

CHAPTER 5

FREE TRADE AREAS IN SOUTHERN AFRICA: GAIN OR PAIN?

5.1 Introduction

As stated previously, since South Africa's emergence from the apartheid era, policy makers have pursued a path of speedy integration into the world economy. Recent developments include the creation of a Free Trade Agreement (FTA) with the EU. Critics have, however, suggested that not much is to be gained from such an agreement. Furthermore, it has been argued that South Africa could benefit more from forging regional trade alliances, and that the country should not neglect its regional responsibilities, South Africa being the major economy of the region. Any trade agreement encompassing South Africa is therefore bound to have substantial effects on the welfare of the region.

The logical task of this study is therefore to quantify the effects of an FTA between South Africa and the EU against the backdrop a potential closer regional cooperation. The emphasis will be on the agricultural sector. Trade theory stipulates that all the parties to a FTA will benefit from reduced barriers to trade. On the other hand, trading partners excluded from the agreement are likely experience welfare losses, because of trade diversion effects. Furthermore, the greater the liberalization, the greater the benefits.

The study is drawn up in such a way as to test the theory by making use of the GTAP model and data basis. The effects of the agreement are evaluated extensively for South Africa and the EU, in terms of increased trade flows, output, job creation, price changes and welfare analysis. Most of these important issues are analyzed according to three scenarios, namely the actual agreement between South Africa and the EU, a completely liberalized trade regime between South Africa and the EU, and a free trade agreement between South Africa and the rest of Southern Africa. Trade diversion issues are also addressed. The different scenarios are functional in putting the newly crafted deal into perspective. They also indicate the usefulness and practicality of the

GTAP framework. With only a few tariff adjustments, different agreements can be analyzed within a very short period of time.

5.2 Experimental Design

This study makes use of the GTAP software and methodology, which provides a very convenient and efficient way for interpreting changes in trade flows due to tariff structure adjustments. The welfare analysis and resource use tables are especially helpful in this regard. However, before the actual analysis can be discussed, there are some very important issues to be clarified first.

5.2.1 Time Structure of Tariff Changes

The GTAP software is based on a static general equilibrium model; in other words it portrays a picture of trade flows at a given point in time. Therefore the analysis of the gradual lifting of trade barriers between the EU and South Africa poses some problems. Intuitively one can imagine that a speedy pace of tariff change would have different effects from a slow pace of change, and that within twelve years there could well be structural changes taking place. The different pace of liberalization between the EU and South Africa could well be of critical importance. This is however a trade-off which has to be accepted, in the absence of more suitable models. The analysis will therefore be conducted on a trade-weighted basis, so that the tariff rates used to analyze the agreement will reflect the effect of the bilateral tariff changes after 12 years.

Appendix A indicates the calculations of the various tariff changes. Under the column “Offer” the time frames for the implementation of the tariff changes are given for both South Africa and the EU. These are the same specifications as discussed in Chapter 3 (see Table 3.6). For South Africa, the numbers 0 to 3 indicate complete liberalization within 12 years, whereas areas with the designation “Prot”, which stands for protocols, are excluded from the deal, and no tariff changes will occur for those products. For the EU, the numbers 1 to 4 indicate complete liberalization within 12 years, whereas the number 5 is synonymous with exclusion from the deal.

5.2.2 Disaggregation

The GTAP model provides the researcher with a very substantial analysis package. This study isolates the effects on commodity groups within the food and agricultural sector. Therefore highly disaggregated data on the agricultural sector is desired. Furthermore, labor effects form an essential part of the study, and unemployment will be introduced, to indicate possible job-creation possibilities stemming from the agreement. The model makes a distinction between skilled and unskilled labor. The disaggregation of sectors and regions is given below.

Commodities:

	<u>Description</u>	<u>Code</u>
1.	Cereals, grains and oilseeds	GrainOilseed
2.	Vegetables and fruit	VegFruit
3.	Livestock and meat	LvstMeat
4.	Fish, crustaceans, etc.	Fish
5.	Dairy products	DairyProd
6.	Other animal products	OthAnmProd
7.	Other agricultural products	OthAgProd
8.	Other processed food products	OthPrFood
9.	Manufactured goods	Mnfcs
10.	Services	Services

Regions:

1.	South Africa	SAF
2.	European Union	EU
3.	Rest of Southern Africa	RSA
4.	Rest of sub-Saharan Africa	RSS
5.	Rest of the world	ROW

5.2.3 Data

When attempting such an in depth study, data requirements are immense. However GTAP has very extensive databases, which are frequently updated. For the EU, the available data is certainly sufficient. Trade flows between the EU and South and Southern Africa should also be well enough documented, based on 1997 data. Furthermore, the macro data from South Africa and the Southern African region should still be acceptable, although the structure of the South African economy has undergone some quite extensive changes which are not captured by the GTAP data, which is still based on the 1983 inter-industry structure. Furthermore some doubts arise about the accuracy of the data, within the agricultural and food sector disaggregations. Trade flows within Southern Africa are possibly also lacking some credibility. There are, however, projects currently underway to remedy this situation.

5.2.4 Scenarios

The question to be answered by this study revolves around the benefits of trade liberalization. Will South Africa gain from the FTA concluded with the EU, and which sectors of the economy will expand through increased exports, creating employment opportunities. Having smoothed out the concerns mentioned above, the actual analysis design will be discussed. There are three major scenarios of interest.

FTA

First, the actual agreement between South Africa and the EU will be scrutinized, concentrating on its impact on the food and agricultural sectors in South Africa, together with labor effects and unemployment, and of course welfare effects. The effects of the FTA will also be analyzed in terms of the Southern African region, highlighting possible trade diversions and welfare losses.

100%

Second, the FTA will be extended to all commodities and all tariff barriers will be reduced. This scenario thus depicts a full-blown FTA between South Africa and the EU.

SAF–RSA

Finally an equivalent full-blown FTA agreement is modeled between South Africa and the remaining SADC countries (RSA) only, excluding the EU. This scenario will shed some light on the benefits to be reaped from regional liberalization, an issue, which has come to the fore on many occasions within SADC circles, but has not been translated into meaningful action so far. This exercise serves the purpose of indicating some the opportunity cost to the FTA deal.

A number of studies already exist which attempt to capture the effects of earlier trade liberalization attempts. However the agreement recently reached between the EU and South Africa provides definitive tariff removal structures, making this study much more realistic in terms of actual tariff changes and the resulting trade flows and welfare effects. In another GTAP study (Davies, 1998) it was observed that in all the scenarios sketched, there were losers because of trade diversion. Countries excluded from the FTA will apparently experience welfare losses. The compensation principle could therefore be brought into play by the losers, in this case possibly the rest of Southern Africa, which could add an interesting twist to developments if the WTO were to be called upon.

5.2.5 Settings

Version

A new GTAP version was created for this analysis with the aggregation mentioned above. This version basically focuses on the agricultural sectors within South and Southern Africa, with the EU separated from the rest of the world.

Closure

The new MRGE (multi region general equilibrium) closure was used. In this closure “psave” is allowed to vary among regions and the “pfactwld” parameter becomes the new comparator.

Solver

For greater accuracy, the Gragg 2–4–6 solver was used. The GTAP model supplies the user with various solvers, which are suited to different scenarios. A discussion on these solvers and their uses however falls beyond the scope of this study.

5.2.6 Shocks

FTA

The shock file for Scenario 1 was created using the actual tariff reductions stipulated by the agreement, as shown in Table 5.1. The calculations are shown in Appendix A. The tariff reduction structure was taken from the actual documents compiling the South African and European offers. However, since these documents only provide tariff structures for historic trade flows, it is difficult to calculate the actual tariffs for the various agricultural sectors as aggregated by this study. Therefore the envisaged tariff reductions were used to calculate a target tariff rate, using the GTAP tariff values as basis (see Appendices A and B).

Note again, that on the South African offer, all products identified as “Prot” (meaning protocol) were considered as excluded from the agreement (see Appendix A). The same applies to the products identified under the EU offer as number 5. These are regarded as highly sensitive products, such as red meat, dairy products and winter grains. Further negotiations will clarify their tariff reduction schedules, if any.

Table 5.1. Target Import Tariff Rates and Tariff Changes (%)

Commodity	EU offer		South African offer	
	Target rate	Change	Target rate	Change
GrainOilseed	4.11	0.01	15.02	0.14
VegFruit	1.66	6.36	0.00	10.70
LvstMeat	99.51	2.00	33.21	0.00
Fish	9.57	0.00	0.00	0.00
Dairy	101.68	14.66	7.30	0.00
OthAnmProd	0.07	0.00	0.03	0.00
OthAgProd	25.03	7.79	0.00	4.62
OthPrFood	25.36	1.60	0.00	14.89
Mnfcs	1.77	0.00	5.16	0.00
Svcs	0.03	0.00	0.00	0.00

Some of the target rates shown in Table 5.1 might seem high. However the analysis is based on the change in tariffs and not the actual values as presented by the GTAP database. Only import tariffs were altered and provided the shock to the model through the “tms” parameter. This study did not take the quotas under the agreement into consideration, as they amount to only a small percentage of total trade. Most quotas will be eliminated after the period of 12 years.

The tariff reductions for the EU seem to be very substantial. However coming from a high base, the changes are in fact rather conservative. South Africa (SAF) on the other hand, has reduced most of its agricultural import tariffs substantially under the agreement. Only *LvstMeat* is still high, while *GrainOilseed* is higher than for the EU. The EU still has tariffs on most of the products, still excessively high for bovine meat and dairy products. Notice that tariffs for manufactured goods and services were left unchanged for the analysis. They were however quite low for both countries anyway.

100% & Regional

Scenarios 2 and 3 were created by setting the import tariffs between the respective regions at zero for all commodities .

5.2.7 The Agreement

Table 3.6 gives is a summary of the time structure of the tariff reductions on the EU and the South African side. All products are placed within groups, and import tariffs on each commodity are reduced according to the specification of each group. It was the specifications of these groups, which provoked most criticism, because it was felt that South Africa was opening up its borders much more quickly and to more sensitive agricultural products with respect than the EU. As mentioned before, the analysis will however only be able to indicate the overall effect of the reciprocal liberalization at the end of 12 years. Below is a list of the most significant agricultural products, which were left out of the agreement. On wine, juice and some fruits and vegetables, there were some concessions towards South Africa in the form of quotas. These were, however, relatively insignificant and were not included in the analysis.

Table 5.2. Products Excluded from the Agreement

South African offer	EU offer
1. Meat	1. Bovine meat and animals
2. Dairy products	2. Dairy products
3. Cereals and cereal products	3. Flowers
4. Sugar	4. Fruits and juices
5. Flax and hemp	5. Cereals and cereal products
	6. Wine

5.3 Analysis

The analysis is conducted in a structured way. Five sections cover the most important issues — output, unemployment, imports and exports, welfare, and trade diversion (Section 6.3). In each section there will be an overview of the effects under the three scenarios, followed by a detailed discussion of the results of the actual agreement on South Africa. Figures will be used in each section to give a close account of effects.

At this point it needs to be said that the GTAP analysis package is fairly extensive and the modeler obtains a wealth of information, which is generated within seconds by the model. Due to time constraints, only the most important effects will be analyzed. For more detail on further possible analyses and applications, the reader is referred to the GTAP book (Hertel, 1997).

5.3.1 Output

To begin the analysis of output it is necessary to indicate the initial import barriers within each region, and how they change according to each scenario. Figures 5.1 and 5.2 illustrate the import tariffs between South Africa (SAF) and the EU and the rest of Southern Africa (RSA) respectively. Note the extremely high tariffs for LvstMeat and DairyProd in the EU. EU meat imports are also faced with high tariffs in SAF. EU import tariffs are substantially higher than those in South Africa, except for grains and manufactured goods. Barriers between SAF and RSA are also high for meat and livestock, vegetables and fruits, and for manufactured goods, although the magnitude is much less. Tariffs for grains and oilseeds are negative, indicating subsidies, especially for RSA. South African tariffs are higher than those in the rest of Southern Africa for all import commodities except OthAnnProd, OthAgProd and Svcs.

