

# THE IMPACT OF THE EU FREE TRADE AGREEMENT ON SOUTH AFRICAN AGRICULTURE: A GENERAL EQUILIBRIUM ANALYSIS

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*The objective of this paper is to analyse the effects of the concluded EU free trade deal on South Africa with special emphasis on the agricultural sector. The study makes use of the GTAP software and methodology developed at Purdue University, which provides a very convenient and efficient way for interpreting changes in trade flows due to tariff structure adjustments. The paper gives a detailed account of change in trade flows together with the resulting welfare effects. It is found that both South Africa and the EU will experience welfare gains as a result of the agreement. Furthermore it is determined that exports of dairy products to the EU will increase by more than 35% while exports of vegetables and fruit, and other agricultural products will also increase by 25% and close to 30% respectively.*

## 1. INTRODUCTION AND BACKGROUND

On the 24th of March 1999 the EU approved a free trade deal with South Africa, which took over three years to conclude. Significantly, it is the first between the EU and a developing country and the first also to include agricultural goods. The deal will come into force in January 2000 and will encompass a substantial portion of the current annual bilateral trade. On the South African side, 14% of total imports and only 19% of agricultural imports from the EU are not subject to tariff reductions over the next 12 years, whereas the EU offer excludes 5% of all trade, but 37% of agricultural trade. However if tariff quotas are taken into account, the EU excludes only 26% of agricultural trade. Although it falls beyond the reach of this paper, it is assumed that the rest of Southern Africa would unfortunately experience trade diversion effects and thus welfare losses, due to this agreement. The objective of this paper is to quantify the effects of the FTA between South Africa and the EU.

Critics within South Africa have been concerned over the seemingly lopsided market access structure of the agreement in the agricultural sector. Cheap, subsidized EU agricultural exports, it is feared, will flow onto the South African and SACU markets, which could seriously threaten small and unsubsidized farmers in South Africa and the region as a whole. There is also

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concern over the ability of Southern African industrial sectors' to withstand the impact from increased imports of EU manufactured goods.

The EU had been South Africa's most important trading partner throughout the apartheid era. Trade relations were conducted according to reciprocal MFN agreements. After the political change in 1994, South Africa once again became an acceptable trading partner and the EU could afford to strengthen its ties with Pretoria. Various GSP's presented South African exporters with limited preferential access into the EU. Industrial GSP's were extended in 1995 and agricultural GSP's in 1996. The latter came into effect in 1996 and will run until June 2000. A further extension of these programs seems unlikely. For a couple of years South Africa attempted to become a full member of the Lomé group of countries, which would have entailed lucrative trading opportunities for South African agricultural products. This was however met with strong resistance by both countries within the EU and other Lomé countries, wary of South African competitors.

In 1996 therefore, a new approach was taken towards South Africa. The country was awarded partial Lomé membership, which excluded the usual trade and financial provisions, while the EU simultaneously offered to negotiate a trade and development agreement, culminating in the creation of a FTA with South Africa within 10 years. EU bureaucracy and politicizing proved to be a formidable obstacle, apart from resistance of EU member countries. A deal could have been reached much earlier, had it not been for opposition from especially Spain and Portugal in recent months, lamenting South African competition in products such as fruits, juices, and wine. Finally a deal was however concluded, of which the effects and trade flows will be closely scrutinized together with the resulting welfare effects. Before shedding some light on the experimental design, a brief introduction to the GTAP trade model will be presented. As the model is multi-faceted and complex, only a one-region framework will be used to illustrate the structure of the model. The analysis makes use however, of the extended multi-region framework to include trade flows, which form the basis of this paper.

## 2. THE GTAP MODEL

There is a large and expanding literature on multi-sectoral applied General Equilibrium (GE) models, and each group of models tends to have a different focus, although employing the same basic principles. This paper uses the GTAP framework of Applied General Equilibrium (AGE) modeling to analyze trade effects. GTAP stands for the Global Trade Analysis Project, which is

administered by the Center for Global Trade Analysis of Purdue University. The following discussion of the GTAP framework uses the text "Global Trade Analysis" by Hertel (1997) as basis.

The framework comprises an economy wide simulation model, which has been constantly reviewed to encompass 50 commodities and more than 20 regions. The multi-region model captures the global economy and all its trade flows. It is furthermore typically based on neoclassical theories of firm and household behaviour with a time frame long enough to achieve equilibrium in all markets. The framework is based on comparative static analysis, but dynamic versions are also in place.

GE analysis has become popular for a number of reasons, in part because some of the PE limitations can be avoided. PE analysis generally does not acknowledge finite resource endowments, whereas a subsidy in GE analysis pulls resources away from other sectors, making them scarce, thereby increasing their price. PE analysis also does not indicate, where subsidies come from, meaning the model does not punish those agents that have to pay for the subsidy. This could have profound welfare consequences, where the subsidy may increase welfare of some, but at the expense of others. Income effects are not captured endogenously and there is no link between factor income and expenditure.

GE analysis furthermore provides a consistency check through Walras' Law, which does not apply to PE analysis. Walras's law provides a definitive computational check, which is used to great effect by most modelers. Furthermore, the fundamental GE equations in the GTAP framework provide accounting consistency. There is thus no double counting. Key accounting identities in the model include:

- Commodity and factor market clearing conditions
- Private and public household budget constraints, and
- Balance of payments conditions.

