unemployment and poverty during the 1990s (Thurlow, 2006). To structure our

understanding, McCulloch et al. (2004) identify four main transmission mechanisms linking trade policies to household incomes and poverty: (i) the effect of policies on trade, productivity and growth; (ii) the impact of trade-induced growth on employment and wages; (iii) the effects of falling import tariffs on relative prices and household expenditures; and (iv) the effects of changing import revenues on fiscal deficits and government transfers and social investments. This section describes the key features of the dynamic CGE and microsimulation model that is used in this paper to empirically estimate the size and interactions of these transmission mechanisms.[5]

As mentioned above, an important factor determining the impact of liberalisation on overall economic growth are the linkages between the sectors that are directly affected and the rest of the economy. Both consumption (forward) and production (backward) linkages are captured in the CGE model, whose constant elasticity of substitution (CES) production functions allow producers to generate demand for both factors and intermediates. To reflect the heterogeneity of South African producers, the model is calibrated to a disaggregated 2003 social accounting matrix (SAM) that distinguishes between 40 productive sectors and 40 commodities. Imperfect factor markets are assumed for the 18 different types of labour identified in the model. Labour is disaggregated across (i) three skill groups based on occupational category (skilled, semi-skilled, and unskilled); (ii) three population groups (African, White, and Other); and (iii) male and female workers.[6] Skilled labour has upward sloping supply curves reflecting their low unemployment rates (Casale et al., 2004). Semi-skilled and unskilled labour is assumed to be unemployed with real wages fixed relative to those of skilled workers.[7] Labour is mobile within a national market, while capital is fixed across sectors earning flexible activity-specific returns. The 40 representative producers in the model make decisions in order to maximise profits, but are constrained by factor market imperfections when choosing inputs. A nested production system is employed. At the lower levels, a CES function is defined over factors, while at the highest level, fixed-share intermediates are combined with factor value-added in a Leontief specification. Factor substitution elasticities are econometrically estimated and vary across activities (IDC, 2000). Within the nesting of labour demand, a workers' skill is assumed to have the highest importance, followed by population or racial group, and finally their gender. Profit maximisation implies that the factors receive income where marginal revenue equals marginal cost based on endogenous relative prices. By disaggregating production across sectors and employment across labour categories, the model captures the changing structure of growth after liberalisation and its effect on employment and wages (i.e. the second transmission mechanism described by McCulloch et al. (2004) and referred to above).

Within each sector, substitution possibilities exist between production for the domestic and foreign markets, where the latter includes the EU, SADC, USA, Mercosur, India, China and the rest of the world. This

[5] See Thurlow and van Seventer (2002) and Thurlow (2007) for a more detailed description.

[6] This common three-part disaggregation of labour by skill group differs from other South African studies (e.g. Edwards, 2001; Thurlow, 2006) in that rural subsistence farmers are treated as unskilled rather than semi-skilled.

[7] Closing the labour market by fixing relative wages implies that the levels of employment and wages are endogenous.

decision of producers is governed by a non-nested or flat constant elasticity of transformation (CET) function. Profit maximisation drives producers to sell in those markets where they can achieve the highest returns. These returns are based on domestic and regional export prices (where the latter is initially determined by the world price times the exchange rate). Under the small-country assumption, South Africa is assumed to face perfectly elastic export demand at fixed prices.[8] The final distribution of exports across domestic and foreign markets is determined by the endogenous interaction of relative prices. Similar substitution possibilities exist between imported and domestic goods under a non-nested or flat CES Armington specification. Such substitution can take place both in final and intermediates usage. The Armington elasticities are econometrically estimated and vary across commodities, with lower elasticities reflecting greater differences between domestic and imported goods (IDC, 2000). Again under the small country assumption, South Africa is assumed to face infinitely elastic import supply at fixed prices. The final combination of regional imports and domestic goods is determined by the cost minimising decision-making of domestic demanders based on the relative prices of domestic goods and imports, which include taxes and region-specific tariffs respectively. By capturing relative price movements and substitution-effects, the model allows import and export demand to shift across regions as a result of tariff changes (i.e. the third transmission mechanism described by McCulloch et al, 2004).

The model also distinguishes between various 'institutions' within the South African economy, including enterprises, the government, and numerous representative households. These households are derived from the 2000 Income and Expenditure Survey (IES) (StatsSA, 2001). Households are disaggregated according the population group and gender of the household head, and across national expenditure deciles. In total there are 60 aggregate households in the model. 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, unlike enterprises, use their income to consume commodities under a linear expenditure system (LES) of demand. The government receives income from imposing import tariffs and sales and direct taxes, and then makes transfers domestically and abroad. The government also purchases commodities in the form of government consumption expenditure and the remaining income 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 current investment is financed. By separating demand into its component parts and capturing government income and expenditure patterns, the model considers how changes in tariff revenues influence the fiscal budget. (i.e. the fourth transmission mechanism described by McCulloch et al, 2004). Furthermore, by retaining the detailed income and expenditure patterns of households, the model can better capture distributional change.

[8] The standard small-country assumption assumes that the rest of the world is sufficiently large that changes in South African exports will not influence world prices. The limitation of using a single-country model to assess regional trade agreements is that changes in South African exports are now assumed not to influence prices within each specified trading region. However, given the large size of each of the trading partners identified in the model, it seems unlikely that foreign price changes would be significant, especially at the current level of commodity disaggregation.

The model includes three broad macroeconomic accounts: (i) the savings and investment account; (ii) the current account, and (iii) the government balance. In order to balance these accounts, it is necessary to specify a set of adjustment or 'closure' rules, which provide the mechanism as to how macroeconomic balance is achieved. Based on evidence for South Africa, a savings-driven closure is assumed to balance the savings-investment account (Nell, 2003). Under this closure, the marginal propensities to save of households and enterprises are fixed, and real investment quantities adjust to ensure that the level of investment and savings are equal at equilibrium. For the current account it was assumed that a flexible exchange rate adjusts in order to maintain a fixed level of foreign savings. In other words, it is assumed that policy makers attempt to hold the external balance fixed in terms of foreign currency and the government cannot borrow abroad to replace falling tariff revenues. For the government account, tax rates and real government consumption expenditure are held constant. As such, the fiscal deficit is assumed to adjust to ensure that public expenditures equal receipts. The model assumes that falling tariff revenues cause the government to borrow domestically rather than reduce transfers to households (i.e., the fourth transmission mechanism mentioned above).