Figure 5.1. Import Tariffs by Destination, South Africa and the EU

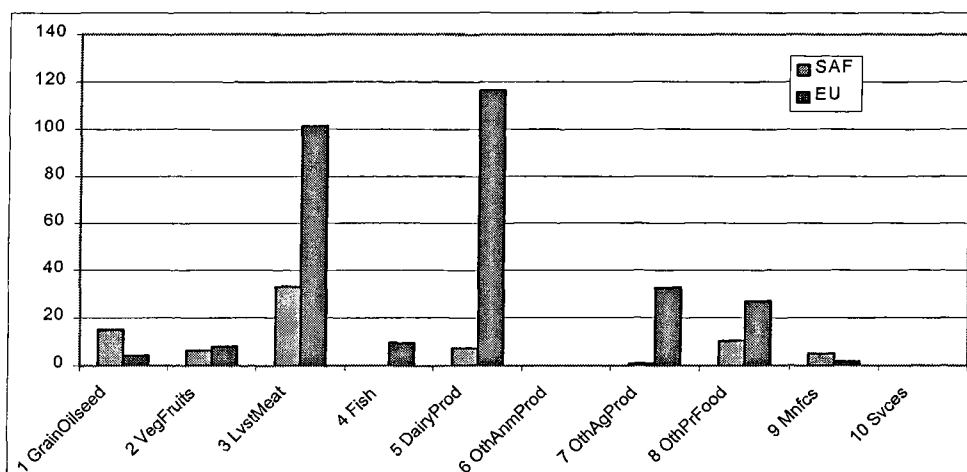


Figure 5.2. Import Tariffs by Destination, South Africa and the rest of Southern Africa

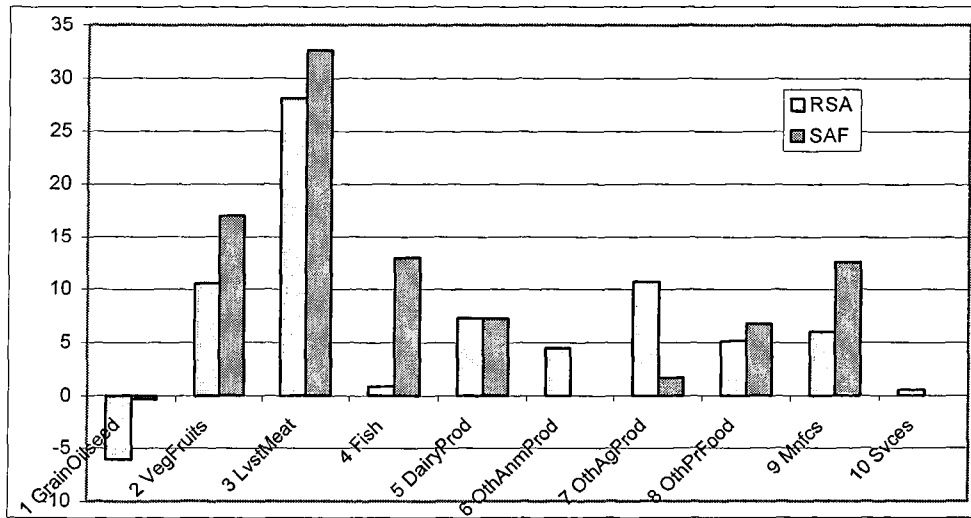


Figure 5.3. Percentage Reductions in Import Tariffs under the FTA Scenario after 12 Years, South Africa and the EU

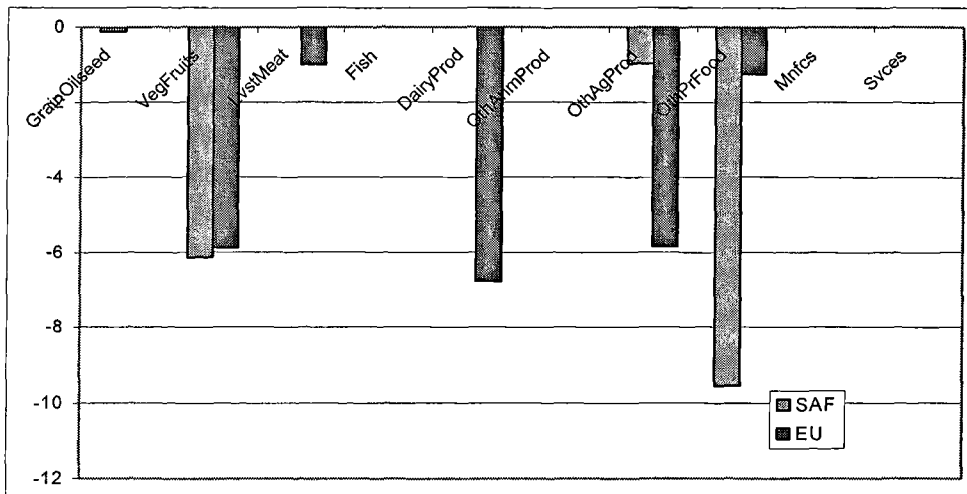


Figure 5.3 indicates the reduction in import tariffs in percentage terms according to the actual agreement. The reductions for the EU seem to be fairly substantial, matching or even beating those of the South African offer, except for other processed foods. However coming from a high

base, the changes are in fact rather conservative. Figures 5.4 and 5.5 indicate the relative changes for both the EU and SAF as stipulated by the agreement.

Figure 5.4. Import Tariff Changes, EU to South Africa

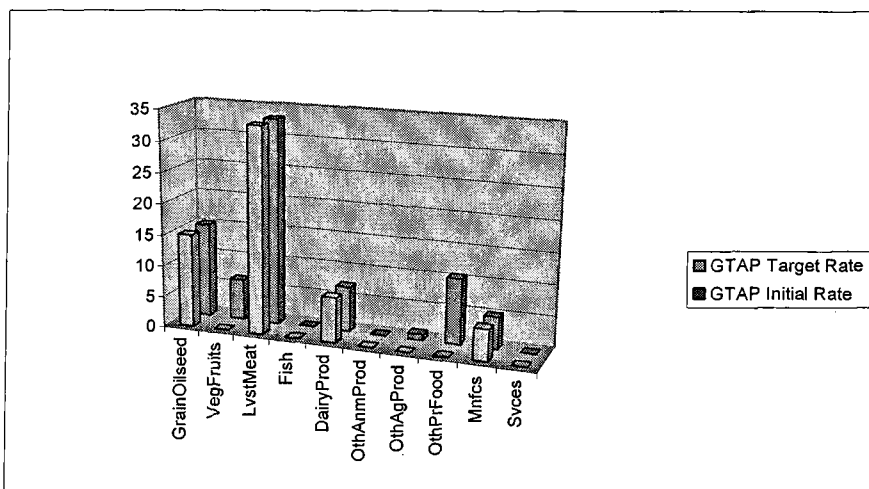
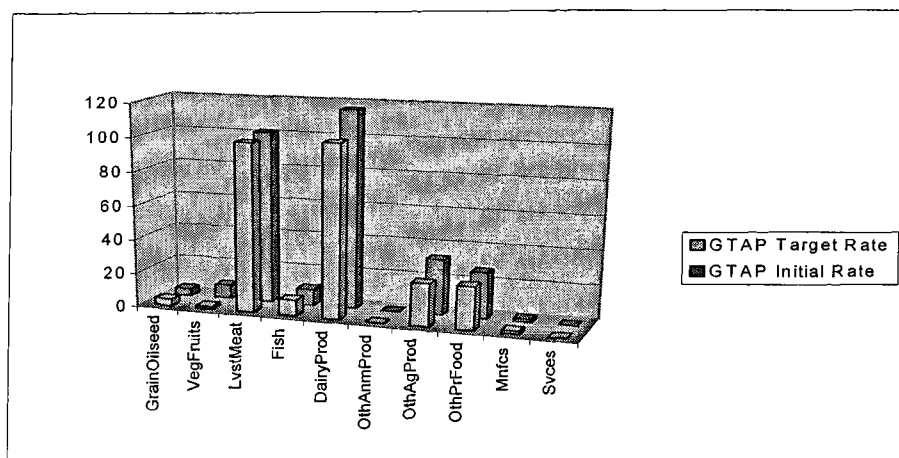


Figure 5.5. Import Tariff Changes, South Africa to EU

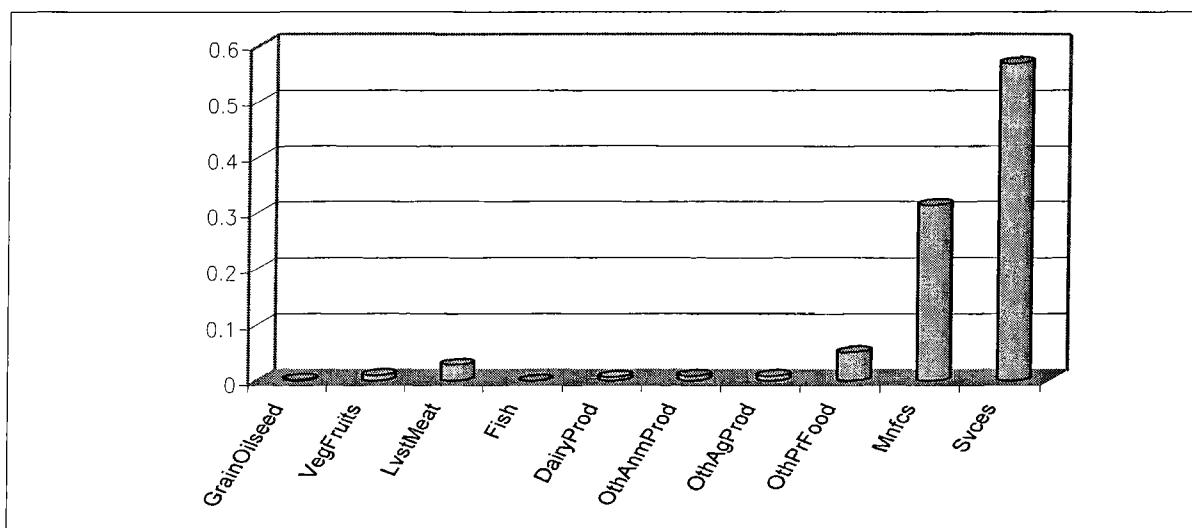


South Africa will reduce many of its agricultural import tariffs to zero under the agreement. The biggest reductions are in the VegFruit and OthPrFood food sectors, which will both go to zero after 12 years. LvstMeat is still high and unchanged, as is Dairy, while GrainOilseed is higher

than for the EU. The EU still has tariffs on most of its products, still excessively high for bovine meat and dairy products. Substantial tariffs are also still in place for OthAgProd and OthPrFood. The biggest reductions though occur in the Dairy, OthAgProd and VegFruit sectors. Notice that tariffs for manufactured goods and services were left unchanged for the analysis. They were however quite low for both parties anyway.

The next three Figures shed some light on the output structure of the South African economy. Figure 5.6 depicts the output shares for each sector within the economy after the new tariff structures of the trade deal are implemented. Services and manufactured goods make up the bulk of economic activity. Beyond this, only the livestock sector and processed foods are of some significance. The shares of domestic and export use of commodities from each sector are indicated in the Figure 5.7. Fish is overwhelmingly exported, and exports also account for a substantial proportion of production in the grains and oilseeds, other agricultural products, and manufacturing sectors. The total export share is roughly 10%. Figure 5.6 indicates the most import export sectors according to total export share.

