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## Trade Liberalisation and Pro-Poor Growth in South Africa

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# Trade Liberalization and Pro-Poor Growth in South Africa

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## Abstract

Trade liberalization has been at the center of South Africa's post-Apartheid development strategy. However, despite considerable reforms, the country has failed to generate pro-poor growth, with both unemployment and inequality worsening over the last ten years. This raises concern that trade liberalization may have worked against the country's development objectives. This study uses a dynamic general equilibrium and microsimulation model to assess the effects of trade liberalization on growth, employment and poverty. The results suggest that trade policies have not contributed to increased poverty and that trade-induced technological change has accelerated growth. However, liberalization has changed the structure of production and exacerbated income inequality. While all population groups have benefited from trade-induced growth, it is higher-income and African and White households who have benefited more than lower-income and Asian and Colored households. Furthermore, households in the coastal provinces have borne most of the structural adjustment costs. Trade reforms also contributed to the rising capital and skill-intensity of production. Accordingly, the decline in poverty has been small and it is higher-income households that will benefit more from further liberalization. Therefore, while there may not be a trade-off between trade reform and poverty reduction, the country should not overemphasize the role of further liberalization in generating pro-poor growth or address the prevailing inequalities.

## 1. Introduction

The 1990s marked a turning point for South Africa. The country emerged from Apartheid and reentered the global economy after more than a decade of isolation. However, the new democratic government inherited the challenges of slow growth and severe poverty and inequality, thus demanding a shift in the country's development path. In 1995 the government unveiled its 'Growth, Employment and Redistribution' (GEAR) strategy (Republic of South Africa, 1995). The objective of this broad package of policies was to establish a "fast-growing economy that creates employment and encourages a redistribution of incomes in favor of the poor". To achieve the necessary growth, GEAR called for a "transformation towards a competitive outward-oriented economy". Accordingly, trade liberalization has been one of the central policies of South Africa's development strategy over the last ten years.

Trade liberalization since 1994 has been pronounced, reflecting the government's strong commitment to outward-oriented industrialization. However, the country has so far failed to generate pro-poor growth (Hoogeveen and Ozler, 2005). Despite some success in job creation during the 1990s, both unemployment and poverty worsened due to rapid increases in the

workforce and falling real wages (Casale *et al.*, 2004).<sup>1</sup> Furthermore, despite some evidence of an emerging African ‘middle-class’, the overall gap between African and White households has widened (Hoogeveen and Ozler, 2005). This coexistence of substantial trade liberalization and rising poverty and inequality raises concern that trade policies may have worked against the country’s development objectives and questions the need for further liberalization. Accordingly, this study assesses the impact of recent trade liberalization on the distribution of incomes and poverty in South Africa.

Section 2 provides an overview of South Africa’s trade policies over the last ten years. Section 3 considers how growth, employment and wages have changed during the 1990s, and reviews the existing empirical evidence on liberalization’s impact on each of these aspects. Although a number of studies have examined specific aspects of the recent liberalization episode, few studies have attempted to reconcile the evidence to provide a comprehensive assessment of its impact on poverty. Section 4 describes the dynamic general equilibrium and microsimulation model that is used in this study to jointly assess the impact of trade liberalization on growth, employment and poverty. Section 5 presents the results from the model simulations. Three scenarios are considered: the static effects of reducing tariffs; the dynamics gains from liberalization; and the likely impact of further trade reforms. The final section summarizes the findings and reconsiders the trade-off between liberalization and pro-poor growth.

## 2. Trade Reform in South Africa

South Africa’s trade regime has shifted over the last three decades. Prior to 1970 a policy of import-substitution industrialization was adopted. Since then trade policy has focused on achieving greater openness, first through the stimulation of exports during the 1970s and 1980s, and then later through a more concerted attempt at trade liberalization. However, despite these previous attempts at trade reform, South Africa entered the 1990s with high and variable tariffs and a complex system of quantitative restrictions. Although the 1990s was a period of unprecedented trade liberalization, the earliest years of the decade saw an increase in protection and considerable variation across commodities (cf. Figure 1). Unlike most developing countries, South Africa imposed high tariffs on consumer products and lower tariffs on imported machinery and capital goods. This uneven structure of protection contributed to the country’s long-standing dependence on exports as a means of financing imported investment goods. The resulting current account constraint was exacerbated by the introduction of sanctions during the 1980s. The previous government responded by introducing *ad hoc* import surcharges and actively promoting exports.

Trade liberalization did not start in earnest until the new government came into power. Import surcharges were removed on capital goods in 1994 and consumer goods in 1995 (Tsikata, 1999). The pace of liberalization culminated in the 1995 Uruguay Round and an offer to the World Trade Organization consisting of a five-year tariff reduction and rationalization program (Cassim *et al.*, 2004). The government’s commitment to trade reforms was reflected in its proposal to halve average tariffs in manufacturing. However, with the exception of consumables, initial tariff rates were already below the offered rates and special dispensation was granted to the ‘sensitive’ textiles and vehicles sectors. The proposed rationalization program involved

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<sup>1</sup> Some interpretations of recent evidence find that poverty may have fallen since 2000 (van der Berg *et al.*, 2005).

removing quantitative restrictions, phasing-out export incentives, and reducing the number of tariff lines and applied tariff rates.

The reduction in tariffs during the 1990s was pronounced. The largest absolute declines were on consumables. Quantitative restrictions were replaced with their tariff equivalents, although in the case of agriculture this led to an increase in protection. The export incentive scheme was abolished by 1997 and the number of tariff lines had declined by 40 percent by 1999 (Lewis, 2001). Average tariff rates have halved and the country has moved towards its proposed rationalization targets. However, the pace of reforms has slowed considerably. In 1999 there were still 47 different applied tariff rates, with a highest rate of 55 percent (Lewis, 2001). This falls far short of the proposed six tariff bands. The removal of export incentives meant that trade reforms had a negative effect on the anti-export bias (Tsikata, 1999). Furthermore, the continued favoring of consumables meant that effective protection may have increased.<sup>2</sup> (Fedderke and Vase, 2001). Therefore, the system of protection still remains complex despite the recent liberalization episode. Accordingly, future reforms are likely to focus on further tariff rationalization and the strengthening of regional trading agreements (Cassim *et al.*, 2004; Thurlow, 2006b).

### **3. Trade, Growth and Employment**

#### *Trade and Economic Growth*

The South African economy performed poorly during the years leading up to the recent liberalization episode. Gross domestic product (GDP) grew at just over one percent per year during 1985-1993 (cf. Table 1). Investment fell during this period due to political instability and declining foreign capital inflows. However, the depletion of inventories allowed the capital stock to accumulate and contribute positively to overall growth. By contrast, labor employment and total factor productivity (TFP) were relatively stagnant. Agriculture, mining and manufacturing either grew slowly or contracted in spite of subsidized exports. The growth that did exist was primarily driven by public services and government expenditures.

The country's performance changed dramatically during the trade liberalization period. Most notable was the acceleration of economic growth driven by rising factor productivity. A number of studies find that this increased productivity was partly a result of trade liberalization (Arora and Bhundia, 2003; Fedderke, 2003). Jonsson and Subramanian (2001) econometrically examine the relationship between nominal tariff reductions and average TFP growth during the 1990s. They find a strong and robust relationship in which a one percentage point decline in tariff rates raised the TFP growth rate by 0.74 percentage points. Harding and Rattso (2005) update the study and find its conclusions robust. Trade liberalization therefore appears to have contributed positively to the accelerated growth of the 1990s.