In order to account for the dynamic growth-effects of liberalisation, the model described above is extended to a recursive dynamic specification in which selected parameters are updated based on the modelling of intertemporal behaviour and results from previous periods. Current economic conditions, such as the availability of capital, are endogenously dependent on past outcomes but remain unaffected by forward-looking expectations. The dynamic model is also exogenously updated to reflect demographic and technological changes based on observed trends. Unlike total factor productivity (TFP) growth, which is updated exogenously, the process of capital accumulation is modelled endogenously, with previous-period investment generating new capital stock for the subsequent period. Although the allocation of new capital across sectors is influenced by each sector's initial share of capital income, the final sectoral allocation in the current period is dependent on sector specific depreciation rates and on sectoral profit-rate differentials from the previous period. Sectors with above-average capital returns receive a larger share of the new capital stock. The model therefore captures some of the growth-effects of liberalisation by allowing for both an exogenous adjustment in productivity growth and an endogenous accumulation of capital due to cheaper imported capital goods (i.e. the first transmission mechanism described above).

The model is initially calibrated to the 2003 SAM. The dynamic model is then solved for the 2003-2010 period as a series of equilibria, each one representing a single year. By imposing forecasted sectoral GDP growth and other dynamic adjustments from the literature, the model reproduces a counterfactual or baseline growth path. Trade agreements are then expressed as a change in region-specific import tariffs, regional export prices, and factor productivity. The model is then re-solved for a new series of equilibria and differences between the policy-influenced growth path and the counterfactual are interpreted as the economy-wide impact of liberalisation. Finally, changes in poverty and inequality in the microsimulation module are measured using the same household income-expenditure survey that was used to construct the underlying SAM of the core CGE model. Analogous to sample weights, each representative household in the CGE model is an aggregation of a larger number of households in the survey. Since poverty in this

study is defined according to per capita expenditure, changes in each household's expenditure on each commodity in the CGE model are passed down to the larger number of households in the survey, where a range of poverty measures are updated and poverty and inequality is recalculated. Therefore, the model is able to capture both the economy-wide and macro-micro linkages between regional trade liberalisation and poverty.

4. The impact of South Africa's bilateral agreements

In this section, we examine the potential impact of South Africa's bilateral trade agreements, first with developed and then with developing countries. However, before presenting the results, it is necessary to create a counterfactual or baseline scenario which captures the growth path that South Africa would have followed in the absence of further trade liberalisation.

4.1 The baseline scenario

The model is calibrated to replicate projected sectoral growth rates produced by Trade and Industrial Policy Strategies for the period 2003-2010. These average sectoral growth rates are available at the same level of disaggregation as the representative producers in the model. However, growth in gross domestic product (GDP) under the Baseline scenario is reported using a more aggregate sectoral classification (see Table 1). The projections predict strong overall manufacturing growth led by vehicles and transport equipment, and chemicals and petroleum products. Slower growth is expected in agriculture, food and beverages, and textiles and clothing. Together, these sectoral growth projections result in an aggregate GDP growth rate of 4% per year. Fast growth in vehicles, machinery and construction generate high levels of investment growth, which in turn lead to a rapid accumulation of the capital stock.[9] By contrast, slower growth in the more labour-intensive agricultural and textiles sectors lowers employment growth. Furthermore, mining-driven export growth exceeds that of imports, thus forcing the real exchange to appreciate in order to maintain a fixed current account deficit. This further stimulates import-intensive investment demand. Therefore, in line with observed trends for the preceding five-year period, the current growth path is expected to be investment-driven.

[9] All model scenarios assume a 6% per capital depreciation and a capital-output ratio of around two.

Table 1: Macroeconomic results from the baseline, regional FTA and unilateral liberalisation scenarios

	Share in 2003 (%)	Average annual growth rate: 2003-2010 (%)						
		Baseline	EU	USA	SADC	Mercosur	India	China
GDP at market prices	100.0	3.95	4.59	4.04	3.99	4.15	4.04	4.53
Private consumption	62.8	3.27	4.53	3.62	3.37	3.51	3.37	3.86
Investment	16.4	6.57	8.59	7.00	6.69	6.91	6.77	7.79
Government	19.1	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Exports	27.1	4.81	6.83	5.26	4.92	5.08	4.97	5.77
Imports	-25.5	5.08	8.89	6.26	5.33	5.39	5.26	6.12
Real exchange rate	-	-0.96	-2.73	-1.52	-1.05	-0.87	-0.92	-1.08
Terms of trade	-	-	0.21	0.19	0.11	0.23	0.19	0.20
GDP at factor cost	100.0	4.03	4.86	4.17	4.07	4.22	4.11	4.60
Capital stock	48.8	3.43	3.81	3.50	3.45	3.51	3.47	3.70
Labour employment	51.3	0.91	1.11	0.95	0.94	0.99	0.93	1.08
TFP (residual)	-	1.78	2.29	1.86	1.80	1.90	1.83	2.14
GDP at factor cost	100.0	4.03	4.86	4.17	4.07	4.22	4.11	4.60
Agriculture	3.9	0.54	0.37	0.36	0.73	0.89	0.55	0.70
Mining	7.4	4.96	5.23	4.99	4.97	4.98	4.99	5.08
Manufacturing	19.7	4.53	6.86	5.10	4.65	4.93	4.75	5.83
Food & beverages	3.0	3.17	3.84	3.23	3.55	3.87	3.19	3.38
Textiles & clothing	0.9	2.65	4.12	4.10	2.99	2.97	2.87	4.29
Wood & paper	1.9	5.09	5.20	4.71	5.06	5.28	5.36	6.42
Chemicals & petroleum	4.7	5.03	6.04	5.14	5.10	5.48	5.24	5.88
Metals products	3.2	4.72	5.32	4.53	4.66	4.89	4.88	6.16
Machinery & equipment	1.7	4.42	4.27	3.94	4.31	4.56	4.51	5.10
Vehicles & equipment	1.8	5.95	18.03	10.87	6.43	6.68	6.59	8.21
Other manufacturing	2.4	4.10	6.05	4.27	4.18	4.48	4.31	6.79
Other industry	4.8	5.07	6.32	5.31	5.14	5.32	5.20	5.89
Private services	49.4	3.83	4.36	3.87	3.85	4.01	3.90	4.35
Public services	14.8	3.98	3.99	3.98	3.98	3.98	3.98	3.99