Figure 5.6. Output Shares, South Africa



Changes in output because of the deal are shown in Figure 5.8 for all three scenarios. For most commodities there are positive output gains, the greatest being achieved under the 100% scenario in the LvstMeat sector. Further big gains occur for other animal and agricultural products, and for

other processed foods under the same scenario. These can all be linked to tariff reduction as more products are exported. Hence the small output change for dairy products: as Figure 5.7 indicated,

Figure 5.7. Output Use, South Africa

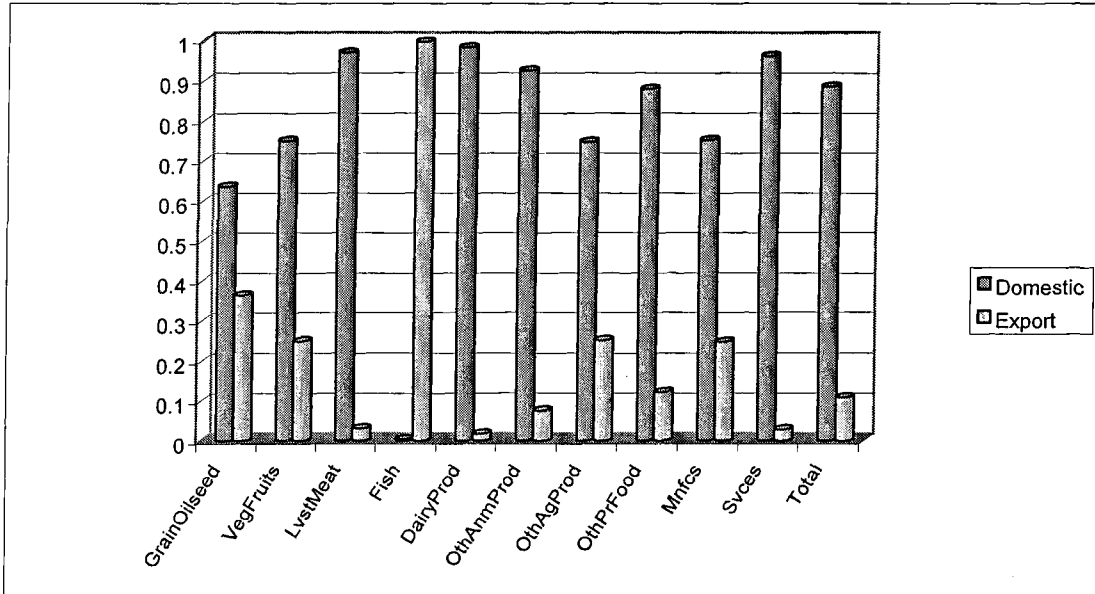
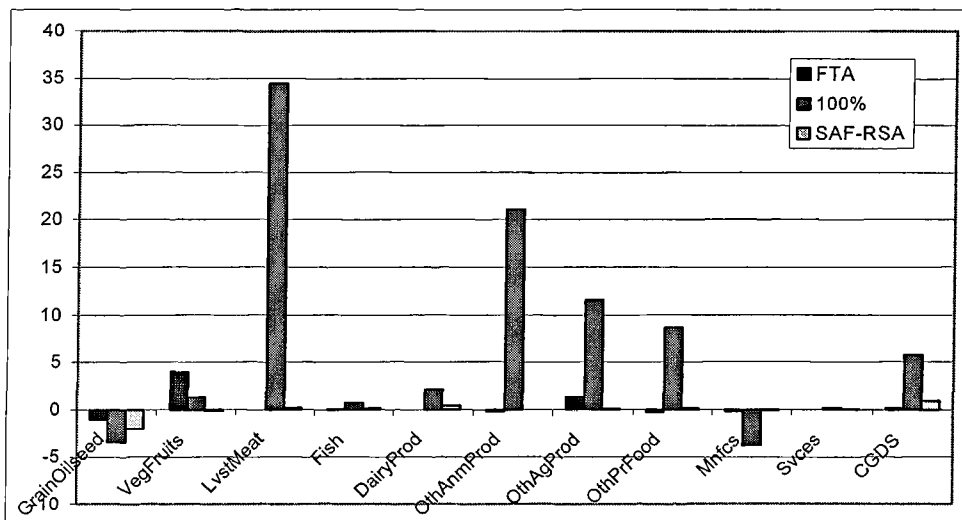


Figure 5.8. Changes in South African Output in the Three Scenarios



only a very small portion of production from this sector is exported. Output changes for the regional free trade agreement are quite small, except for the negative change in grains and oil-seeds. For the FTA scenario the biggest change occurs in other agricultural products, which can

be linked mainly to increased exports, as indicated by Figure 5.27. It is noteworthy that the grains and manufacturing sectors decrease for all three scenarios. This is explained by Figures 5.14 and 5.15, which show a decrease of intermediate commodity and endowment use in both of these sectors. To summarize, the 100% scenario induces the biggest changes in output, whereas the regional FTA does not significantly stimulate South Africa's increase of output, except for the VegFruit and OthAgProd sectors. The FTA scenario however promises some welfare gains.

Figures 5.9 and 5.10 display price changes for all three scenarios and for South Africa in particular under the agreement with the EU. These are price changes relative to the comparator of the closure, "pfactwld" in this case. All changes are positive, with the 100% scenario producing the biggest change (as expected). A more in-depth look at changes in South Africa reveals the same picture, with prices for land increasing the most, by more than 6% among endowments. Of the commodities, vegetables and fruit show the biggest increase, while the increase in other agricultural products is also substantial. As the fish sector essentially only makes use of the natural resource endowment, its change in price is linked to the change in the price of that endowment, which is fairly significant. However, because it does not constitute an important issue in this study, the fish sector and the natural resource endowment are not analyzed further. More important is the increase in the price of land, which is used extensively in various agricultural sectors. In Figure 5.11 the relative price changes of endowments for each sector are indicated.

Figure 5.9. Price Changes in South Africa under the Three Scenarios

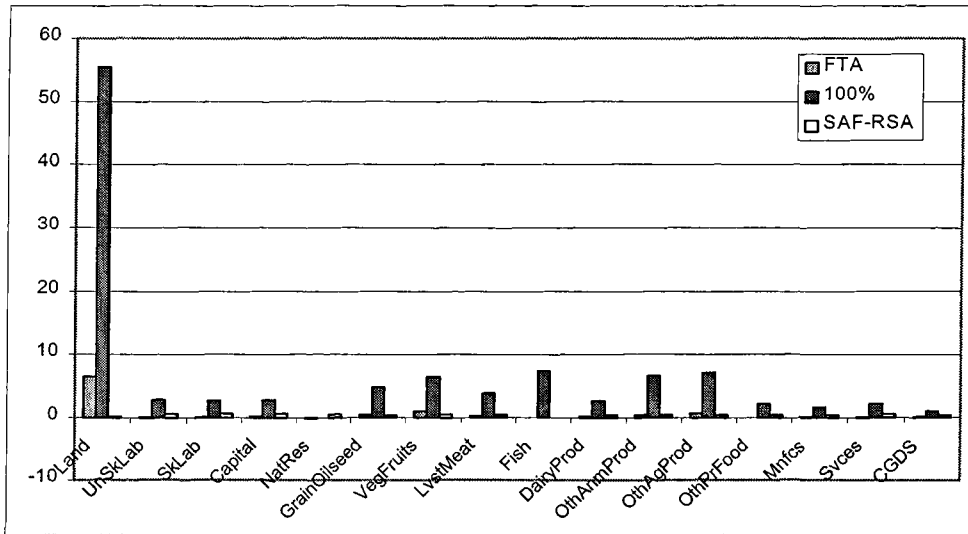


Figure 5.10. Percentage Price Changes for Factors in South Africa under the FTA Scenario

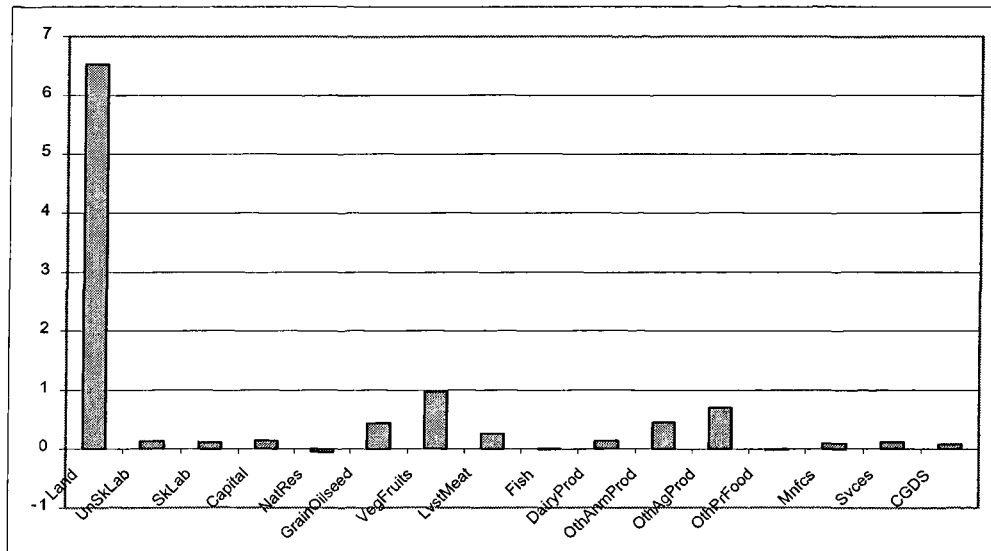
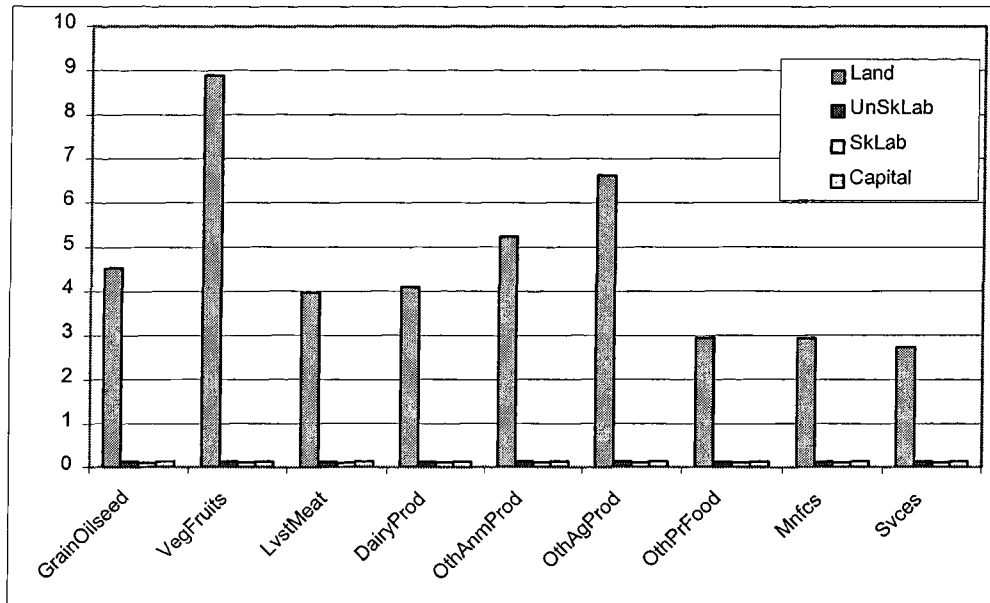


Figure 5.11. Relative Price Changes for Endowments in South Africa

Land shows large relative price increases across all sectors, with the greatest increases in the other vegetables and fruit and other agricultural products sectors. These two sectors also experience the highest growth in exports. The return on other endowments also increases. This can be verified in Figure 5.12, which shows positive changes in real return on the labor and capital factors. Figure 5.13 indicates the total shares of endowment use for all the sectors. Unfortunately nearly all labor is used in the services and manufacturing sectors and a little bit in the other processed foods sector, which does not bode well for job creation in terms of the agreement. On the other hand, the agricultural sectors are also intensive users of unskilled labor, as indicated by Figure 5.18, and the agreement could lead to the creation of new jobs, especially in the vegetables and fruit and other agricultural products sectors. This issue will be pursued further at a later stage. Land forms the major resource in all the agricultural sectors. As mentioned before, the fish sector uses very few resources other than the natural resource endowment, which was omitted from the Figure.