Both imports and exports increased rapidly during the liberalization period. The empirical evidence suggests that higher export growth was due to changes in trade policies (Fedderke and Vaze, 2001; Edwards and Golub, 2002; Edwards, 2003). However, the depreciation of the real exchange rate during this time may have also been an important factor in determining export competitiveness (Edwards and Golub, 2002). Furthermore, the removal of trade sanctions at the end of Apartheid may have accounted for some of the sudden increase in trade experienced

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<sup>2</sup> See Fedderke and Vase (2004), Holden (2005), Rangasamy and Harmse (2004), and Edwards (2005).

during the mid-1990s (Tsikata, 1999; Edwards and Golub, 2002), although the evidence remains ambiguous (Golub and Ceglowski, 2002). Some studies find a positive relationship between exports and productivity growth (Belli *et al.*, 1993; Jonsson and Subramanian 2001), possibly because increased import competition and imported capital goods have resulted in productivity-enhancing technological change (Black, 1996; Edwards, 2003). Therefore, one of the mechanisms through which liberalization appears to have influenced economic growth is through its stimulation of exports, import competition, and improved access to foreign technology.

Finally, investment grew strongly during the liberalization period. This is likely due to a resurgence of foreign investment after the reestablishment of political and economic stability. However, Jonsson and Subramanian (2001) find that trade liberalization may have contributed positively to faster capital accumulation due to cheaper imports. Despite higher investment growth, the increase in capital accumulation was smaller than the increase in either labor employment or productivity. This is reflected in the sectoral structure of growth. Although the more capital-intensive mining and manufacturing sectors grew faster during the 1990s, it was the more labor-intensive service sectors that were the primary sources of overall economic growth.

The 1990s therefore represents at least a structural break if not a positive turning-point for economic growth in South Africa. The stagnation of the 1980s was reversed, with renewed growth driven by productivity gains from the augmentation of technology and greater efficiency (Fedderke, 2001). Trade performance improved and foreign markets became increasingly important. Of particular relevance to this study is the considerable empirical evidence suggesting that trade liberalization enhanced productivity and economic growth. However, this positive growth-effect is insufficient to conclude that liberalization has had a positive effect on employment and wages and household incomes.

### *Trade, Employment and Wages*

Unemployment increased during the 1990s, despite the country's stronger economic performance. Under the broad definition, which includes the non-searching unemployed, the national unemployment rate increased from 29.4 to 42.9 percent during 1995-2003 (Casale *et al.*, 2004). Rising unemployment affected all population groups and was caused by labor force participation rising considerably faster than job creation. Poverty also worsened during 1995-2000, especially amongst the country's poorest population (Hoogeveen and Ozler, 2005). This rising unemployment and poverty raises concern over the possible effects of foreign competition and structural adjustment on labor employment and wages.

Employment increased by more than ten percent during 1995-2003 (cf. Table 4 in Section 5). However, while rising employment coincides with trade reforms, most studies find a negative relationship between recent liberalization and net aggregate employment. For example, Bell and Cattaneo (1997) and Edwards (1999) use a factor content approach and find that import penetration has reduced employment. However, these studies also find that this effect has been small. This is supported by Edwards (2001), who finds that employment losses from import penetration were matched by gains from export growth, and by Jonsson and Subramanian (2001) who find an insignificant relationship between changing tariffs and sectoral employment. Furthermore, Edwards (2003) uses firm-level data and finds that large firms affected by trade liberalization tended to reduce employment, but that there is no evidence of this amongst smaller firms. Therefore, the empirical evidence suggests that liberalization has had little or no effect on

net aggregate employment, and hence did not contribute to the observed increase in employment during the 1990s.

Economic growth has affected population and skill-groups differently. While wages and employment amongst skilled-workers rose during 1995-2003, unskilled workers experienced slower employment growth and declining wages (Edwards and Abdi, 2003).<sup>3</sup> A number of studies have focused on the factor-bias of trade-induced changes in net employment. Borat (1999) finds that increased trade during the 1990s only benefited skilled labor, with lower-skilled employment declining. Edwards (2002) decomposes the structure of production and trade and finds that, although small, the effect of increased trade was to raise the skill-intensity of production. Edwards (2003) uses firm-level data and concludes that trade-induced technological change explains some of the shift towards skill-intensive production and falling unskilled labor employment. These studies suggest that focusing on the effect of liberalization on *aggregate* employment hides the differential effect of trade on employment and wages across workers.

Trade liberalization's bias towards higher-skilled labor may be due to the rising capital-intensity of production that took place during the 1990s. Jonsson and Subramanian (2001) find a positive relationship between tariff-reductions and sectoral capital growth. Since no structural relationship is specified, the authors tentatively conclude that sectors experiencing reduced import protection might have used *existing* capital more efficiently. By contrast, Edwards (2003) uses firm-level data and finds that firms affected by trade liberalization invested more heavily in capital equipment. This corroborates observed labor trends, since increased investment has been found to be associated with a rising skill intensity of employment (Fedderke *et al.*, 2003).

The above studies have focused on the effects of liberalization on *net* employment and do not examine the adjustment costs associated with trade reforms. Therefore, while the empirical evidence finds that liberalization has had little effect on the level of employment, it does not suggest that there has not been any 'churning' of the labor market resulting from changes in the structure of production. Furthermore, while the evidence suggests that higher-skilled workers have benefited more than lower-skilled workers, the extremely high level of unemployment in South Africa makes it difficult to infer the effects of trade on the distribution of household incomes and poverty.

In summary, the empirical evidence suggests that trade reforms over the last decade have been significant and have contributed positively to economic growth. However, import competition and technological change may have undermined employment, especially amongst lower-skilled workers. Poverty and inequality have also risen dramatically. This study extends the existing literature by not only examining liberalization's effect on growth, employment and wages, but also on poverty and inequality. More specifically, it considers whether liberalization has contributed to rising unemployment, poverty and inequality experienced during the 1990s. Since trade reforms are a key component of South Africa's pro-poor growth strategy, this study also considers the implications of completing the tariff rationalization program proposed by the government at the start of the recent liberalization episode. However, to jointly determine the effects of trade reform on growth and poverty, it is necessary to employ an analytical method that can link macroeconomic policies to their microeconomic impacts, and which captures distributional changes across households.

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<sup>3</sup> Edwards and Abdi (2003) find that relative wages for skilled and unskilled workers converged over the last ten years. However, the data used in this study considers only formal sector employment (Casale *et al.*, 2005) and so does not capture the divergence of wages that actually took place during 1995-2003 (cf. Table 4 in Section 5).

#### 4. Model Specification and Calibration

There are many studies reviewing the vast international literature on the relationship between trade and poverty (see Winters *et al.*, 2004). McCulloch *et al.* (2002) identify four transmission mechanisms: (i) the effects of reforms on trade, productivity and growth; (ii) the impact of growth on employment, wages and household incomes; (iii) the effects of falling import tariffs on relative prices and household expenditures; and (iv) the effects of lower tariff revenues on government transfers. Each of these interrelated mechanisms depends on the institutional and structural characteristics of households and markets within a specific country. This section describes the dynamic computable general equilibrium (CGE) model used to capture these various transmission mechanisms (Lofgren *et al.*, 2001; Thurlow, 2005). The model is calibrated to a highly-disaggregated social accounting matrix (SAM), which is an economy-wide database describing the detailed structure of the South African economy (Thurlow, 2006a). The CGE model is also linked to a microsimulation module, which allows it to retain the full detail of the household survey when estimating changes in poverty and inequality.