Note: Real exchange rate is composite foreign currency units per domestic currency units (i.e. decrease in an appreciation); terms of trade is weighted export price over import price

Source: South African CGE-microsimulation model and world trade analyser

In spite of persistent unemployment amongst lower skilled labour, factor accumulation alone, in particular amongst skilled labour and capital is unable to generate the projected levels of growth. Sector-specific total factor productivity (TFP) therefore increases at an overall 1.8% per year in order to make up this shortfall. While investment growth is endogenous in the model, government consumption growth is imposed exogenously (in order to maintain a fixed share of GDP). By contrast, endogenous private consumption grows more slowly at 3.3% per year. This is higher than the projected population growth rate of around 2%, implying that per capita expenditure is rising. The associated increase in household incomes is primarily derived by higher labour employment (see Table 2). Total employment is expected to expand by 7.3% over the entire 2003-2010 period, or at an annual rate of 0.8%. Male and female employment grows at similar rates, as does employment amongst the three population or racial groups identified in the model. However, skilled employment is expected to increase at almost twice the rate of either semi-skilled or unskilled labour. This is due to slow growth in the less skill-intensive agricultural and textiles sectors, and stronger growth in the more skill-intensive heavy manufacturing and public services sectors (see Table A3 in the appendix). Therefore, again in line with recent trends, the baseline growth path becomes increasingly capital and skill-intensive and relies on strong productivity growth.

Table 2: Employment results from the baseline, regional FTA and unilateral liberalisation scenarios

	Share in 2003 (%)	Average annual growth rate: 2003-2010 (%)						
		Baseline	EU	USA	SADC	Mercosur	India	China
Total labour employment	100.0	7.25	2.00	0.45	0.20	0.56	0.20	1.38
Agriculture	10.3	-0.65	-7.32	-4.40	0.94	1.83	-0.10	-0.05
Manufacturing	15.3	23.04	-0.91	3.11	0.04	-2.57	-0.88	-6.81
Other sectors	70.1	5.43	4.14	0.62	0.14	1.08	0.49	3.45
Skilled	19.9	12.05	2.39	0.75	0.18	0.42	0.17	1.15
Semi-skilled	39.6	5.55	2.26	0.28	0.06	0.81	0.24	1.72
Unskilled	40.5	6.55	1.56	0.48	0.35	0.38	0.17	1.15
Male		53.3	7.23	0.86	-0.09	0.03	0.41	1.08
Female	46.7	7.27	3.30	1.07	0.39	0.73	0.28	1.72
African	70.5	7.17	1.84	0.36	0.18	0.57	0.21	1.46
White		15.5	7.15	2.01	0.54	0.11	0.48	1.26
Asian & Coloured	7.77	2.81	0.84	0.39	0.59	0.19	1.06	1.06

Source: South African CGE-microsimulation model and world trade analyser

Higher per capita incomes translate into declining poverty. The simplest measure of poverty is the headcount or poverty incidence, which reflects the share of the total population falling below a poverty line. The poverty line used in this study defines the 'poor' as being those people whose monthly per capita

consumption expenditure falls below R263 per person in 2003.[10] Based on this measure, the incidence of national poverty falls under the baseline scenario from 44.1% in 2003 to 42.2% in 2010. Although the share of the population below the poverty line declines, two % population growth implies that the absolute number of poor people increases by 530,000. This slight decline in poverty under the current growth path is not unexpected since slower growth over the late-1990s led to only a slight increase in poverty (Hoogeveen and Ozler, 2005). More recently, van der Berg & Louw have indicated that poverty has declined since the turn of the century. Therefore, the model is partially validated, since the Baseline scenario reasonably reproduces the projected structure of growth and changes in macroeconomic and poverty indicators. It can now be used to examine the impact of alternative trade policies.

Table 3: Poverty results from the baseline, regional FTA and unilateral liberalisation scenarios

	Initial rate 2003 (%)	Average annual growth rate: 2003-2010 (%)						
		Baseline	EU	USA	SADC	Mercosur	India	China
Poverty incidence (P0)	44.1	42.2	40.0	41.6	42.0	41.6	42.1	41.3
Male-headed households	34.7	31.7	29.7	31.3	31.6	31.2	31.6	30.9
Female	57.7	56.6	54.1	55.8	56.2	55.7	56.3	55.5
African	52.5	50.0	47.4	49.3	49.7	49.2	49.8	48.9
White	0.7	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Asian & Coloured	17.4	14.1	12.7	13.6	14.0	13.6	14.1	13.8
Poverty depth (P1)	20.0	19.6	18.1	19.1	19.4	19.1	19.4	19.0
Poverty severity (P2)	11.6	11.5	10.5	11.2	11.4	11.2	11.4	11.1

Source: South African CGE-microsimulation model and world trade analyser

4.2 Trade agreements with developed countries

Two scenarios are presented in this section capturing the impact of free trade agreements between South Africa and the EU and USA. The design of each FTA simulation involves exogenous adjustments to three of the model's parameters. Firstly, changes in South African tariffs on imports from the respective partners are reduced to zero. Secondly, based on the econometric findings of Jonsson and Subramanian (2001), a 1% decline in each domestic sector's tariff rate generates an additional 0.74% increase in the TFP growth rate for that sector. Finally, foreign tariffs on South African exports to the respective partners are reduced to zero, thereby raising the export price facing South African producers by an equivalent percentage. In this

[10] This is the unadjusted per capita one dollar per day poverty line. It is equivalent to R211 per month in 2000 prices. Since the 2000 IES is the most recent available survey that can be used for poverty analysis, the poverty level and income distribution is assumed to have remained unchanged between 2000 and 2003.

way the simulations capture increased import competition, improved export opportunities, and trade-induced technological efficiency. By contrast, the growth-enhancing effects of capital accumulation and technological change arise endogenously as a result of changing trade policies.