Figure 5.12. Changes in Real Returns on Endowments in South Africa

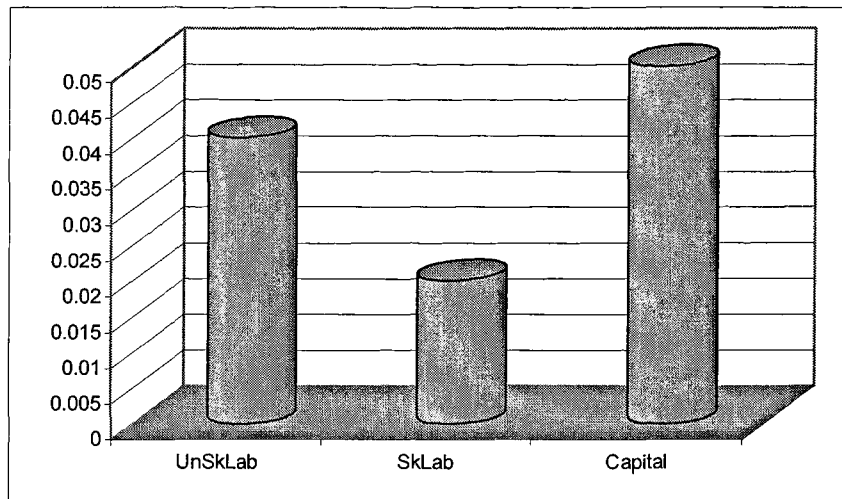


Figure 5.13. Shares of Factor Use in South Africa

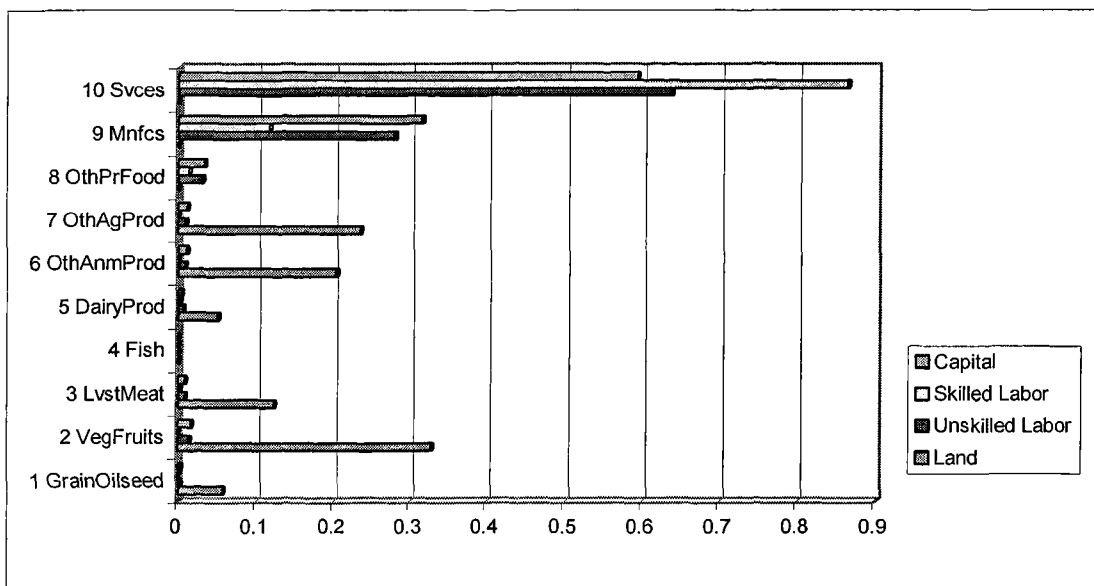


Figure 5.14 gives a clear indication of the changes in the use of intermediate commodities by sectors in the South African economy. Commodity use is reduced for most sectors, especially for the grain and oilseeds sector and the other processed foods sector. The reduction in tariffs by both the EU and South Africa is responsible for this reallocation of factors for production. Note that these changes are also reflected in the output change as shown in Figure 5.8. Figure 5.5 indicates a huge percentage change in the EU import tariff for South African VegFruit and OthAgProd, which is responsible for the increase in output of this sector due to increased exports to the EU. Hence the flow of intermediate commodities into these sectors, which provide higher returns relative to the other sectors because of higher export prices in the EU, as shown by Figure 5.28. The same analysis also holds for livestock and meats and dairy products, though to a lesser extent. The change in commodity use by the fish sector is again small, because it basically only uses the natural resources endowment.

Figure 5.14. Changes in Total Commodity Use by Sector in South Africa

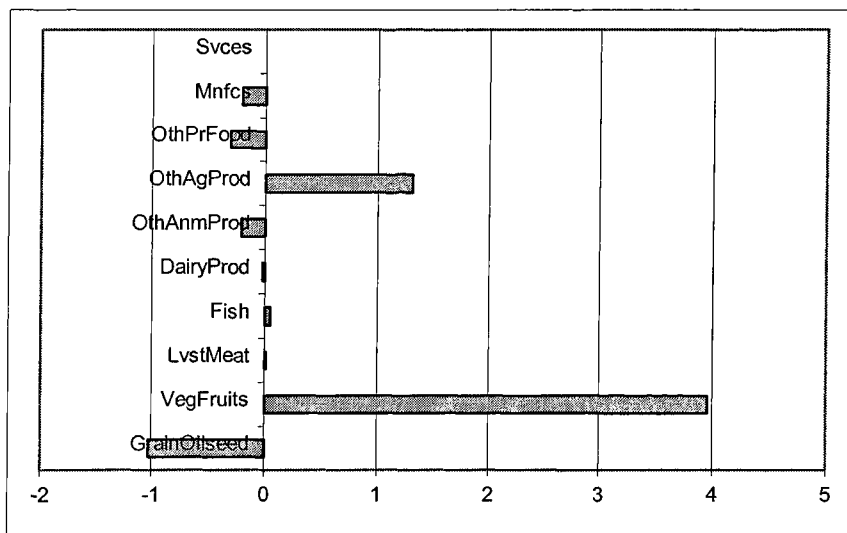
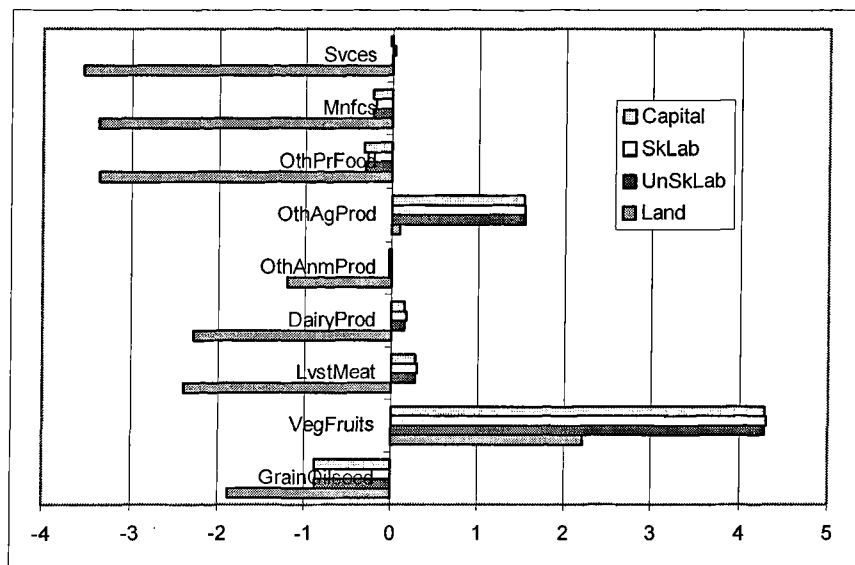


Figure 5.15. Changes in Use of Endowments by Sector in South Africa



The same explanation can be derived from Figure 5.15, which tells a similar story, but from the endowment perspective. Notice that resources are drawn into the same sectors as before, and again the same sectors experience an outflow. However there is a significant difference, namely the allocation of the land endowment. Only the VegFruit sector uses more land, bidding up the price of the resource, while all the other sectors use less land because of the higher price. Other agricultural products are the second biggest users of land next to other animal products, as shown in Figure 5.13, and it is somewhat surprising that there is no expansion of this sector. The explanation can be found in the new tariff structures shown in Figures 5.4 and 5.5, which indicate no changes in tariffs because the rates are already very low. Hence the decline in output and the use of fewer resources, because of greater imports. In addition the increase in the relative price of land may explain a decline in the use of land by this large land-user.

5.3.2. Unemployment

While the discussion is still on the topic of resource use, the continuation of the analysis will deviate a little from the central theme and focus on a very important issue for South Africa,

namely unemployment, especially among unskilled labor. South Africa has an unemployment rate of more than 30%, which paints a bleak picture of social circumstances and living standards. What is even more problematic is that most of the unemployed are black, which increases the pressure for redistribution on the one hand and economic growth on the other. These circumstances have led to policy decisions, which often do not reflect the economic rationale. It is therefore especially important to analyze the effects of the agreement in terms of job creation for unskilled labor.

The analysis is conducted by fixing the real return on unskilled labor in the model, keeping all the other parameters and settings unchanged from the FTA scenario. This leads to the result that only the quantity of unskilled labor can vary, indicating the expansion of unskilled labor use because of the agreement. Figure 5.16 indicates the fixation of the real return on unskilled labor, which also shows the increase in return on the other endowments because of the manipulation. Figure 5.17 shows a familiar picture, namely the change in endowment use, but this time only for unskilled labor. It reveals a slight increase in the use of unskilled labor or less of a decrease for all sectors. This thus gives an indication that unskilled labor is likely to gain from the agreement, although the actual job creation is rather small. Because these are value shares, it is impossible to give an exact estimate of how many new jobs will be created. For this, data is needed on the current price and volume of unskilled labor in each sector.

Figure 5.16. Real Return Analysis

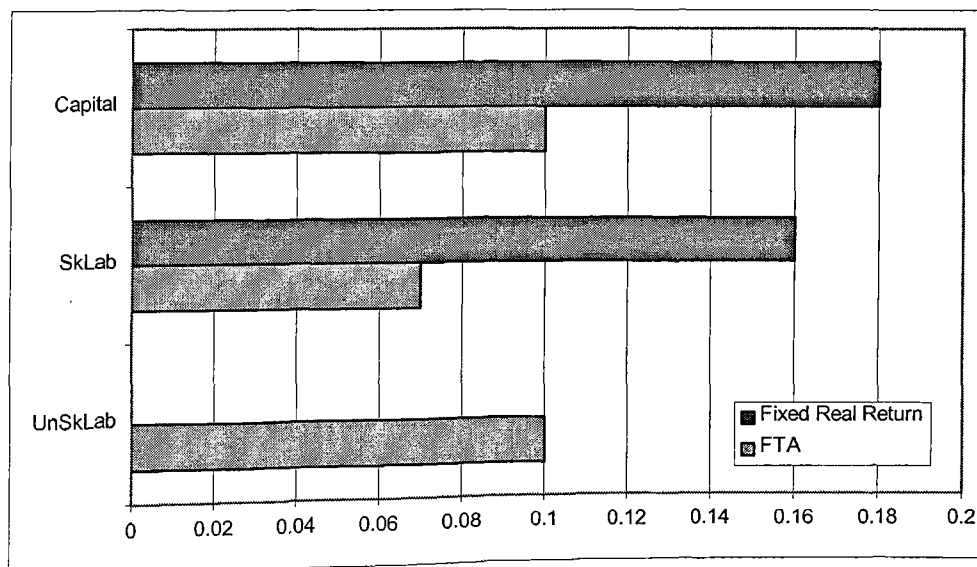


Figure 5.17. Unemployment Analysis for Unskilled Labor

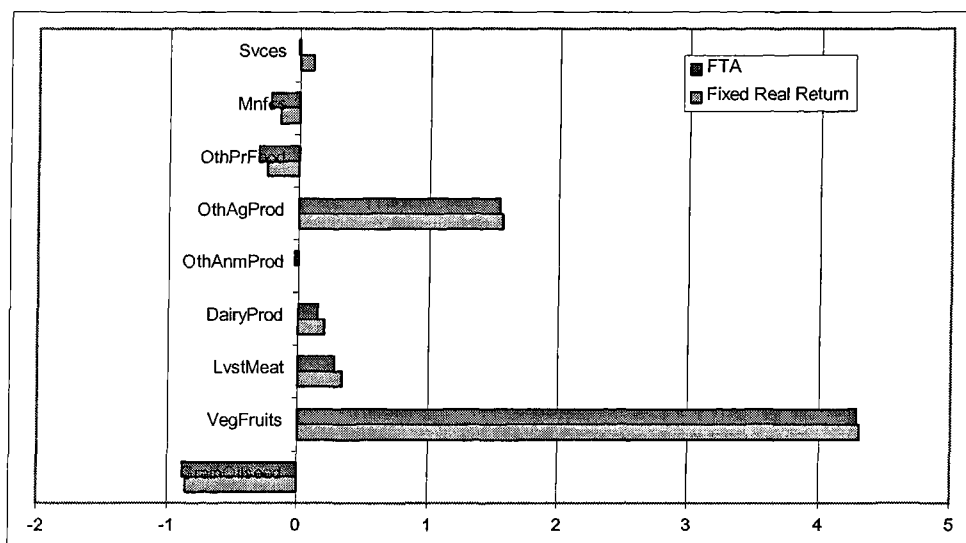
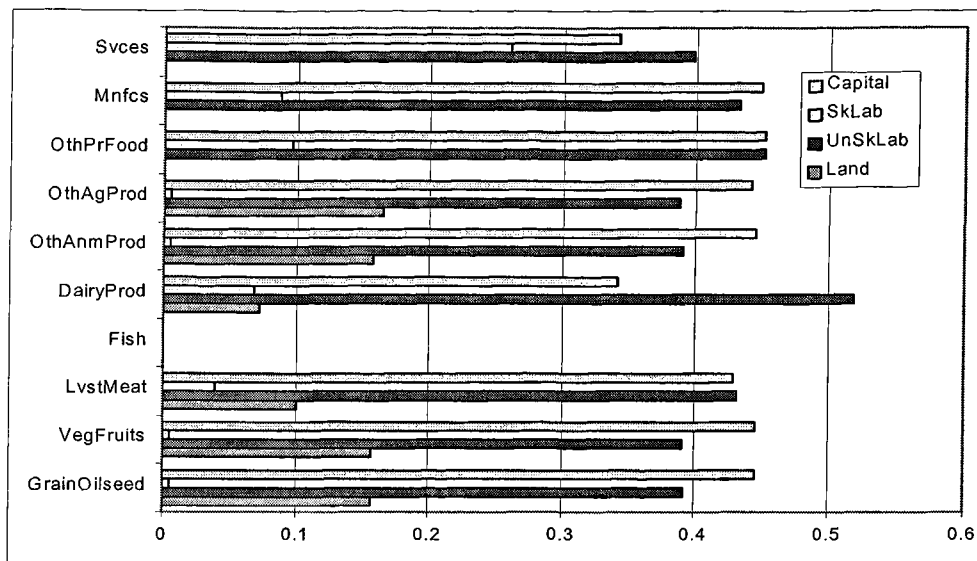