Drawing on the SAM, the CGE model identifies 39 sectors/commodities. Three geographic regions are also separately identified, thus implying that there are a total of 117 productive activities or representative producers in the model. The three regions include (i) the main coastal provinces (Western Cape, Eastern Cape, and KwaZulu-Natal); (ii) the inland core industrial provinces (Gauteng and Mpumalanga); and (iii) the remaining inland provinces (Northern Cape, Free State, North West, and Limpopo). While production activities are defined at the regional level, an integrated national market for commodities is assumed (i.e., the model does not capture interregional trade). Imperfect factor markets are assumed for the 18 different types of labor identified in each of the three regions. Labor 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. Skilled and white labor have upward sloping labor supply curves reflecting their low unemployment rates (Casale *et al.*, 2005). Semi-skilled and unskilled, non-white labor are unemployed with real wages fixed relative to those of skilled workers. Labor markets are defined at the regional level (i.e., labor is mobile across sectors *within* regions but not *between* regions). By contrast, capital is nationally mobile. The 117 representative producers in the model make decisions in order to maximize profits, but are constrained by factor market imperfections when choosing inputs. A nested production system is employed. At the lower levels, a constant elasticity of substitution (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 labor demand, a workers' skill is assumed to have the highest importance, followed by population or racial group, and finally their gender. Profit maximization 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 labor categories, the model captures how the changing structure of growth caused by liberalization influences employment and wages (i.e., the second transmission mechanism described above).

Within each sector, substitution possibilities exist between production for domestic and foreign markets. This decision of producers is governed by a constant elasticity of transformation (CET) function which distinguishes between exported and domestic goods, and by doing so, captures any differences between the two products. Profit maximization drives producers to sell

in those markets where they can achieve the highest returns. These returns are based on domestic and export prices (where the latter is determined by the world price times the exchange rate). Under the small-country assumption, South Africa is assumed to face a perfectly elastic world demand at fixed world prices. The final ratio of exports to domestic goods is determined by the endogenous interaction of relative prices for these two types of commodities. Similar substitution possibilities exist between imported and domestic goods under a CES Armington specification. Such substitution can take place both in final and intermediates usage. The Armington elasticities are econometrically estimated and vary across sectors, 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 world supply at fixed world prices. The final ratio of imports to domestic goods is determined by the cost minimizing decision-making of domestic demanders based on the relative prices of imports and domestic goods (both of which include relevant tariffs and taxes). By capturing relative price movements and substitution-effects, the model allows demand to shift towards cheaper imports following tariff reductions (i.e., the third transmission mechanism).

The model also distinguishes between various 'institutions' within the South African economy, including enterprises, the government, and many representative households. These households are derived from the 1995 Income and Expenditure Survey (IES) and 1995 October Household Survey (OHS) (StatsSA, 1996a and 1996b). Households are disaggregated across the three regions and, within each region, according to rural and urban areas, the population group and gender of the household head, and across national expenditure deciles. In total there are 240 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 to households, enterprises and the rest of the world. The government also purchases commodities in the form of government consumption expenditure, and the remaining income of government is (dis)saved. All savings from households, enterprises, government and the rest of the world (foreign savings) are collected in a savings pool from which 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. Furthermore, by retaining the detailed income and expenditure patterns of households, the model can better capture distributional change.

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 'closure' rules, which provide the mechanism through which macroeconomic balance is achieved. Based on evidence for South Africa, a savings-driven closure is assumed to balance the savings-investment account (Nel, 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, the external balance is held fixed in foreign currency and the government cannot borrow abroad to replace falling tariff revenues. For the



government account, the level of direct and indirect tax rates, as well as real government consumption expenditure, are held constant. As such the balance on the government budget is assumed to adjust to ensure that public expenditures equal receipts. The model assumes that the government does not reduce transfers to households due to falling tariff revenues, but rather borrows domestically through deficit financing (i.e., the fourth transmission mechanism).

In order to account for the dynamic growth-effects of trade liberalization, the model described above is extended to a recursive dynamic specification in which selected parameters are updated based on the modeling of intertemporal behavior 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. For example, population growth is exogenously imposed on the model based on changes from the 1995 IES/OHS and the 2000 IES (StatsSA, 2001). It is assumed that a growing population generates a higher level of consumption demand and therefore raises the supernumerary income level of household consumption within the LES demand system.

Unlike total factor productivity (TFP) growth, which is updated exogenously, the process of capital accumulation is modeled 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 aggregate capital income, the final sectoral allocation of capital in the current period is dependent on the depreciation rate 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 the growth-effects of liberalization 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).

The model is initially calibrated to the information contained in the 1993 SAM (Thurlow, 2006). The dynamic model is then solved for the 1993-2003 period as a series of equilibria each one representing a single year. By imposing observed trends in sectoral GDP growth and other dynamic adjustments from the literature, the model reproduces a counterfactual or base growth path. Trade liberalization is then expressed as a change in tariffs and productivity and the model is re-solved for a new series of equilibria. Differences between the policy-influenced growth path and the counterfactual are interpreted as the economy-wide impact of trade policies.

The poverty and distributional impacts of trade liberalization are modeled inside the same household survey that was used to construct the SAM and CGE model (i.e., the 1995 IES). This microsimulation model fully employs the household survey data. Each representative household in the CGE model is linked to its corresponding household within the microsimulation model. Similar to the use of sample weights in the survey, each representative household in the CGE model is an aggregation of a larger number of households. Since poverty in this study is defined according to per capita expenditure, changes in household expenditure for each of the 39 commodities in the CGE model are passed down to the survey, where the poverty measure is updated and poverty and inequality are recalculated. Therefore, the model captures the four main transmission mechanisms between trade liberalization and poverty and can be used to assess the impact of recent reforms.

## 5. Simulation Results

The CGE-microsimulation model is used to examine the impact of recent liberalization on pro-poor growth, as well as the potential gains from future trade reforms. For the former, the static efficiency gains from tariff reductions are separated from the dynamic gains from trade in order to determine the relative importance of the various transmission mechanisms between trade and poverty. However, a *Baseline* scenario first assesses the effects of the ‘pre-liberalization’ growth path on poverty, thereby providing a counterfactual for the trade policy scenarios.

### *Baseline Scenario*

The *Baseline* scenario is calibrated to replicate the growth path that would have been achieved if South Africa had continued with the same level and structure of growth experienced during the pre-liberalization period (cf. Table 1). The GDP growth rates for each of 39 sectors in the model are calibrated to the observed growth rates for 1985-1993 (SASID, 2006), with both sectoral TFP and factor employment adjusting. The model then solves endogenously for the remaining dimensions of growth. Capital accumulation and labor employment are both endogenous implying that the Solow-decomposition of growth is determined by changes in factor demands both across and within sectors. Similarly, the expenditure composition of growth is endogenous, with the only exception being government consumption whose growth is fixed at the observed 2.6 percent growth rate.