While overnight reduction of tariffs to zero is typically not the true nature of any FTA, our scenarios offer an upper bound to the likely impacts as a gradual and incomplete phase-down of tariffs between the relevant partners is more likely to be the case. In particular, details of potential FTAs between South Africa and the US, India and China are not known at this stage, and the agreement with Mercosur is of very modest nature at this stage.

There are similar kinds of macroeconomic impacts to be expected from signing an FTA with either the EU or USA (see Table 1). On the one hand, the decline in South African import tariffs improves the trading partner's preferential access into the domestic market, with falling import prices generating higher import demand. On the other hand, falling tariffs on South African exports encourages domestic producers to supply the foreign market. In this case, South African tariffs are initially higher than those of the EU or USA (see Table A2 in the appendix). Export growth therefore exceeds imports. Furthermore, the decline in import tariffs fosters greater efficiency amongst domestic producers, with productivity and exports rising further. The effect of faster export growth is to place pressure on the current account balance, which is assumed to be held constant in foreign currency. Therefore, the real exchange rate is forced to appreciate in order to partially offset export growth and encourage higher import demand, which in turn favours import-intensive investment growth. The latter is further encouraged by a decline in the fiscal deficit, which increases the availability of loanable funds in the domestic economy. This increase in government revenues seems counter-intuitive. However, the increase in the level of imports more than offsets the fall in tariff rates. The overall impact of signing an FTA with either of these developed countries is an increase in invest-led growth. However, the larger EU-FTA creates a higher impact, with the annual GDP growth rate rising by 0.7 percentage points.

Faster GDP growth is driven by the strong performance of key sectors. First amongst these is the vehicles sector, especially under the US-FTA (see Table 1). This strong growth is the result of high tariffs facing South African exports in both the EU and USA, and the relatively low tariffs imposed on South African imports.[11] The textiles and clothing sectors also benefit in both scenarios, although the clothing sub-sector only benefits under a US-FTA. Other sectors that perform well include the chemicals sector in the EU-FTA and 'other manufacturing' under both agreements.[12] By contrast, sectors that do not benefit from bilateral reforms include agriculture, food processing, and metal products. Domestic agricultural tariffs are considerably higher than those imposed by either the EU or USA. Therefore, increased import competition

[11] The simulations do not adjust the non-tariff subsidies being granted to the motor industry, rather focusing on changes in duty collection rates. This is similarly true for EU and USA farm subsidies.

[12] 'Other manufacturing' is dominated by non-metallic mineral products and furniture sub-sectors.

exceeds new export opportunities and the sector experiences a declining growth rate. The contraction of food processing is partly driven by its strong linkages to domestic agriculture. However, the primary driver of the decline in both food and metal products are exchange rate effects. As mentioned above, under both scenarios there is a appreciation of the real exchange rate driven by strong export growth amongst those sectors that are directly affected by reforms. Thus, for those export sectors that do enjoy greater preferential access under the FTA, the effect of the appreciation is to undermine export competitiveness in the rest of the world. This underlines the importance of taking an economy-wide approach when assessing trade policies. A further justification for the current methodology can be seen in the spill-over effects of trade liberalisation into the largely non-traded service sectors. Higher economic growth generates faster growth in the private services sectors through production and consumption linkages.

Economy-wide effects are important in determining the impact of trade agreements on employment. For example, the EU-FTA undermines agricultural and manufacturing employment (see Table 2). However, this is more than offset by additional growth in private services, where employment growth increases from 5.4% under the Baseline scenario to 9.6% under the EU-FTA scenario. By contrast, rising textiles employment under a US-FTA causes manufacturing employment to increase, but this is partially offset by slower service sector growth such that overall job creation remains small. Since the agricultural and food processing sectors perform poorly in both scenarios, it is unskilled and African workers who benefit the least from these agreements. Conversely, strong vehicles and textiles growth means that skilled and semi-skilled workers benefit relatively more. The textiles sector is particularly important for semi-skilled Asian and Coloured workers, especially women (see Table A3 in the appendix). Private services are also important for female workers, although this is concentrated in the retail trade sector, which in turn is associated with the informal sector activity. Therefore, while female workers experience faster employment growth than men, they may also experience a decline in working conditions and wages as a result of migration from manufacturing to the more-informal service sectors. Furthermore, it is lower-skilled and female workers who are most likely to bear the short-term adjustment costs since job losses may not be immediately offset by new opportunities. Overall, the findings suggest that trade agreements with developed countries favour higher skilled employment, especially amongst non-African workers.

The focus of this paper is to estimate the effects of selected existing and potential bilateral trade agreements on poverty and inequality. The results suggest that trade agreements with the EU and USA will not worsen poverty, and will in fact reduce the incidence of poverty beyond what will be achieved under the baseline scenario. For example, while poverty falls to 42.2% under the baseline scenario, it reduces further to 40% after implementing the EU FTA.[13] Therefore, current concerns over the negative effects of liberalisation may be overstated, and while the decline in poverty may appear relatively small, it does imply that one million people could be lifted out of poverty as a result of the EU FTA. Furthermore, while percentage declines in poverty favour male-headed and Asian and Coloured households, a majority of the

[13] This is 2.2% of the total population of 46.1 million people in 2010.

people lifted over the poverty line would still be Africans and those people living in female-headed households.[14]