Figure 5.18 sheds some light on the intensities of labor use within each sector. Except for the dairy sector, most sectors are more capital intensive, although the use of unskilled labor overall is pretty high at nearly 40% for all sectors. The argument could be made that South Africa, being so labor abundant, should use much less capital and employ much more of the abundant resource.

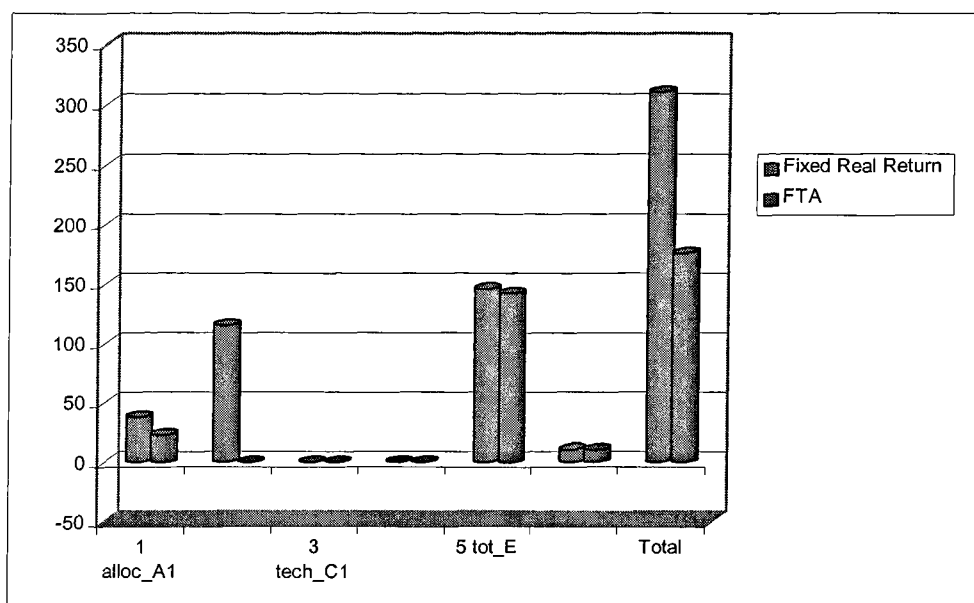
Figure 5.18. Factor Use — Sector Shares



However relative prices are responsible for the allocation of resources, and there seem to be some rigidities in the supply of unskilled labor. These can probably be traced back to union activity or distortions on the capital input side, which have occurred in the past, especially in the agricultural sectors. On the other hand, these are value shares, and if labor is abundant and cheap and capital is rare and expensive, it does not give an indication of volumes.

From an expansion perspective the unemployment picture is also not too bright. The agreement with the EU leads to the expansion of sectors such as VegFruit and OthAgProd which are quite labor intensive, but whose total share of labor use is rather small, as Figure 5.13 has indicated. Unfortunately heavy users of labor, such as the manufacturing and services sectors, either contract or do not show any expansion in terms of total share, which does nothing to alleviate the situation. However the analysis has indicated that the overall effect for unskilled labor is positive, which is desirable.

Figure 5.19 gives an indication of the welfare gains of fixing the real return on unskilled labor. Again it is a comparison between the familiar FTA scenario and the unemployment scenario. Although there are some allocation efficiency gains, because more unskilled labor can be used at

Figure 5.19. Welfare Decomposition on Unskilled Labor Analysis

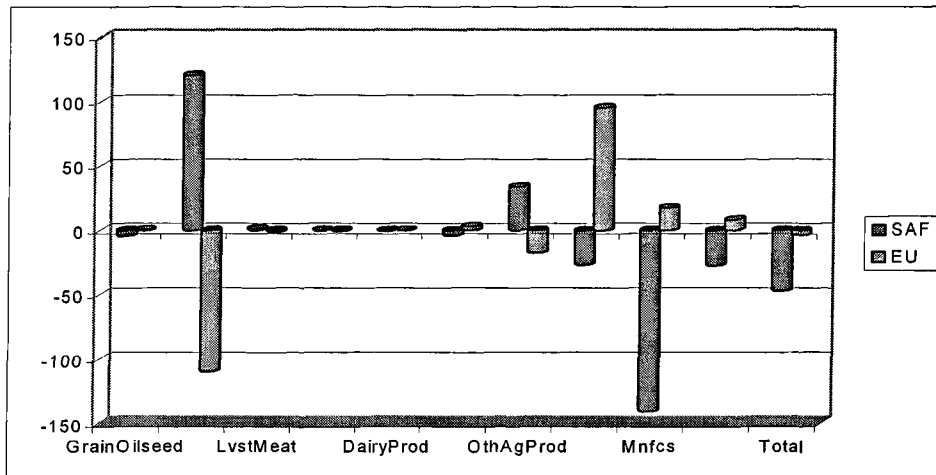
a lower price, the real difference arises, as expected, in the endowment category. The interpretation here is that more people receive an income because more unskilled laborers are employed out of the unemployment pool, and that the total change of welfare in the endowment sector is largely positive. The increase in total welfare gain thus gives an indication of the beneficial impact on unskilled labor derived from the agreement between South Africa and the EU.

5.3.3 Imports and Exports

The focus of the discussion now shifts towards the change in trade flows induced by the agreement. The changes in these flows are the catalyst for all the other changes within the South African economy. Figure 5.20 therefore highlights the changes in the trade balance for South Africa and the EU. In South Africa, the big losses in the manufacturing, services and other processed food sectors are partly offset by gains in the vegetables and fruit and other agricultural products sector. The EU has the reverse flows. Value changes in the other sectors are rather

small, and the overall effect is negative, indicating that South Africa is importing more because of the agreement.

Figure 5.20. Changes in Trade Balance (\$ million)



Let us first focus attention on imports. Figure 5.21 indicates the percentage changes in imports into South Africa from the EU and the rest of Southern Africa under the three scenarios. Notice that there is an increase in imports of all commodities under all scenarios. This was to be expected, as tariff reductions tend to increase trade flows. The 100% scenario delivers the greatest changes. These are basically correlated with tariff reductions, and the livestock and meat sector therefore experiences a huge increase in imports, because it had the highest tariffs. On a regional basis, as illustrated by the SAF–RSA scenario, South African sectors enjoying protection are the manufacturing sector, the livestock sector, the fish sector, and the fruit and vegetable sector. Significant import changes from the EU under the FTA agreement occur in the VegFruit and OthPrFood sectors. Again these can be traced back to tariff reductions according to the agreement. The dairy sector shows no dramatic changes in spite of its huge tariffs, because of its very small import and export shares.

Figure 5.21. Percentage Changes in Imports to South Africa under the Three Scenarios

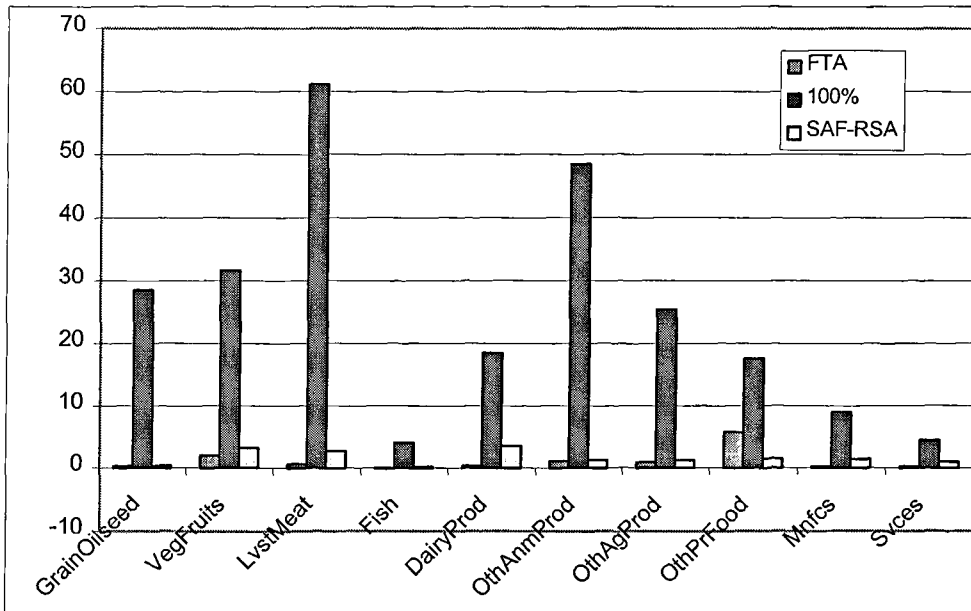


Figure 5.22. Percentage Changes in Import Prices in South Africa under the FTA Scenario