The projected *Baseline* scenario closely matches the pre-liberalization growth path to which it is calibrated. For example, aggregate GDP growth for 1993-2003 averages 1.1 percent per year, which is identical to the growth experienced during 1985-1993 (cf. Tables 1 and 2). The *Baseline* growth path is also similar to observed trends at the disaggregated level. For example, the model reproduces the contraction of investment and the slow private consumption growth experienced during 1985-1992. The model also correctly estimates the productivity growth required to meet the aggregate GDP growth rate. However, it understates capital stock growth and overstates labor employment growth. This is because changes in inventories are exogenous in the model, yet were the main driver of rising capital stocks during the late 1980s (cf. Section 2). Furthermore, the model does not capture the political instability of the 1980s, which may have caused firms to favor capital over labor. However, despite these differences, the *Baseline* scenario closely tracks the pre-liberalization growth path.

### *Recent Trade Liberalization*

Two scenarios are presented in this section that assess the effects of recent trade liberalization on growth and poverty. Although both scenarios simulate the impact of tariff reductions, only the second scenario includes the dynamic trade-induced productivity gains that have been estimated by other studies. The design of the two scenarios is described first before presenting the findings.

Both scenarios incorporate the tariff reductions of the 1990s. These were concentrated in the manufacturing sector, where the largest absolute declines were on consumable products, such as food and textiles (cf. Figure 1 and Table A1 in the appendix). Tariffs also declined for capital and intermediate goods, such as on chemicals, machinery and metal products. It should be noted that there is a difference between the nominal tariff rate as it appears in the tariff schedule, and

the duty that is actually collected by customs officials. For example, the total collection rate in 1993 was less than a third of the nominal rate due to collection inefficiency and tariff exemptions. This was certainly true for the vehicles sector, which has received large duty-drawbacks as part of the government's industrial strategy. Since the SAM captures the *actual* flow of funds between importers and the government, it is collection rates and not nominal rates that appear in the model. The two trade liberalization scenarios therefore simulate the lowering of tariffs by reducing collection rates by the percentage change in the nominal rate. This effectively assumes that collection efficiency is unaffected by liberalization.

The estimated dynamic gains from trade liberalization are drawn from Jonsson and Subramanian (2001). Each percentage point decline in the nominal tariff rate raises a sector's TFP growth rate by 0.74 percent (cf. Section 2). This elasticity gives the *average* relationship between tariffs and TFP growth across all sectors. Therefore, by uniformly applying this elasticity, the model does not capture the unique response of each sector to trade reforms. However, the absolute size of the productivity gains is unique since each sector experiences different tariff changes. As such, the model provides a best estimate of the effects of the dynamic gains from trade for each individual sector.

The results for the *Tariff Reduction* and *Dynamic Gains* scenarios are described sequentially. The initial effect of reducing tariffs is to lower import prices and stimulate import demand (cf. Table 2). However, this places pressure on the current account, which is held fixed in foreign currency. The real exchange rate therefore depreciates to maintain macroeconomic balance.<sup>4</sup> This partially offsets the fall in import prices and raises export competitiveness. The overall effect of reducing tariffs is therefore an acceleration in *both* import and export growth. Falling import prices also benefits import-intensive investment, which in turn accelerates capital accumulation. Again this is partially offset by falling tariff revenues and increases in the government deficit. The net effect is positive, implying that falling tariffs during the 1990s contributed to capital accumulation.

TFP growth increases under the *Tariff Reduction* scenario because production shifts towards more efficient sectors. However, it is when the dynamic gains from trade liberalization are included that productivity growth is significantly enhanced. Faster economic growth under the *Dynamic Gains* scenario raises household incomes and hence government revenues and private savings. The resulting increase in loanable funds strengthens investment and fosters higher production and exports. However, export growth exceeds import growth in the *Dynamic Gains* scenario causing the real exchange rate to appreciate rather than depreciate. The results for this scenario indicate that trade liberalization contributed to the macroeconomic changes observed during the 1990s, such as the acceleration of trade, investment and growth. Furthermore, the larger increase in the capital stock relative to labor employment implies that liberalization raised the capital-intensity of production.

Trade reforms also contributed to the changes in sectoral production taking place during 1993-2003 (cf. Table 3). For example, the consumables sectors were hurt by falling tariffs and increased import competition, yet benefited from faster productivity growth. This is certainly the case for the textiles and clothing sectors, which suffer under the *Tariff Reduction* scenario, but whose growth rate rises rapidly under the *Dynamic Gains* scenario. The net effect is a slower decline in the textile sector, which is similar to what was actually observed during the 1990s. Although the other manufacturing sectors did not benefit as much from trade-induced

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<sup>4</sup> The real exchange rate is measured in the model as the amount of local currency required to purchase a unit of foreign currency. Therefore, a depreciation is reflected as an increase in the real exchange rate.

productivity, they did benefit from improved export competitiveness and cheaper imports. This led to improvements in their net trading positions. Furthermore, all sectors benefited from increased domestic demand resulting from higher overall economic growth. The model captures these economy-wide linkages between the manufacturing and services sectors. Faster trade-induced growth in manufacturing generates additional demand for private services, which grow rapidly as a result. This predicted acceleration of services under the *Dynamic Gains* scenario mirrors the sector's actual performance during the 1990s. Liberalization therefore explains some of the structural changes that took place in South Africa over the last ten years, especially the expansion of manufacturing and services. However, the initial decline in production due to import competition and the changing composition of growth suggests that there were substantial structural adjustment costs accompanying liberalization.

Trade reforms have also influenced labor markets. At the aggregate level, rising import competition under the *Tariff Reduction* scenario causes a slight decline in employment amongst semi-skilled workers but has little effect on unskilled workers (cf. Table 4). These results match the findings of other studies. However, faster trade-induced growth under the *Dynamic Gains* scenario generates employment for *all* skill-groups, although it is skilled employment that expands fastest. While this rising skill-intensity is confirmed by other studies, this is not the case for unskilled labor, where the literature suggests that liberalization may have caused a *decline* in employment. One explanation for this difference is that the model estimates the 'general equilibrium' effects of liberalization thereby explicitly capturing both its direct *and* indirect effects on employment. Explicitly isolating transmission mechanisms is difficult in ex-post econometric studies, which may incorrectly attribute employment gains to factors that are indirectly related to trade policies, such as higher investment. Furthermore, the model captures the 'economy-wide' effects of trade policies, whereas previous empirical studies have tended to focus on manufacturing and therefore do not capture the effects of liberalization on other sectors, such as private services. Finally, another explanation is that the model does not capture how the technology embodied in imported goods has changed during the 1990s. For example, the nature of imported electrical machinery has changed dramatically over the last ten years with the rise of personal computers. Predicting such innovations is obviously beyond the ability of the model. Therefore, while the model correctly predicts the increase in imports, it underestimates the rising skill-bias caused by these imported capital goods.

Despite differences in methodology, the model produces results that are similar to those of existing evidence. However, the objective of this study is to go beyond the aggregate level of existing studies to estimate the distributional effects of trade liberalization. The decline in the production of textiles and other consumables affects Asian and Colored workers more than other population groups since these workers are heavily dependent on employment in these sectors (cf. Table A2 in the appendix). These consumables sectors also tend to use semi-skilled labor more intensively, thus leading to declines in employment amongst semi-skilled African workers. Finally, textiles and other consumables are more concentrated in the coastal regions of South Africa and so these provinces experience declining employment. By contrast African and White workers, especially in the inland and core industrial regions, are less affected by rising import competition in consumables sectors and benefit more from rising non-consumable exports and economic growth. However, Asian and Colored workers do benefit from faster manufacturing growth under the *Dynamic Gains* scenario, but these overall benefits still remain smaller than for other workers. Comparing these results to the actual changes observed during 1995-2003 suggests that trade liberalization contributed to the fall in manufacturing employment and to the

considerable increase in employment in mining and private services. The model does not produce results that are consistent with observed changes in agricultural employment. However, agriculture is more volatile than other sectors and the model does not capture such factors as changes in climatic conditions and world commodity prices.