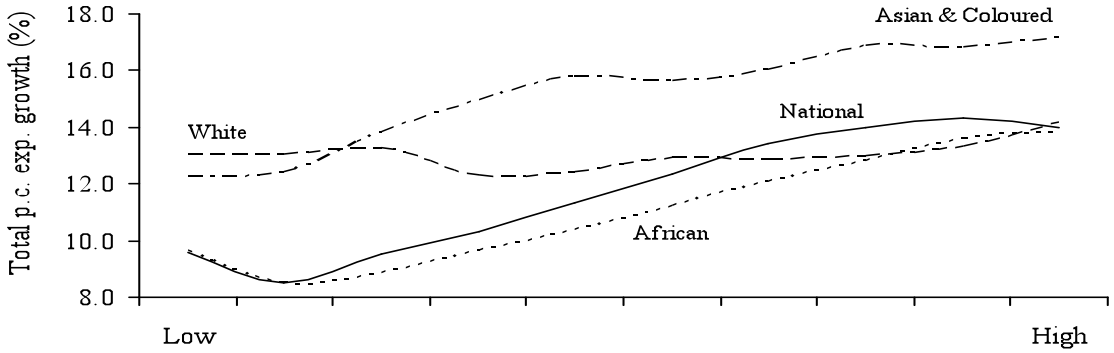
While there is a decline in poverty, there is also a worsening of inequality as a result of these two trade agreements. This can be seen in the growth incidence curves (GIC) for the combined EU/USA FTA (cf. Figure 3). A GIC shows the additional per capita expenditure growth for each percentile of the population ranked according to their initial level of per capita expenditure.[15] The upward-sloping national GIC for the EU/USA FTA indicates that, while expenditure growth among the poorer population does rise (i.e. the GIC is positive), they do not benefit as much as higher income households. This is because trade-induced growth following trade agreements with developed countries favours higher skilled workers. Since most white households contain skilled and semi-skilled workers, this population's GIC is relatively flat. By contrast, higher skilled workers are more likely to fall into higher income non-White households. This is especially true for African households, who experience the smallest increases in expenditures and the largest increases in within-group inequality. By contrast, the strong performance of vehicles and textiles sectors means that Asian and Coloured households benefit more than other population groups, although it is higher income households within this group that benefit the most. Finally, the GIC for male-headed households is considerably higher than for female-headed households (see Figure 4). This is because worker dependency ratios are typically higher for female-headed households (Casale et al., 2004), implying that higher employment growth does not necessarily have as a large an impact on household income as it does for male-headed households. However, dependency ratios are similar at higher income levels where the GIC curves for male and female-headed household converge.

[14] The latter arises because these groups have higher initial poverty rates and comprise a majority of the poor.

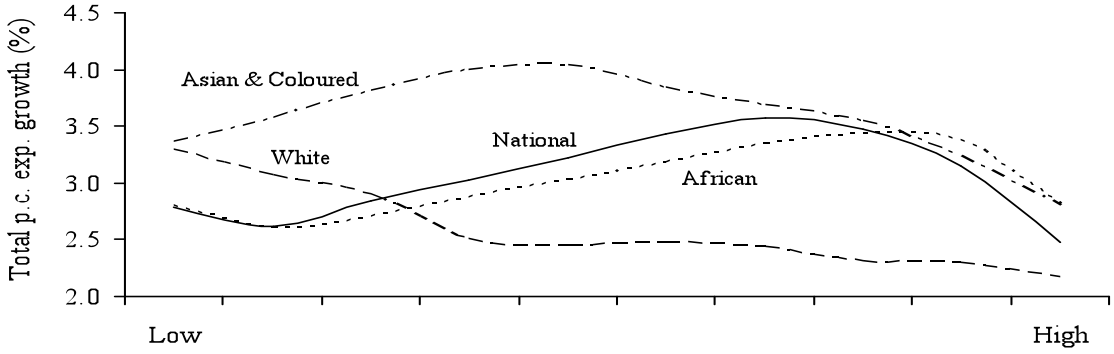
[15] Note that populations are ranked within the reporting group rather than by nationality. Therefore, for example, Africans falling into the high expenditure group among only Africans do not necessarily fall in the expenditure group when the total population is considered.

Figure 3: Growth Incidence Curves by population group for selected model scenarios

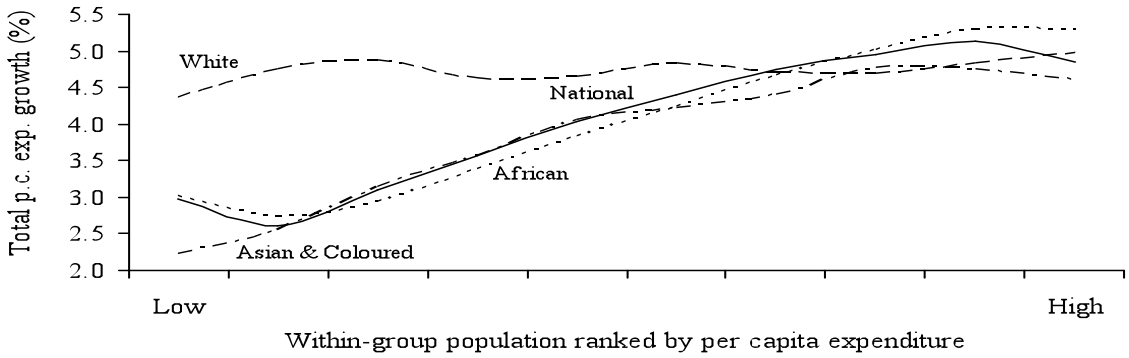
Combined impact of an EU and USA FTA



Combined impact of an SADC and Mercosur FTA



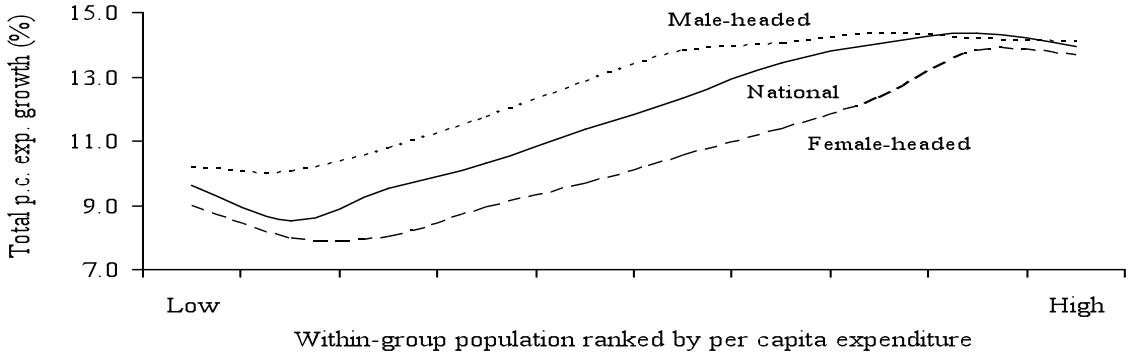
Combined impact of an India and China FTA