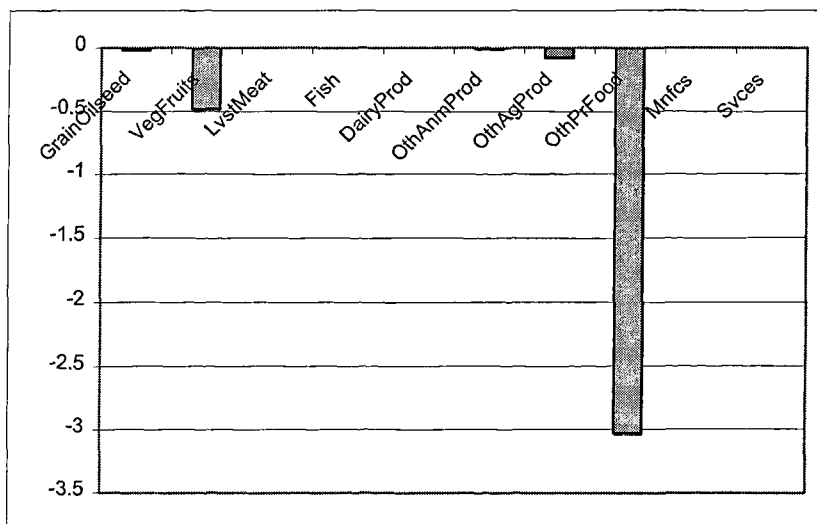
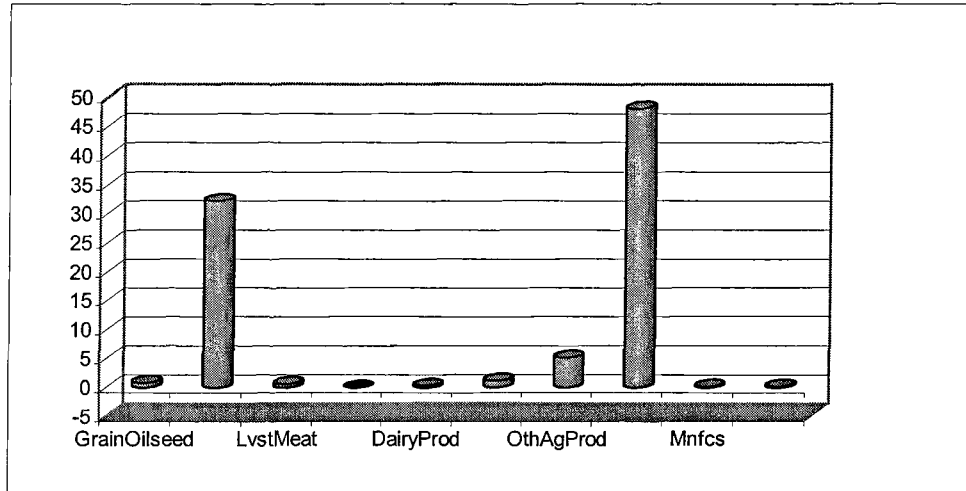
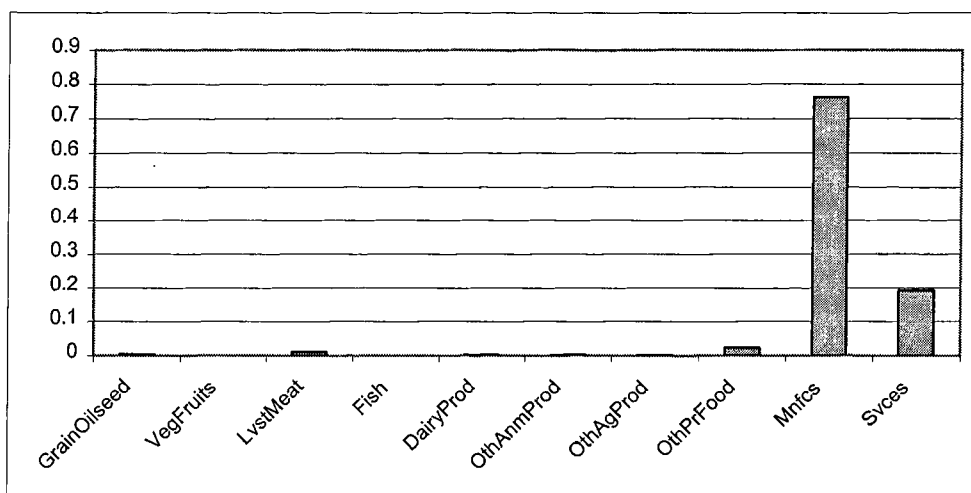


Figure 5.23. Percentage Changes in Import Quantities from the EU

The changes in imports under the FTA agreement can also partially be explained by Figure 5.22, which depicts the relative changes in import prices. Import prices of other processed foods are relatively much cheaper under the agreement because of reduced tariffs and therefore more is imported. The same applies for vegetables and fruit. Figure 5.23 isolates the changes in imports from the EU under the FTA scenario, and the correlation with tariff reductions and price changes becomes clearer. Figure 5.24, on the other hand, indicates the import shares according to the value of commodities from the EU. Manufactured goods and services account for the overwhelming share of imports. Imports of both of these commodities rise only slightly, as indicated by Figure 5.23: however, because of the size of their share, they will be responsible for most of the TOT gains (as will be discussed below).

Figure 5.24. Import Shares from the EU

The final point of interest under the import discussion is presented by a look at the changes in relative import prices for services and manufactured goods under the FTA scenario. The effects were rather small and therefore not clearly visible on Figure 5.22. It can however be said that both the EU and South Africa experience lower import prices for services and manufactured goods because of reduced import tariffs. For the other regions there are no tariff reductions and trade diversion occurs (especially for manufactured goods in the rest of Southern Africa region, which still has substantial tariffs on manufactured goods). The issue of trade diversion will be explored in more detail in the last section of this Chapter.

The next series of Figures analyses changes in exports from South Africa. Figure 5.25 again portrays changes in exports to the EU and the rest of Southern Africa of all commodities under the three scenarios. Note the scale of the changes. For livestock and meat, the percentage change under the 100% scenario is well in excess of 1000%. This tremendous effect comes from a very low export base together with very high tariffs, which are eliminated completely under the 100% scenario. More important, however, are the export changes of other agricultural products and other food products for the FTA scenario, and livestock and meat changes for the SAF-RSA scenario. Notice that there is again a negative change in the grain and oilseeds sector under regional liberalization, illustrating the effects of the initial subsidy as discussed above.

Figure 5.25. Percentage Changes in Exports from South Africa under the Three Scenarios

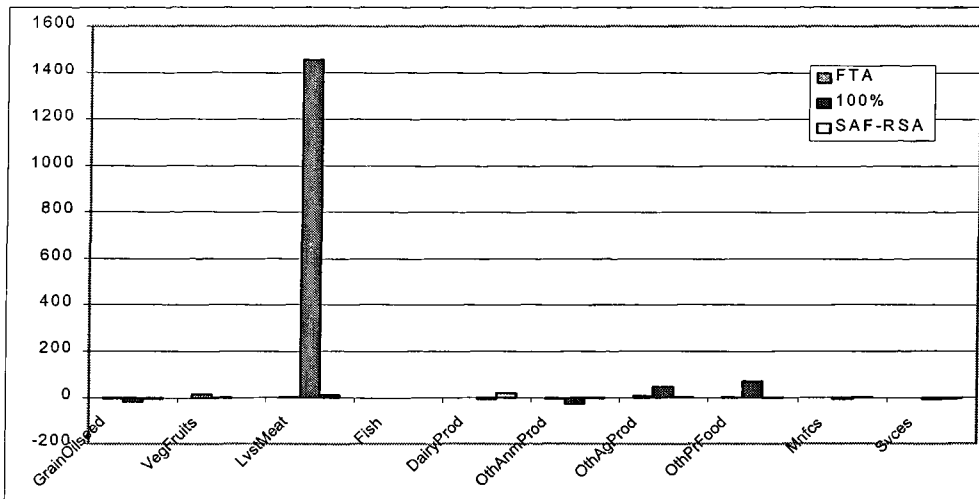


Figure 5.26. Percentage Changes in South African Exports to the EU

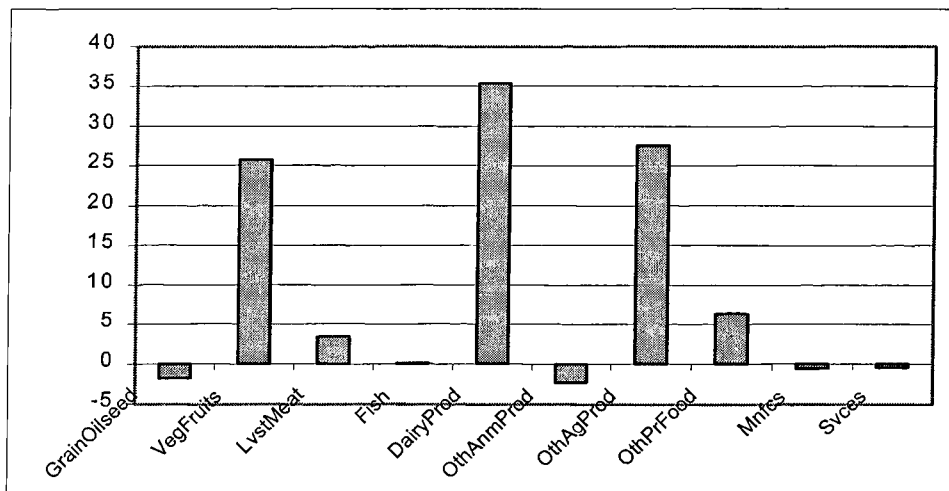


Figure 5.26 provides a closer look at export changes from South Africa to the EU under the FTA scenario, while Figure 5.27 illustrates the total export shares according to value. Manufactured goods and services feature prominently again, while other processed foods, and vegetable and fruits are also of importance. The exports of manufactured goods and services fall because of unchanged tariffs, and resources therefore are being allocated to more profitable sectors, as was indicated in the earlier discussion, thereby decreasing the output and exports. The increases in

exports are again highly correlated with tariff reductions, especially for vegetables and fruit, dairy and other agricultural products.

Figure 5.27. Share of South African Exports to the EU

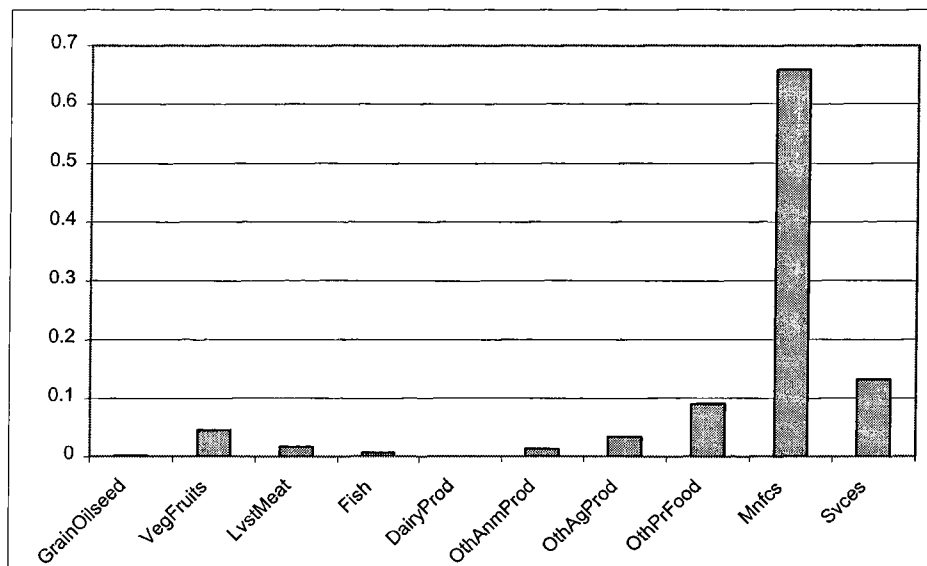
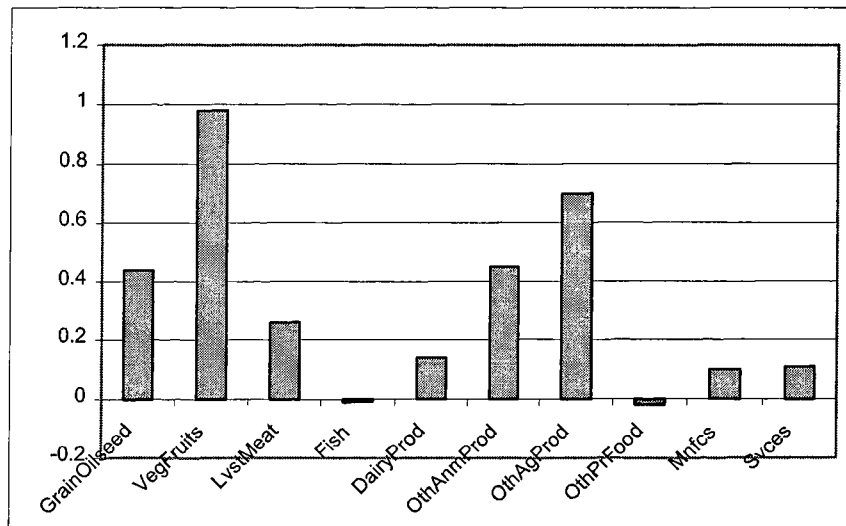


Figure 5.28 again focuses on price changes. The FTA agreement between South Africa and the EU produce higher prices for all South African export commodities except fish and other processed foods. The biggest change takes place in the vegetables and fruit sector, which also increases exports significantly because of substantially lower tariffs. Note that the other agricultural products sector experiences the next biggest price change, which can be traced back to the reduction in import tariffs by the EU shown in Figure 5.5. These two sectors thus become the most lucrative export sectors, drawing resources out of the other sectors, especially out of the grains and oilseeds and other animal products sectors, which can be imported more cheaply. On a relative price basis, although the results show only rather small changes, they are significantly more positive for South Africa than for the other regions, which are mostly negative, except for manufactured goods from the rest of Southern Africa. This might be linked to the smaller output of manufactured goods from South Africa, opening the door for exports from the rest of the region. The price changes are, however, minute, and not too much emphasis should be placed on them.