The distributional impacts of liberalization are less pronounced for wages, although skilled-workers are the primary beneficiaries of recent reforms (cf. Table 5). Although rising productivity under the *Dynamic Gains* scenario leads to a shedding of manufacturing labor, it does increase real wages, especially in the skill-intensive manufacturing sectors. Furthermore, trade-induced growth generates demand for labor outside of manufacturing, which in turn raises wages for workers in these sectors. Overall, it is skilled and White workers that enjoy the largest increases in factor incomes, while Asian and Colored workers' incomes increase the least. However, all workers benefit in the longer-term from trade-induced growth. This is reflected in the changes in poverty (cf. Table 6). Under the *Baseline* scenario, the growth in private consumption is outweighed by population growth and the national poverty headcount rate rises from 58.4 percent in 1993 to 66.8 percent in 2003.<sup>5</sup> Trade liberalization raises economic growth and consumption spending and hence lowers the final poverty rate to 65.3 percent. Trade liberalization therefore did not contribute to rising poverty in South Africa during the 1990s. On the contrary, the results suggest that trade liberalization prevented more than 700 000 people from falling into poverty during the 1990s.<sup>6</sup>

Not all households benefited equally from recent trade reforms. Asian and Colored households in the coastal region are likely to have borne most of the adjustment costs since poverty in these households initially rises under the *Tariff Reduction* scenario, albeit only slightly. These differential effects across population groups can be seen in Figures 2 and 3, which show the additional expenditure accruing to different population groups and regions as a result of trade reforms. The initial rise in poverty under the *Tariff Reduction* scenario is reflected in the negative 'growth incidence curve' for Asian and Colored households (cf. Figure 2). Trade liberalization resulted in per capita expenditure that was lower than would have been achieved under the *Baseline* scenario. The high representation of Asian and Colored households in the coastal provinces is reflected in this region's negative growth incidence curve (cf. Figure 3). By contrast, African and White-headed households remain unaffected by tariff reductions since they are least dependent on employment in the consumables sectors. While all households benefit from faster economic growth under the *Dynamic Gains* scenario, the upward sloping curves indicate that higher-income households benefit more than lower-income households. Furthermore, rising incomes favored African and White households rather than Asian and Colored households. Therefore, trade liberalization caused an increase in both within- and between-group inequality. The only exception is within-group inequality for White-headed households, where lower-income households experienced rapid increases in per capita expenditure. This is due to rising employment amongst unskilled White workers, primarily in the service sectors.<sup>7</sup> Finally, trade liberalization also caused an increase in inequality across regions, although this is less pronounced than across population groups and rising within-region inequality is concentrated in the coastal provinces.

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<sup>5</sup> The 1993 CGE model is linked to the 1995 household survey, implying that the initial poverty rates and income distribution are for 1995.

<sup>6</sup> This is 1.5 percent (66.8 minus 65.3) of the total population of 47 million people in 2003.

<sup>7</sup> This result should be treated with caution since there is only a small sample of unskilled White workers and low-income White households in the household survey used to construct the SAM and CGE-microsimulation model.

The results from the model suggest that South Africa's recent trade liberalization episode reduced poverty during the 1990s. However, this effect was relatively small and insufficient to offset the rise in poverty caused by slow growth and falling employment and wages. Liberalization has also increased the bias towards capital and skilled labor, thus reducing the gains from trade for poor households who are more dependent labor incomes and are less endowed with capital. However, low-income households did benefit from faster non-manufacturing employment caused by the economy-wide growth-effects of liberalization. However, while liberalization reduced poverty, it also exacerbated inequality. This negative effect on the income distribution affected households in all population groups and regions.

### *Future Reforms*

The final scenario considers the effects that might have been realized had the government successfully implemented its tariff rationalization program. As mentioned earlier, the government's original proposal to the WTO was to reduce the number of applied tariff rates to six (i.e., zero, five, ten, 15, 20 and 30 percent). However, by 1999 there were still 47 different applied rates. Since the government has already reached its average tariff reduction targets, its future efforts are likely to focus on tariff rationalization. Accordingly, this scenario implements the original rationalization program by reducing nominal tariffs for each tariff line to the nearest of the six tariff bands. These adjustments are based on the final year and so include the actual tariff changes of the 1990s *plus* any additional decline in tariffs caused by rationalization. For example, a tariff rate that declined from 50 to 25 percent during 1993-2003 under the *Tariff Reduction* scenario is now reduced to 20 percent under the *Future Reforms* scenario. Furthermore, the estimated elasticity linking tariff reductions to productivity growth is applied in this scenario. Therefore, the results for this scenario should be compared to the *Dynamic Gains* scenario to determine the possible impact of future reforms.

The changes in tariffs required to achieve the original rationalization targets are quite small (cf. Table A1). Most sectors would experience less than a one percentage point decline in their 2003 nominal tariffs. However, the textiles and vehicles sectors, who were deemed 'sensitive' under the WTO agreement, would experience larger declines. Overall, the consumables sectors would be affected the most since they still enjoy the highest levels of protection and were exempted from most of the tariffs reductions of the 1990s.

The macroeconomic effect of reducing tariffs under the original rationalization program is to stimulate import demand and raise productivity (cf. Table 2). Faster economic growth increases the supply of exports, which offsets rising imports and causes an appreciation of the real exchange rate. Economic growth raises household incomes and savings as well as government non-tariff revenues. This offsets the revenue-loss associated with lower tariff rates. The resulting increase in loanable funds facilitates higher investment growth. These results suggest that completing the proposed tariff rationalization program will favor investment and capital accumulation but will have little effect on overall economic growth.

The increase in the capital stock under the *Future Reforms* scenario is matched by rising labor employment (cf. Table 4). However, manufacturing employment remains stagnant due to a productivity-induced shedding of labor in the consumables sectors and the inability of faster export growth in other manufacturing sectors to offset this trend. Unskilled workers benefit from the economy-wide growth-effects of liberalization and rising employment in the non-manufacturing sectors. While this is true for all workers, it particularly important for African

workers who rely more heavily on agriculture for their livelihoods (cf. Table A2). Again it is skilled workers that benefit the most from improved employment opportunities after trade reforms. Ultimately, further tariff rationalization would only slightly increase growth and reduce poverty and the differences in its effects across population groups and regions would remain small (cf. Table 6).

## 6. Conclusion

This study has examined the relationship between trade liberalization and pro-poor growth in South Africa. The findings suggest that liberalization has *not* contributed to the rise in poverty during the 1990s. Rather it has prevented many households from falling into poverty. This is because increased openness has fostered higher levels of investment and employment by reducing the cost of capital goods and facilitating productivity-enhancing technological change. However, liberalization has not benefited all workers and households equally. High levels of unemployment and inadequate human capital meant that poor households have been disconnected from most of the benefits of liberalization. Furthermore, rising import competition has contributed to the fall in manufacturing employment during the 1990s. While this has been more than offset by improved employment opportunities in the non-manufacturing sectors, the associated *short-term* adjustment costs may have increased the vulnerability of the poor and undermined their ability to participate in subsequent trade-induced growth. In the *long-term* however, higher trade-induced growth and incomes resulting should mitigate adjustment costs.