Note: GICs show the additional per capita expenditure growth for each percentile of the population ranked according to their initial level of per capita expenditure

Source: South African CGE-microsimulation model

Figure 4: Growth Incidence Curves by gender for the combined EU/USA FTA scenario



Note: GICs show the additional per capita expenditure growth for each percentile of the population ranked according to their initial level of per capita expenditure

Source: South African CGE-microsimulation model

In summary, trade agreements with the EU and USA lead to higher levels of economic growth and falling poverty, but exacerbate inequality. The acceleration of growth is more pronounced under the EU FTA since it is already South Africa's most important trading partner. The EU FTA does undermine manufacturing employment but, like the USA FTA, creates new employment opportunities in other areas of the economy. This suggests that there are substantial short-term adjustment costs as workers may lose current jobs and are forced to migrate to new areas of the economy. Since both agreements favour skilled and semi-skilled workers, it is likely that households comprising unskilled workers will bear the majority of these costs.

4.3 Trade agreements with developing countries

The impact of implementing FTAs with developing countries depends critically on the trading partner. Similar to the two agreements described above, the initial effect of the FTAs is to lower import prices and raise import demand, while also increasing export opportunities and productivity for domestic producers (see Table 1). However, the combined effect of these changes varies across countries and determines whether there is an appreciation or a depreciation of the real exchange rate. The SADC and China FTAs produce similar effects as the EU and USA FTAs. In these scenarios, initially high tariffs on South African exports means that additional export growth after implementing the FTA exceeds that that of imports and there is a real appreciation to maintain the current account balance. Conversely, Mercosur and India have lower tariffs on South Africa exports than vice versa. Therefore, export opportunities for domestic producers are outweighed by increased import competition. Faster import growth in these two scenarios cause a depreciation of the exchange rate relative to the Baseline scenario. In all of the scenarios there is an increase in investment growth driven by the availability of cheaper imported goods. This is further compounded by the real appreciation under the SADC and China FTAs. The growth-effect of the FTAs varies widely, due to differences in their importance for South African trade and the initial levels of protection. For example, SADC is a relatively small trading partner for South Africa and bilateral tariffs are

already low (see Tables A1 and A2 in the appendix). Therefore, a free trade agreement with the SADC member states has little effect on South Africa. China, on the other hand, is an important source of imports in spite of initially high tariffs. Therefore, a FTA with China has a much larger effect on overall GDP growth. Overall, each of the FTAs accelerate economic growth, regardless of whether it is export or investment-led.

The sectoral impacts of the FTAs also vary across countries. Unlike the developed countries scenarios, all trade agreements with developing countries generate higher growth in the agricultural and food processing sectors. This is especially true for the agreements with SADC and Mercosur, who are currently more heavily protected from these South African exports. The textiles and clothing sector also benefits from improved access to foreign markets. However, growth in this sector is particularly strong under the SADC and China FTA, where changes in production technology as a result of foreign competition generate efficiency gains. Finally, the vehicles sector also benefits from the various FTAs, although this growth is more pronounced under an agreement with China. By contrast, a number of sectors do not perform as well due increased competition and detrimental movements in the real exchange rate. In the SADC and Mercosur scenarios these include wood and paper, metal products and machinery.

Faster economic growth generates greater demand for labour, despite the overall capital-intensification of the economy as a result of higher investment growth. However, not all workers and households benefit equally under the different trade agreements. Unlike with the developed country scenarios, the benefits from FTAs with developing countries benefits lower-skilled labour (see Table 2). For instance, unskilled and African labour benefits from the expansion of agriculture and food processing, especially in the SADC and Mercosur scenarios. Faster textiles growth favours semi-skilled and Asian and Coloured workers, although it is the China FTA that generates most growth in this sector. Skilled and White workers benefit from growth in the vehicles sector, but this is offset by the weaker performance of the machinery and chemicals sectors. Despite increases in overall employment, all scenarios except for SADC lead to large declines in manufacturing employment as firms respond to foreign competition by shedding labour. These displaced workers are assumed to migrate to other sectors. Again, it is private services that generate most of the new jobs, but these are likely to be in the more informal trade and construction sectors. Therefore, while the model does not explicitly capture adjustment costs, the results do suggest that there would be a significant 'churning' of the labour market as a result of South Africa's bilateral agreements.

Changes in the labour market influence the level of household incomes and poverty. All FTA scenarios lead to increases in growth and declines in poverty (see Table 3). However, no developing country scenario produces as large declines in poverty as the EU FTA. For instance, the incidence of poverty under the China FTA falls from 42.2% under the Baseline scenario to 41.3%. However, despite its small impact on the poverty rate, an additional 435,000 people are lifted out of poverty as a result of this trade agreement. Even under the SADC agreement there are 115,000 fewer people below the poverty line. Therefore, poverty declines even under agreements with trading partners at similar stages of development and who are more likely to be in direct competition with domestic producers.

Not all people benefit equally from these bilateral trade agreements. The China and India FTAs unambiguously worsen inequality, as seen in their upward-sloping national growth incidence curves (see Figure 3). This is similar to the results from the combined EU/USA scenario. However, strong growth in the textiles sectors is offset by increased foreign competition in the India/China scenario, so that textiles employment declines and hurts middle-income Asian and Coloured workers. Unlike the EU/USA scenario, the GIC for the Asian and Coloured population is similar to that of Africans, who only benefit from slight improvements in agriculture and food processing. By contrast, the strong performance of the vehicles and machinery sectors favour higher-income households, especially amongst the White population. This explains the higher curve for the White population and the continued rise in the national GIC at the top end of the distribution.