Figure 5.28. Percentage Changes in Export Prices for South Africa under the FTA Scenario



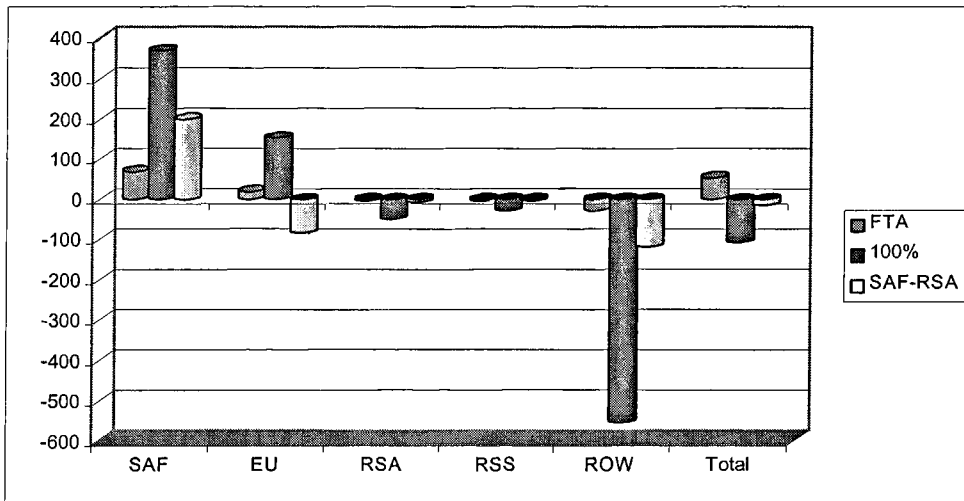
5.3.4 Welfare Analysis

The welfare section is probably the most germane to achieving the objectives laid out at the beginning of the analysis. The GTAP software allows the researcher to conduct an in-depth analysis of welfare effects, pinpointing the losses and gains to various sectors and translating them into a whole variety of factors. The obvious starting point for the analysis is a summarized welfare decomposition.

Figure 5.29 identifies the losers and gainers amongst all the regions under the three scenarios. In contrast to the belief of many critics, South Africa gains under all three scenarios, the biggest gain coming from the 100% reduction scenario. However, this Figure also bears testimony to the fact that there are bigger gains for South Africa under the regional SAF-RSA agreement than under the FTA deal. This is not surprising, because the third scenario foresees the elimination of all tariffs between the member countries, whereas under the first scenario, only some tariffs are reduced or eliminated. The EU gains under all the scenarios where it is a partner to the liberalization, though less than South Africa. This result has its origin in the fact that South Africa

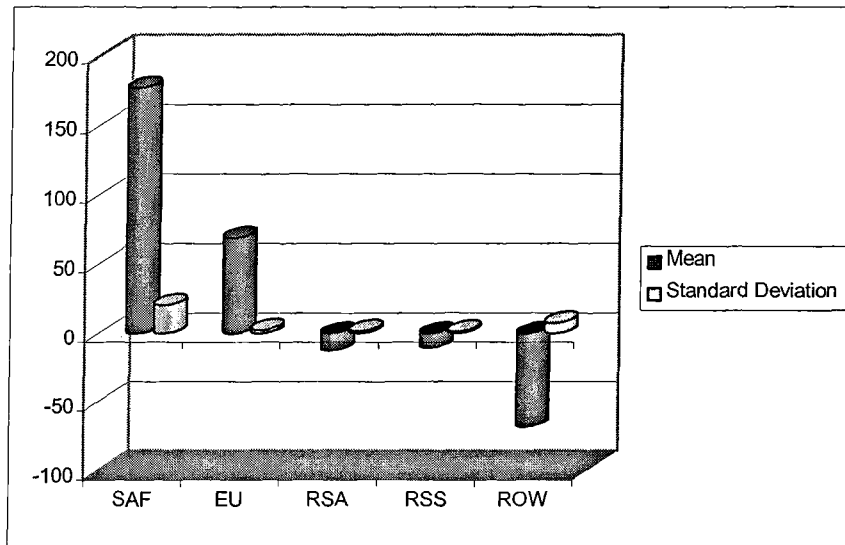
stands to gain more market access and increased exports because of the EU's high initial tariff barriers. The EU however loses under the third scenario. An uncomfortable result is presented by

Figure 5.29. Total Welfare Effects under the Three Scenarios



the rest of Southern Africa, which forms part of the third scenario. The hypothesis that there are gains for all partners to an FTA agreement has to be rejected. However the loss to the rest of Southern Africa is rather small. This issue will be further explored in the last section of the analysis, which will also focus on the trade diversion, which clearly takes place in all the non-agreement regions. Notice that the only positive total gain is achieved under the first scenario.

Figure 5.30. EV Sensitivity Analysis — tms (FTA)



To test the trustworthiness of the results, a sensitivity analysis was conducted on the FTA scenario. The shocks, in this case the tariff reductions, were allowed to vary by 20%, due to the less than perfect estimation of target rates. The results were sufficiently robust, indicating a win-win situation for both the EU and South Africa, with the latter experiencing the larger gains. Note that Figure 5.30 indicates that the trade diversion effects for the other regions are also very robust.

Figures 5.31 and 5.32 might possibly illustrate why critics erred in their evaluation of the effects of the FTA agreement between South Africa and the EU. Although the trade balance worsened for South Africa for most commodities, the terms of trade (TOT) effects might have been left out of the equation. Figure 5.31 shows that the TOT gain is the largest, followed by gains in allocative efficiencies; and capital goods. The former is an indication of more efficient resource use; because of the elimination of distorting barriers. The latter indicates the gains from increased capital inflows and thus lower interest rates. Terms of trade measures the relative prices of exports and imports, in other words how much more imports can be bought with the same amount of money and how much more is earned from exports. South Africa receives most of its gains from an improvement in TOT. This is true for all three scenarios, as is shown by Figure 5.32.

Figure 5.31. Decomposition of Welfare Gains for South Africa under the FTA Scenario

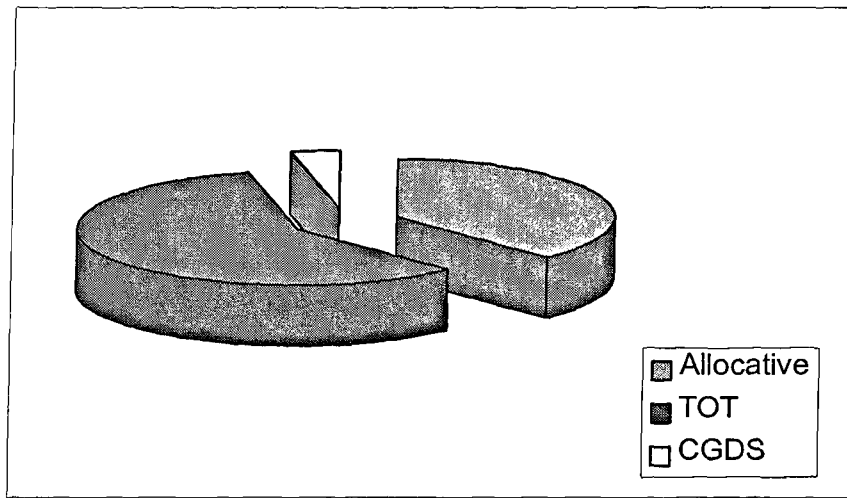


Figure 5.32. Terms of Trade Gains for South Africa under all Three Scenarios

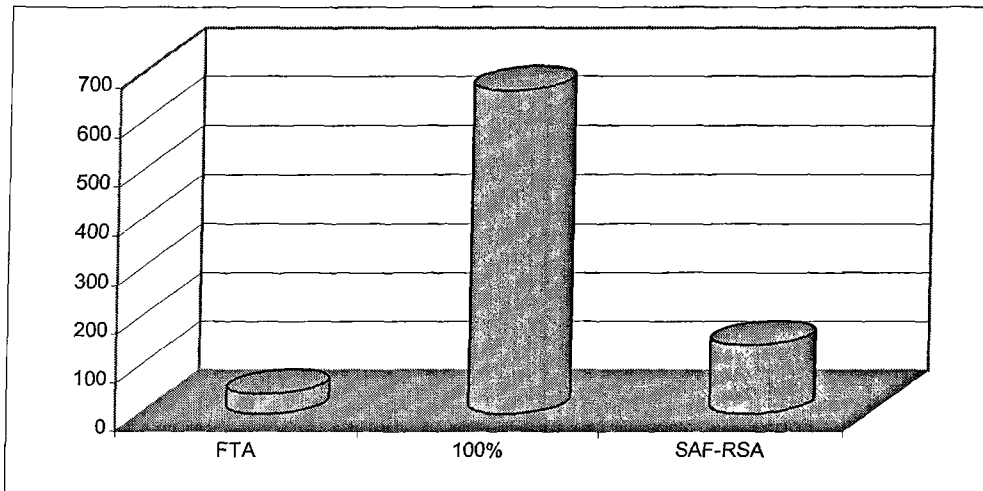
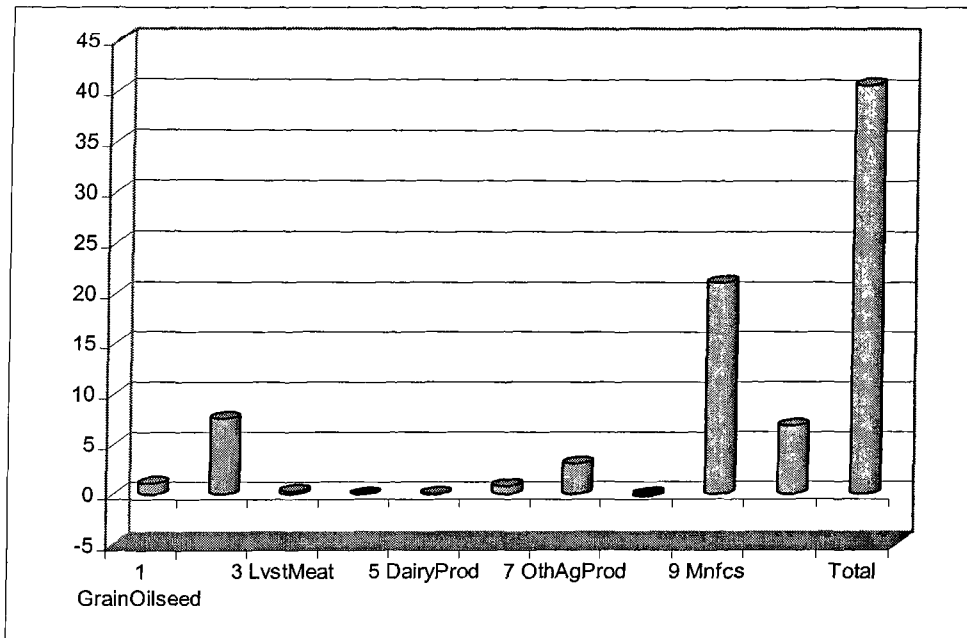


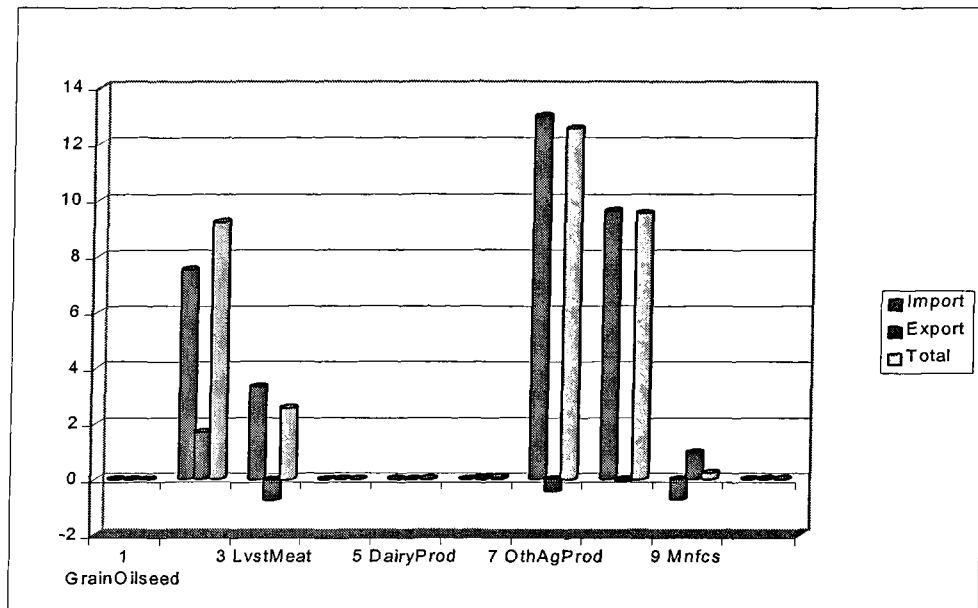
Figure 5.33 presents a further breakdown of TOT effects according to sectors for the FTA scenario. The biggest gains come from the manufacturing sector, which experienced constant import prices and higher export prices as indicated earlier, and is also responsible for the greatest

Figure 5.33. Decomposition of Terms of Trade Effects (\$ million)

trade flow. Therefore more is imported at constant prices, and less is exported at higher prices, giving consumers the opportunity to buy more imported manufactured goods at lower prices, than can be produced locally. The same applies to services, but to a much smaller extent. Next in line are the vegetables and fruit, and other agricultural products sectors, which experienced the biggest increases in export prices and also had much lower import prices. They are nonetheless some of the more important export sectors in terms of trade flows.