Returning to the government's development objectives, this study has shown that, while trade liberalization has helped establish a "faster-growing economy that creates employment", it has not "encouraged a redistribution of incomes in favor of the poor". Therefore, while there may not be a trade-off between trade liberalization and pro-poor growth, the country should not overemphasize the contribution of further liberalization in reducing poverty or addressing inequalities between different population groups. In this regard, the government might emphasize targeted pro-poor strategies, such as public works programs and social security. These interventions are more likely to reach poor and vulnerable households. Furthermore, liberalization may cause some people to become structurally unemployed, especially older and lower-skilled workers. Therefore, the country's growth strategy should include addressing the adjustment costs associated with trade reforms, possibly through social protection and job retraining. Without these explicitly pro-poor interventions, the short-term effects of an export-led growth strategy will be inconsistent the country's more immediate development objectives.

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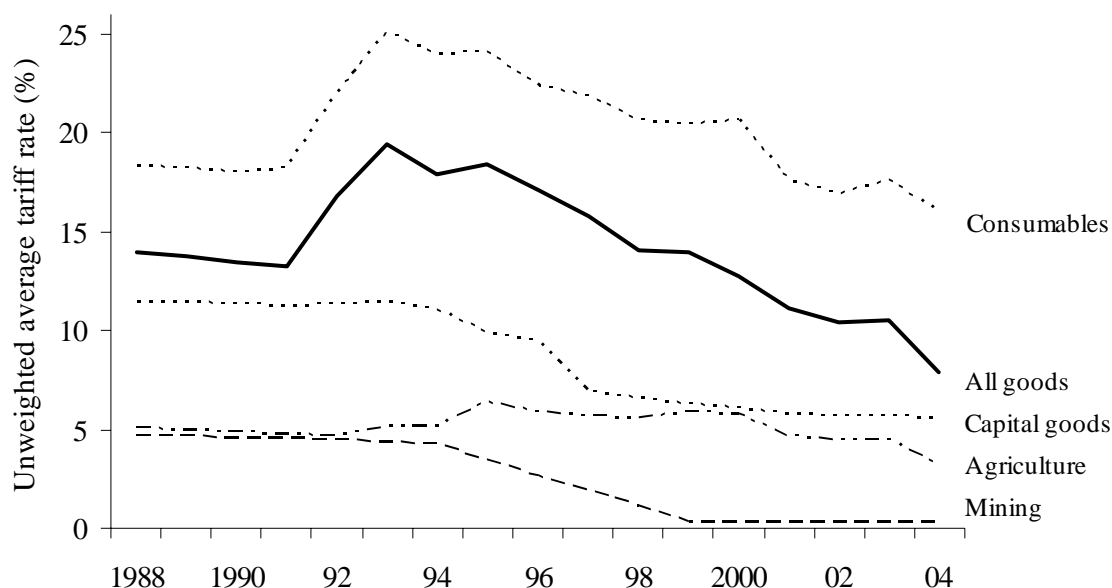
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Figure 1. Nominal Tariffs and Surcharges, 1988-2004



Source: Own calculations using Customs and Excise data provided by Edwards (2005).

Note: Rates are unweighted and include import surcharges. Quantitative restrictions have been converted into their *ad valorem* tariff equivalent using collection duties. *Consumables* include processed food, beverages, textiles, clothing and furniture. *Capital goods* include machinery and vehicles, as well as intermediate goods such as chemicals and metal products.

Table 1. Decomposition of Economic Growth, 1985-2003

	Share of GDP (%)			Annual change (%)	
	1985	1993	2003	1985-93	1993-03
Real gross domestic product (GDP)	100.0	100.0	100.0	1.1	2.7
Private consumption	61.2	62.8	64.0	1.3	2.7
Investment	15.7	12.2	16.9	-0.7	3.9
Government consumption	19.3	21.4	19.0	2.7	1.4
Exports	19.7	23.0	26.1	2.3	4.3
Imports	-15.9	-19.5	-26.0	3.5	3.9
Real gross domestic product (GDP)	100.0	100.0	100.0	1.1	2.7
Agriculture	4.5	4.7	4.0	0.8	1.5
Mining	8.6	7.6	5.5	-1.2	-0.7
Manufacturing	22.0	20.6	19.8	0.4	2.2
Energy and construction	7.0	6.6	6.7	1.0	2.7
Private services	42.9	43.7	50.9	1.3	4.4
Public services	14.9	16.8	13.2	2.6	0.1
Real gross domestic product (GDP)	100.0	100.0	100.0	1.1	2.7
Capital	38.5	43.0	49.2	1.1	1.3
Labor	61.5	57.0	50.8	0.1	0.9
Total factor productivity (TFP)	-	-	-	0.6	1.7

Source: Own calculations using data from SARB (2006), TIPS (2006), and SASID (2005).

Note: All measures are in constant 2000 prices.

Table 2. Macroeconomic Results from the Simulations, 1993-2003

	Initial share (%) 1993	Base scenario	Tariff reduction	Dynamic gains	Future reforms
<u>Average annual growth rate (%), 1993-2003</u>					
Real GDP (market prices)	100.0	1.1	1.2	1.8	1.9
Private consumption	61.8	1.2	1.3	1.9	2.0
Investment	14.7	-1.3	-1.2	0.4	0.7
Government	20.1	2.6	2.6	2.6	2.6
Exports	21.2	2.0	2.9	3.3	3.5
Imports	-17.8	2.3	3.4	3.9	4.1
Real GDP (factor cost)	100.0	1.1	1.2	1.8	1.9
Capital	43.0	0.9	1.0	1.4	1.5
Labor	57.0	0.5	0.5	0.9	1.0
Skilled	16.2	0.7	0.8	1.1	1.2
Semi-skilled	59.9	0.5	0.4	0.8	0.8
Unskilled	23.9	0.7	0.7	1.0	1.1
Productivity (TFP)		0.4	0.5	0.7	0.8
Real exchange rate		-3.9	-3.2	-4.7	-4.8
<u>Percentage point change from initial share, 1993-2003</u>					
Current account deficit / GDP	0.9	-0.1	-0.1	-0.2	-0.2
Import taxes / GDP	0.8	0.2	-0.3	-0.3	-0.4
Government deficit / GDP	6.7	0.6	1.0	-0.4	-0.6

Source: Results from the South African CGE-microsimulation model.

Note: The real exchange rate is in units of local currency per unit of foreign currency (i.e., an increase is a real depreciation).