The effect of the Mercosur and SADC agreements on national inequality differs from previous scenarios. The White population experiences the smallest increases in expenditure, since these households are least likely to benefit from stronger agricultural and textiles growth. Furthermore, middle-income Asian and Coloured households benefit from expanding semi-skilled employment in the textiles sector, which explains the high expenditure growth in the middle of this group's distribution. However, unlike under other scenarios, the vehicles and machinery sectors do not experience more rapid growth. This implies that expenditures amongst higher-income White, Asian and Coloured households do not grow as rapidly, and inequality amongst these population groups declines. This also accounts for the decline in the GIC at the top end of the distribution. Finally, African households benefit from both unskilled agriculture and semi-skilled textiles growth. Since the skill endowment of African households is initially low, this accounts for the concentration of expenditure growth amongst higher income African population and the rise in inequality amongst Africans.

In summary, FTAs with developing countries accelerate economic growth, albeit to a lesser extent than trade agreements with developed countries. Slower economic growth also dampens the positive effects of reforms on household incomes and poverty, although there are still substantial reductions in the number of poor people. Developing country agreements have less detrimental effects on inequality. This is because they create greater export opportunities for less skill-intensive sectors. However, despite poverty reductions and a more even distribution of benefits, there still remain considerable adjustment costs from trade liberalisation. Much of these costs arise through a probable (but not modelled) expansion of the informal sector as domestic producers shed labour in the face of foreign competition.

5. Conclusions

Despite the optimism of liberalisation's proponents and the scepticism of its opponents, the impact of future bilateral trade agreements on the South African economy is likely to be small but positive. This is particularly true since the actual phase-down and coverage of trade barriers between South Africa and the relevant existing and potential Free Trade partners discussed above is probably more modest than what is or will be taking place in reality. The acceleration and structure of economic growth resulting from trade reforms depends on the trading partner. In this regard, most of the growth-effects from bilateral agreements are achieved under the existing agreement with the EU or through an agreement with China. Although faster trade-induced growth does not lead to large declines in the incidence of poverty, it does have large effects on the number of poor people. Even under the SADC FTA, which has little effect on growth, there are 150,000 fewer poor people living in South Africa as a result of the agreement. This impact is larger under the EU FTA, where one million people are prevented from falling below the poverty line. However, rising growth and falling poverty hide the worsening of inequality under most of the trade agreements. This is especially true for trade agreements with developed countries. In such case, there is a rapid rise in inequality both across the entire population and between different population groups. For instance, the benefits of trade agreements with developed countries favour higher-skilled workers and higher-income households. By contrast, trade agreements with developing countries like Mercosur and SADC create greater opportunities for lower-skilled workers and middle income households. Furthermore, the short-term adjustment costs of reforms will disproportionately fall on lower-skilled workers, especially Africans and women. There is also an associated (but not modelled) expansion of the informal sector, which may lower working conditions and wages for those workers losing their jobs in the manufacturing sector.

The findings indicate that, while bilateral agreements favour growth and employment, not all households benefit equally, and it is the poor who are most vulnerable to structural change. Therefore, the benefits to the poor of higher trade-induced growth and employment should not be overstated. Rather the South African government should examine opportunities to accommodate those sections of the population that are adversely affected. In most cases this includes lower-skilled workers, for whom it is particularly difficult to find new jobs as the economy becomes increasingly capital and skill-intensive. Therefore, the country's development strategy should address the adjustment costs associated with trade reforms by increasing its emphasis on social protection and job retraining. The government should also engage more heavily in targeted pro-poor strategies, such as public works programs and social assistance. Although compensating the losers from trade reforms is unlikely to be a long-term solution, it may be necessary to minimise the adjustment costs and inequality associated with bilateral trade agreements.

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Appendix

Table A1: South African imports and exports by origin or destination: 2003

	Trade share (%)	EU	USA	SADC	Mercosur	India	China	Rest of world	All countries
		Share of South Africa's merchandise imports from different partner/region (%)							
All merchandise imports	100.0	39.8	10.1	2.4	3.0	1.3	7.5	36.0	100.0
Agriculture	2.1	13.9	10.9	21.7	10.6	2.7	11.1	29.2	100.0
Mining	13.0	11.2	0.5	3.6	0.1	0.1	0.4	84.3	100.0
Manufacturing	84.9	44.8	11.5	1.7	3.2	1.5	8.6	28.7	100.0
Food & beverages	4.1	25.1	5.4	3.3	23.0	4.6	2.4	36.3	100.0
Textiles & clothing	4.3	18.7	2.7	5.0	1.8	7.4	42.6	21.7	100.0
Wood & paper	2.5	49.1	16.5	2.8	3.9	0.5	2.2	25.1	100.0
Chemicals & petroleum	16.9	45.7	15.1	0.8	1.4	1.5	7.7	27.8	100.0
Metals products	4.5	35.9	5.5	3.9	3.1	3.2	8.6	39.8	100.0
Machinery & equipment	27.3	46.0	11.9	1.0	1.1	0.5	8.6	30.8	100.0
Vehicles & equipment	19.7	57.6	11.8	0.5	4.0	0.3	0.5	25.3	100.0
Other manufacturing	5.5	30.4	11.1	6.3	2.6	2.7	20.8	26.2	100.0
		Share of South Africa's merchandise exports to different partner/region (%)							
All merchandise exports	100.0	34.4	8.8	8.7	0.7	1.2	3.2	43.0	100.0
Agriculture	4.5	52.8	3.7	15.6	0.3	0.4	0.9	26.2	100.0
Mining	34.8	39.6	3.4	0.9	0.4	0.4	4.2	51.1	100.0
Manufacturing	60.7	30.0	12.3	12.7	0.9	1.6	2.8	39.6	100.0
Food & beverages	3.3	39.7	5.1	22.4	0.2	-	0.3	32.2	100.0
Textiles & clothing	2.0	34.5	26.2	10.9	0.3	0.4	1.5	26.2	100.0
Wood & paper	3.2	26.7	5.7	11.3	1.0	3.0	3.5	48.8	100.0
Chemicals & petroleum	10.1	21.7	14.3	21.9	2.7	5.3	2.8	31.4	100.0
Metals products	18.3	23.7	8.0	8.3	0.8	0.9	5.3	53.0	100.0
Machinery & equipment	6.4	48.3	8.3	19.8	0.3	1.3	1.3	20.8	100.0
Vehicles & equipment	12.7	28.4	20.1	8.0	0.5	0.7	0.9	41.4	100.0
Other manufacturing	4.6	45.1	12.5	8.0	0.3	0.7	2.3	31.1	100.0