A further decomposition is presented in Figure 5.34, which identifies welfare gains from the various trade flows under the FTA scenario. These are composed of both volume and price changes. The biggest gains come from the imports of other agricultural products and other processed food, followed by the imports of vegetables and fruit and livestock and meat and exports of vegetables and fruit. Although the other sectors experience larger gains from trade flows, vegetables and fruit has much larger volumes, and hence makes the greater contribution to overall welfare in terms of TOT (see Figure 5.33). The same applies to the manufacturing sector, which has the largest TOT effect because it has the largest volumes. However its price changes for imports and exports are so minute that the contribution in terms of trade flows is also rather

Figure 5.34. Welfare Contributions of Trade Flows into and out of South Africa (\$ million)



small. The trade flows for manufactured goods and services also do not carry so much relative weight, because of their relatively small export share with respect to total output, as indicated by Figure 5.7. The overall effect is positive though. The same analysis can be conducted for the services sector. In terms of exports, the biggest loss comes from the livestock and meat sector, which experienced higher export prices and bigger export volumes, but still was faced with high tariffs, and therefore resulted in a loss in terms of trade flows.

The last two Figures in this section constitute a further analysis of the welfare decomposition, focusing on allocating efficiencies in South Africa. Figure 5.35 illustrates the effects under the three scenarios, and the Figure is dominated by the major negative impact coming from the livestock and meats sector under the 100% scenario. This effect has its origin in the huge tariffs, which still exist towards other countries (such as the rest of Southern Africa) whilst being removed from the EU. This implies that, because of existing tariffs and the protection that the sector enjoys, resources are not used efficiently. Notice that there is also a negative effect for the

same sector under the FTA scenario, but not for the SFA–RSA scenario. This effect is a clear example of trade diversion effects, which will be discussed later on. Positive gains are made in the other processed food and manufacturing sectors under all three scenarios.

Figure 5.35. Decomposition of Allocative Efficiencies in South Africa

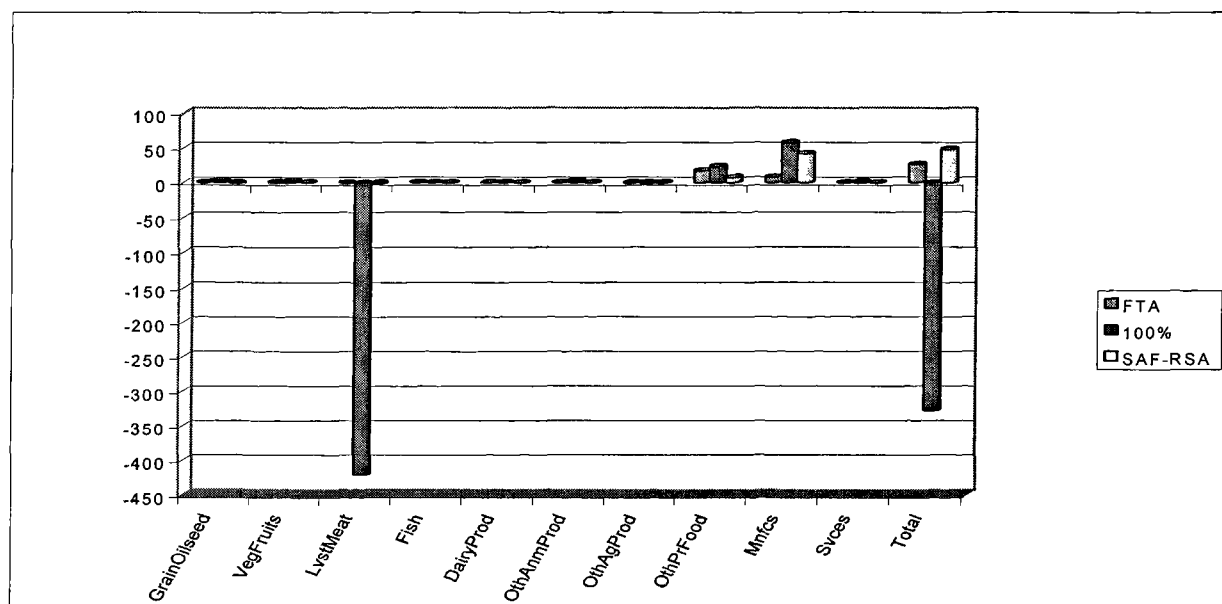
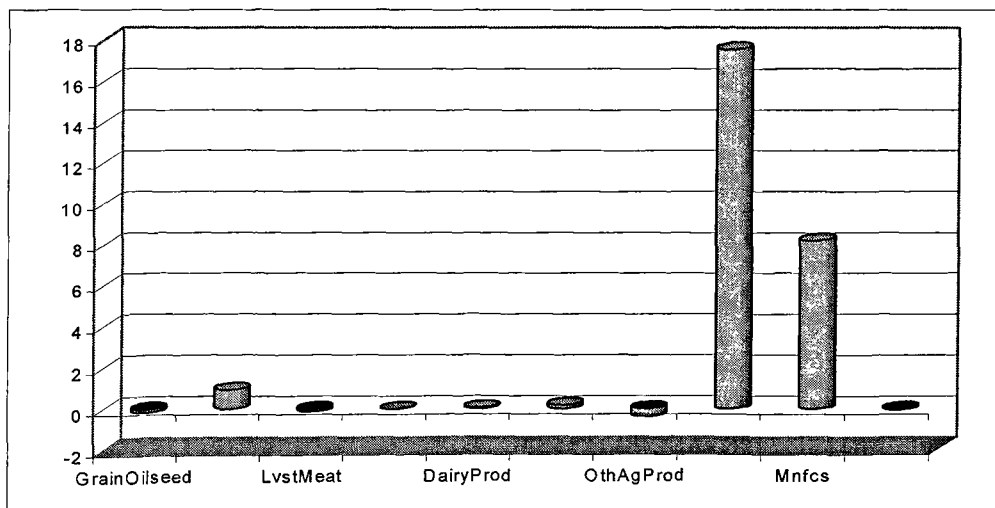


Figure 5.36. Decomposition of Allocative Efficiencies in South Africa under the FTA Scenario



This issue is pursued further in Figure 5.36, which shows the allocating efficiency effects for South Africa under the FTA scenario. Surprisingly there is a negative effect for the other agricultural products sector. This can be traced back to the inflow of factors at higher prices, especially land, which experienced a substantial increase in relative price, as indicated earlier. Although the other processed food sector also drew some higher priced resources in from other sectors, such as the manufacturing sector, it gave up some of the land it initially used to the other agricultural products sector, making it more efficient and thereby presenting the biggest gains. The big efficiency gains in the manufacturing sector arise from the exodus of resources into other sectors, letting demand be satisfied by cheaper imports and contracting in the process. The vegetables and fruit sector also shows some positive results, because of increased imports, which replace some of the less efficient local production.

5.4 Summary

Once again, the GTAP framework needs to be commended for its ease of use on the one hand, and the theoretical soundness of its basic structure and assumptions on the other hand. The aim of the Global Trade Analysis Project is to promote an efficient and ready-to-use framework for modelers all over the world. The results can then be used to guide policy decisions and promote free trade efforts. There are however certain trade offs, which have been indicated repeatedly and other models might be more appropriate for specific circumstances. The use of the GTAP framework is spreading across continents and modelers are realizing the importance of being able to replicate existing studies with ease and accuracy, and extending them through further applications. The custodians of GTAP are nonetheless fully aware of its weaknesses and there is a strong commitment towards constant enhancement and improvement of both the databases and the theoretical structure.

The question asked at the beginning of this study was answered in detail in this Chapter. The analysis has indicated that South Africa gains the most under all three scenarios in terms of welfare, which in the GTAP model is conveniently translated into a dollar amount. In the case of the FTA scenario, the total welfare gains for South Africa amount to \$69 million. The pay-off in

terms of the size of this amount in relation to the effort put into the negotiation process is debatable. The analysis has, however, confirmed the theory with respect to trade liberalization. It is possible that critics of the FTA agreement only considered trade effects and the trade balance, and did not take TOT and allocative efficiency effects, which are responsible for the greatest part of the welfare gains, into consideration.

The sensitivity analysis unequivocally states that these results are robust. This is comforting, given the less than perfect calculation of tariff structures and target tariff rates used in the shock file. The initial tariff rates used by the GTAP model are also cause for concern. The sensitivity analysis gives credibility to the results by indicating that even with 20% swings in the tariff rates the overall result will not change significantly.

This study focused mainly on the agricultural sector of the South African economy. If the welfare results seem small and rather insignificant, this stems from the structure of the South African economy, where manufactured goods and services are by far the most important sectors in terms of output and trade flows. The tariff rates of both of these sectors were left unchanged. However, because of their relatively large share of trade in comparison with the agricultural sector, these two sectors are responsible for most of the welfare gains. Within the agricultural sector the vegetables and fruit sector is predicted to gain in importance under the agreement. Increased output and exports will translate into a sizeable share of the welfare gains in terms of allocative efficiency as well as TOT effects. The growth experienced by this sector will, together with the other agricultural products sector, also be responsible for most of the job creation, as most of the other sectors are shrinking.

A further aspect, which has been highlighted by the study, is that the reduction in tariffs for the different sectors is directly linked to welfare gains and the re-allocation of resources. Therefore the greater the liberalization, the greater will be the welfare effect, which is clearly visible in the comparison of the three scenarios. The opening up of markets therefore serves as a streamlining exercise for the whole economy, making production more efficient and supplying consumers with cheaper products, while presenting local industries with the possibility of higher export prices and volumes.

It is also necessary to gauge the potential gains from further trade liberalization, as depicted by the three scenarios. Not only will welfare gains be much higher under the 100% scenario, but sectors which are currently restrained by heavy barriers will become important. The export potential for beef under total liberalization is tremendous, as is that for the other processed food sector, and policy makers should pursue further liberalization efforts in this regard. A whole range of import sectors also become important in terms of welfare gains under this scenario, with the other processed food sector again leading the way. It should nonetheless be realized that liberalization is an ongoing process and reflective of the current global sentiment on trade.

Positive labor effects are also achieved by the liberalization, although the overall effect is rather small. South Africa should be in a position to make better use of its abundant labor endowment by substituting it with capital. Unfortunately the price signals seem to be distorted in this regard, perhaps because of union activity or subsidized capital, especially in the agricultural sector. As mentioned earlier, it is difficult to give a definite estimate of the number of new jobs created by trade liberalization.

Finally the issue of the regional impact of the study needs to be addressed. Clearly, South Africa's neighbors are worse off because of the FTA agreement through trade diversion effects. While SACU (which is virtually synonymous with South Africa) will experience welfare gains under the agreement, the SADC (which comprises most countries under the rest of Southern Africa designation, except for the SACU countries) will experience welfare losses under the current agreement with the EU. As discussed earlier, trade diversion effects are mainly responsible. What is more disturbing, is the fact that the region also appears to lose from being part of a regional trade agreement under the SAF-RSA scenario. One explanation for this, other than rejecting the generally accepted theory on trade, might be that the data used does not sufficiently capture all the trade flows within the region, and that a lot of new developments have not been included in the data. Nonetheless with South Africa being the giant amongst dwarfs in terms of economic activity and ill-developed economies, the results might be a close approximation to likely effects. This issue will be pursued in more detail in Chapter 6.