Table 3. GDP Results by Sector from the Simulations, 1993-2003

	Initial share (%) 1993	Observed growth rates (%)		Simulated annual growth rate (%), 1993-2003			
		1985-92	1993-03	Base scenario	Tariff reduction	Dynamic gains	Future reforms
GDP factor cost	100.0	1.1	2.7	1.1	1.2	1.8	1.9
Agriculture	4.5	0.8	1.5	0.8	0.9	1.7	1.9
Mining	7.7	-1.2	-0.7	-0.8	-0.6	0.2	0.2
Manufacturing	21.5	0.4	2.2	0.5	0.4	1.7	1.9
Food / beverages	3.7	0.3	0.4	0.7	0.7	2.0	2.2
Textiles / clothing	1.6	-2.7	-1.1	-2.6	-4.7	-1.7	-1.0
Wood / paper	2.2	-1.0	0.7	-1.0	-1.2	-0.3	-0.2
Chemicals	4.2	1.9	3.3	2.6	2.7	3.5	3.4
Non-metals	0.9	-0.4	0.7	-0.2	-0.3	0.8	0.9
Metal products	4.5	-2.7	4.2	-2.1	-2.3	-1.4	-1.4
Electrical machinery	1.0	2.8	1.3	3.2	3.4	5.4	5.3
Vehicles	1.8	0.6	4.7	1.6	1.8	3.1	4.1
Other manufacturing	1.7	10.5	1.4	1.9	1.7	4.6	4.6
Energy and construction	6.7	1.0	2.7	1.4	1.5	2.0	2.1
Private services	43.5	1.3	4.4	1.3	1.4	1.9	2.0
Public services	16.1	2.6	0.1	2.6	2.6	2.6	2.6

Source: Results from the South African CGE-microsimulation model.

Table 4. Employment Results from the Simulations, 1993-2003

	Number employed (1000s) 1993	Total change (%)		Final point deviation from <i>Base</i> scenario growth rate (%) 2003		
		Observed 1995-2003	Base scenario	Tariff reduction	Dynamic gains	Future reforms
All workers	8,194	12.1	6.0	-0.2	3.5	4.1
Agriculture	357	-6.8	3.3	1.0	3.7	5.2
Mining	709	21.7	-8.2	2.1	6.0	5.4
Manufacturing	1,828	-2.6	-6.7	-3.7	-1.6	-1.7
Private services	2,755	24.1	10.0	1.0	7.1	8.5
Public services	2,070	-27.0	9.2	0.1	-0.1	-0.1
Skilled	1,330	14.3	7.5	0.4	4.7	5.4
Semi-skilled	4,909	13.1	5.2	-0.5	3.0	3.6
Unskilled	1,955	9.2	7.0	0.1	3.8	4.5
African	5,160	21.0	6.1	-0.1	3.5	4.1
Skilled	510	-	8.1	0.5	5.1	6.0
Semi-skilled	2,961	-	5.3	-0.2	3.1	3.6
Unskilled	1,689	-	7.1	0.1	3.8	4.5
White	1,889	-11.9	6.1	0.2	3.5	4.0
Skilled	680	-	6.9	0.3	4.0	4.7
Semi-skilled	1,175	-	5.5	0.1	3.1	3.5
Unskilled	33	-	12.3	0.4	6.2	7.5
Asian and Colored	1,145	4.6	5.2	-1.4	3.3	4.1
Skilled	140	-	7.9	0.3	6.2	7.3
Semi-skilled	773	-	4.7	-2.2	2.8	3.5
Unskilled	233	-	5.5	0.0	3.6	4.3
Coastal region	3,125	15.0	5.6	-0.8	3.1	3.8
Core industrial region	3,520	8.7	5.6	0.1	3.8	4.4
Inland region	1,549	11.4	7.9	0.5	3.6	4.2

Source: Observed changes in employment using the 1995 OHS and IES (StatsSA, 1996a and 1996b) and own estimates from the 2003 (Sept) LFS (StatsSA, 2004) provided by Casale *et al.* (2004). Results from the South African CGE-microsimulation model.

Note: The 2003 survey weights have been revised according to the 2001 population census and thus differ from Casale *et al.* (2004). *Coastal region* includes Western Cape, Eastern Cape and KwaZulu-Natal; *Core industrial region* includes Gauteng and Mpumalanga; and *Inland region* includes the remaining provinces.

Table 5. Labor Wages from the Simulations, 1993-2003

	Initial wage (rands) 1993	Observed annual change (%) 1995-2003	Average annual change (%) 1993-2003			
			Base scenario	Tariff reduction	Dynamic gains	Future reforms
All workers	2,219	1.7	0.7	0.8	1.2	1.3
Agriculture	1,182	-6.6	0.6	0.6	1.1	1.1
Mining	1,860	3.3	0.5	0.5	0.9	1.0
Manufacturing	2,102	2.8	0.8	1.0	1.4	1.4
Energy and construction	2,365	-2.9	0.5	0.5	0.9	0.9
Private services	2,493	1.6	0.7	0.7	1.2	1.2
Public services	2,224	7.5	0.6	0.6	1.1	1.1
Skilled	5,339	3.9	0.8	0.8	1.3	1.3
Semi-skilled	1,903	-0.6	0.7	0.8	1.1	1.2
Unskilled	889	-0.7	0.6	0.6	1.1	1.1
African	1,432	1.5	0.4	0.4	0.8	0.9
White	4,599	3.5	1.0	1.1	1.6	1.7
Asian and Colored	1,836	3.6	0.6	0.7	0.9	0.9

Source: Employment from 1995 OHS and IES (StatsSA, 1996a and 1996b). Results from the South African CGE-microsimulation model.

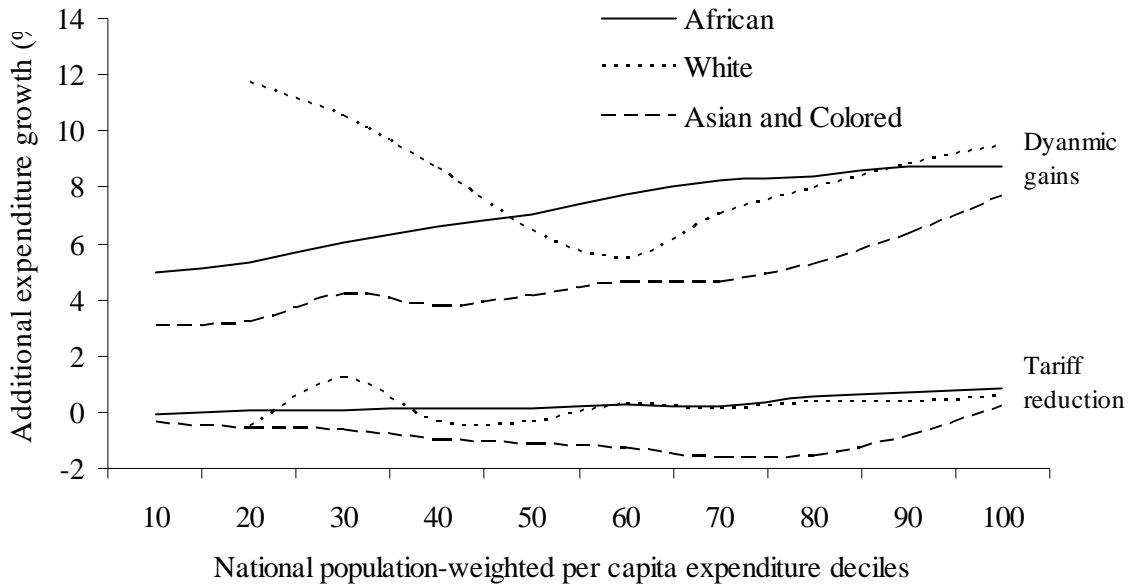
Table 6. Poverty Results from the Simulations, 1993-2003

	Headcount rate (%) 1993	Final poverty headcount rate (%) 2003			
		Base scenario	Tariff reduction	Dynamic gains	Future reforms
National	58.4	66.8	66.7	65.3	65.2
African	69.0	76.3	76.2	74.5	74.4
White	1.8	1.8	1.8	1.7	1.7
Asian and Colored	40.8	39.6	39.8	38.7	38.4
Coastal region	62.3	69.8	69.9	68.8	68.6
Core industrial region	36.9	49.2	49.0	46.4	46.2
Inland region	69.8	76.1	75.9	74.9	74.8

Source: Population share and initial poverty rate from 1995 OHS and IES (StatsSA, 1996a and 1996b). Results from the South African CGE-microsimulation model.