Note: EU is European Union (15 countries); SADC is Southern African Development Community; USA is United States of America; Mercosur includes Argentina, Brazil, Paraguay and Uruguay; Other are all countries not otherwise specified; and World includes all countries.

Source: South African CGE-Microsimulation Model and World Trade Analyzer

Table A2. Tariff rates facing South African imports and exports by trading partner or region: 2003

	EU	USA	SADC	Mercosur	India	China	Rest of world	All countries
	Trade-weighted tariff collection rates on imports into South Africa (%)							
All merchandise imports	2.7	2.0	3.8	9.4	9.0	10.4	1.9	3.0
Agriculture	4.3	7.2	5.2	9.1	4.7	8.2	3.3	5.5
Mining	-	-	-	-	0.1	0.4	-	-
Manufacturing	2.8	1.9	4.5	9.5	9.3	10.5	4.1	4.1
Food & beverages	15.9	10.3	18.7	19.3	1.0	10.4	9.8	13.4
Textiles & clothing	17.8	21.6	14.8	18.2	25.4	26.5	22.3	23.0
Wood & paper	4.7	2.9	0.2	7.9	9.3	15.8	9.8	5.9
Chemicals & petroleum	2.7	2.0	1.2	4.4	3.2	2.3	3.7	2.9
Metals products	5.0	3.2	0.5	2.3	7.9	8.0	3.1	4.2
Machinery & equipment	1.3	1.0	0.9	4.7	3.4	4.5	2.2	1.9
Vehicles & equipment	1.3	0.7	0.5	1.5	1.1	2.2	1.6	1.3
Other manufacturing	6.7	2.8	0.9	12.6	5.3	7.8	6.9	6.3
	Trade-weighted tariff collection rates on South African exports to foreign partner/region (%)							
All merchandise exports	2.9	4.9	2.2	2.8	1.7	1.9	1.8	2.4
Agriculture	3.2	5.3	3.9	6.8	3.5	6.1	2.5	3.3
Mining	-	-	-	-	0.1	1.5	-	0.1
Manufacturing	5.0	5.6	2.2	3.3	1.9	2.1	4.5	4.4
Food & beverages	4.9	3.8	8.5	11.0	0.9	7.3	4.3	5.5
Textiles & clothing	8.1	14.0	6.0	7.4	8.6	10.8	9.2	9.8
Wood & paper	2.7	1.6	-	2.3	4.7	6.7	3.4	2.9
Chemicals & petroleum	2.0	1.1	1.0	1.8	0.6	1.1	1.7	1.5
Metals products	2.0	1.1	0.4	1.4	2.5	0.9	1.4	1.4
Machinery & equipment	0.5	0.3	0.4	1.2	1.1	1.2	1.1	0.6
Vehicles & equipment	14.1	11.6	5.4	13.4	5.6	6.9	13.2	12.4
Other manufacturing	5.3	1.5	1.0	5.2	2.1	3.2	3.2	3.7

Note: EU is European Union (15 countries); SADC is Southern African Development Community; USA is United States of America; Mercosur includes Argentina, Brazil, Paraguay and Uruguay; Other are all countries not otherwise specified; and World includes all countries.

Source: South African CGE-microsimulation model, DTI (tariff phase-down schedules for EU and SADC FTAs and ITC MacMap for tariff schedules of other trade partners

Table A3. Sectoral employment shares across aggregate factor groups: 2003

	Skilled	Semi-skilled	Unskilled	African	White	Asian & Coloured	Male	Female	All workers
Total	19.9	39.6	40.5	70.5	15.5	14.0	53.3	46.7	100.0
Agriculture	1.3	6.0	92.7	81.5	4.4	14.1	49.5	50.5	100.0
Mining	11.9	69.6	18.5	77.2	20.9	1.8	97.4	2.6	100.0
Manufacturing	20.4	51.7	27.9	60.5	17.2	22.3	66.0	34.0	100.0
Food & beverages	16.8	40.3	42.9	65.2	13.7	21.2	60.6	39.4	100.0
Textiles & clothing	13.9	67.3	18.8	58.8	8.3	32.9	28.0	72.0	100.0
Wood & paper	15.5	59.5	25.1	59.0	12.4	28.7	68.8	31.2	100.0
Chemicals & petroleum	37.6	27.9	34.5	54.7	25.2	20.2	58.6	41.4	100.0
Metals products	13.6	71.8	14.6	64.0	22.6	13.4	93.1	6.9	100.0
Machinery & equipment	35.7	44.7	19.6	53.1	30.9	16.0	76.4	23.6	100.0
Vehicles & equipment	31.0	51.1	17.9	51.4	28.1	20.5	84.8	15.3	100.0
Other manufacturing	11.3	52.4	36.3	69.3	7.7	23.0	66.6	33.4	100.0
Other industry	7.4	73.0	19.6	76.4	9.3	14.3	95.5	4.5	100.0
Private services	16.3	38.6	45.2	71.1	15.8	13.2	43.3	56.7	100.0
Public services	55.7	33.1	11.2	66.8	21.5	11.7	49.8	50.2	100.0

Note: Skill groups are based on occupational categories (skilled include professional and managerial, semi-skilled include clerical and technical; and unskilled include elementary and subsistence agriculture).

Source: South African CGE-mcrosimulation model