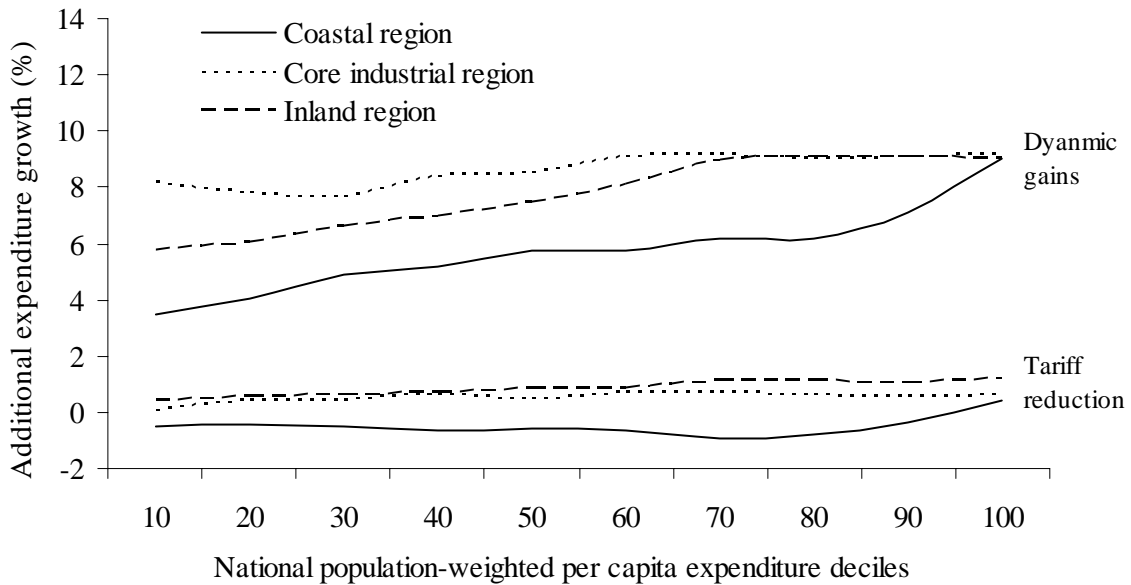
Note: The *poverty headcount* is the share of the total population falling below the poverty line, which is set at R322 per person per month (see Hoogeveen and Ozler, 2005).

Figure 2. Additional Expenditure by Race Relative to the Base Scenario, 1993-2003



Source: Results from the South African CGE-microsimulation model.  
 Note: *Race* refers to the population group of the head of the household.

Figure 3. Additional Expenditure by Region Relative to the Base Scenario, 1993-2003



Source: Results from the South African CGE-microsimulation model.  
 Note: *Coastal region* includes Western Cape, Eastern Cape and KwaZulu-Natal; *Core industrial region* includes Gauteng and Mpumalanga; and *Inland region* includes the remaining provinces.

Table A1. Changes in Tariffs under Trade Liberalization, 1993-2003

	Import share (%) 1993	Collected rates (%) 1993	Nominal tariff rates (%)				Ration. tariffs <sup>1</sup>
			1993	2003	Change		
					Point	(%)	
All sectors	100.0	4.3	15.8	5.2	-10.7	-67.4	4.1
Agriculture	2.9	0.5	10.5	4.5	-6.0	-57.4	3.2
Mining	8.8	0.2	3.0	0.9	-2.1	-71.3	0.9
Manufacturing	76.3	5.5	20.0	7.3	-12.7	-63.7	5.8
Food / beverages	4.3	5.0	30.6	13.3	-17.3	-56.7	10.4
Textiles / clothing	4.0	18.9	50.7	24.0	-26.7	-52.7	19.1
Wood / paper	4.9	4.8	15.7	6.0	-9.7	-61.9	5.1
Chemicals	15.0	5.0	13.5	3.8	-9.6	-71.5	3.7
Non-metals	1.3	11.9	17.4	6.0	-11.4	-65.4	5.7
Metal products	20.6	3.7	13.3	3.9	-9.4	-70.5	3.7
Electrical machinery	9.5	5.3	19.9	3.4	-16.5	-82.8	3.2
Vehicles	13.4	3.2	25.0	11.9	-13.0	-52.2	6.8
Other manufacturing	3.2	13.0	27.7	7.4	-20.3	-73.2	7.3
Energy and construction	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Private services	11.7	0.6	0.6	0.6	0.0	0.0	0.6
Public services	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Import shares from 1993 SAM (Thurlow, 2006a); nominal rates from Edwards (2005); and TFP growth from Jonsson and Subramanian (2001).

1. Nominal tariff rates that would apply in 2003 had the rationalization program been successfully implemented.



Table A2. Factor Employment Shares within Sectors, 1993

	Share of total employment in each sector (%)							All workers
	Population or racial group			Occupational skill group				
	African	White	Asian and Colored	Skilled	Semi-skilled	Unskilled		
All sectors	63.0	23.1	14.0	16.2	59.9	23.9	100.0	
Agriculture	71.0	13.8	15.3	0.5	28.0	71.6	100.0	
Mining	82.4	16.0	1.6	6.8	74.6	18.6	100.0	
Manufacturing	57.5	19.1	23.4	10.9	69.8	19.3	100.0	
Food / beverages	57.4	13.5	29.1	8.5	59.7	31.8	100.0	
Textiles / clothing	54.4	6.3	39.4	4.0	85.1	10.9	100.0	
Wood / paper	59.0	17.1	23.9	11.1	67.0	21.9	100.0	
Chemicals	61.7	21.8	16.5	20.3	59.3	20.4	100.0	
Non-metals	65.7	19.7	14.6	7.5	73.3	19.2	100.0	
Metal products	60.0	28.7	11.4	12.5	73.0	14.4	100.0	
Electrical machinery	56.7	31.6	11.8	23.1	61.9	15.0	100.0	
Vehicles	55.0	23.5	21.5	14.6	73.7	11.7	100.0	
Other manufacturing	43.6	24.4	32.0	5.0	66.9	28.1	100.0	
Energy and construction	58.6	24.3	17.1	13.1	70.6	16.3	100.0	
Private services	59.7	26.4	13.9	28.4	48.6	23.0	100.0	
Public services	65.2	25.8	9.0	11.4	64.3	24.3	100.0	
Coastal region	49.4	20.8	29.9	16.2	60.2	23.7	100.0	
Core industrial region	67.6	27.7	4.7	17.4	59.9	22.7	100.0	
Inland region	80.0	17.1	3.0	13.8	59.4	26.8	100.0	

Source: Own calculations using the 1993 South African SAM (Thurlow, 2006a) and the 1995 OHS and IES (StatsSA, 1996a and 1996b).

Note: Skill groups based on occupational categories. *Skilled* includes professional and managerial workers; *Semi-skilled* includes clerical, sales, artisans and production supervisor workers; and *Unskilled* includes all other workers.