There are also the inter-industry effects. Sometimes it is valuable to have an exhaustive model to account for the internal effects within an economy. Especially in the agricultural and food sectors, inputs and outputs often become blurred. CGE results place an emphasis on the impact of a policy change on factors and households, and thus ultimately on people. Conventional supply-demand analysis on the other hand focuses on commodity prices, consumer and producer surplus. The GE analysis is thus

more valuable in terms of welfare effects, which especially with the GTAP framework, can be broken down into various effects for each commodity.

Figure 1 explains the basic concept of GTAP by focusing on the accounting relationships. The starting point in this exposition is a regional household associated with each country or composite region of GTAP. This regional household collects all income that is generated in the closed economy. According to a Cobb Douglas per capita utility function, regional income is exhausted over the three forms of final demand: private household expenditures (PRIVEXP), government expenditures (GOVEXP) and savings (SAVE). This approach represents the standard closure of GTAP in which each component of final demand gets a constant share of total regional income. Thus, an increase in regional income causes an equiproportional change in private expenditures, government expenditures and savings. Alternately, the level of government activities (GOVEXP), the level of savings (SAVE) or both components can be specified exogenously, so that private household income is then calculated as a residual.

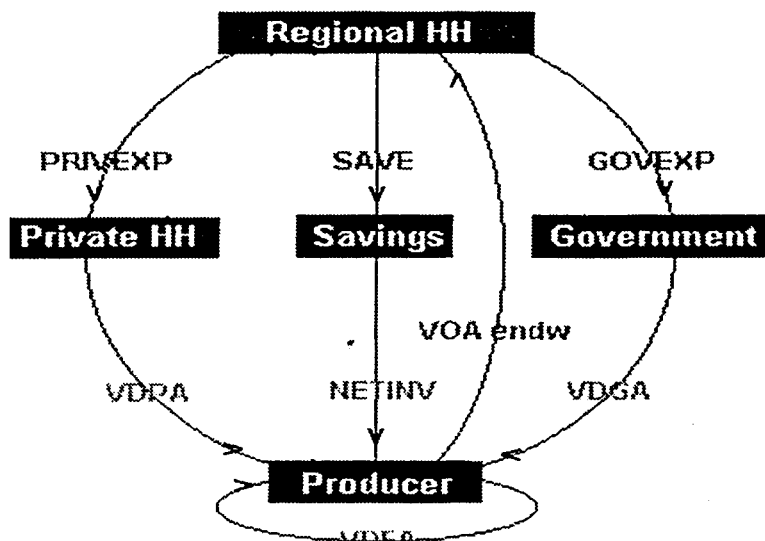


Figure 1: One region closed economy without government intervention

Source: GTAP Lectures, 1999

The focus now shifts onto the producers. The firms and the regional household together with its three components of final demand now build a closed economy. This makes it possible to take a closer look at the accounting identities specified in the GTAP model. Starting with the regional household, the top half of the graph shows that the available regional income consists of the Value of Output at Agent's prices (VOA) paid by producers for the use of endowment commodities to the regional household. In order to give a clearer presentation, Figure 1 only displays the value flows in the economy. However, there are corresponding flows or ownership of an asset, which flow through markets in the opposite direction. In the case described above, the value flow VOA also has a corresponding flow of endowment commodities, going from the regional household back to the producers. This flow as well as the other goods and service flows, are not included in the graphs.

Figure 1 clearly indicates that available regional income is collected by the regional household and entirely exhausted over private household expenditures, government expenditures and savings. Having established the distribution of regional income, we are now in a position to consider the economic activities of other agents in the closed economy.

First, Figure 1 shows the accounting relationship for the government, the private household and savings. According to this, the government spends its entire income on consumption goods, denoted as Value of Domestic Government purchases, evaluated at Agents' prices (VDGA). In order to model the behaviour of the government, a Cobb Douglas Sub-Utility function is employed in GTAP. Thus, the assumption of constant budget shares, which we also find at the top-level nest of the utility tree, is applied once again. The second component of final demand is represented by the private household. Corresponding to the accounting relationship, the private household uses all of its income to buy consumption commodities (Value of Domestic Private household purchases, evaluated at Agents' prices, VDPA). The constrained optimising behaviour of the private household is represented in GTAP by applying a CDE (Constant Difference of Elasticity) function. This CDE function is less general than the fully flexible functional forms on the one hand, but more flexible than the commonly used CES functions on the other hand. It is easily calibrated using data on income and own price elasticities of demand (Hertel, *et al.*, 1991).

Considering the third component of final demand, the accounting relationship in Figure 2 shows that savings are completely exhausted over investment (NETINV). In GTAP the investment is savings-driven according to the

constant budget share of savings in the top-level nest of the utility tree. Given the static nature of the GTAP model, current investment is assumed not to be installed during the considered period, and therefore does not affect the productive capability of the industries in the model. However, investment represents a category of final demand and will affect the economic activity in the region through its effects on the demand structure.

Looking at the production side of the closed economy, Figure 1 also shows the accounting relationships of firms in GTAP. The producers receive payments for selling consumption goods to the private households (VDPA) and the government (VDGA), intermediate inputs to other producers (Value of Domestic Firm Purchases, evaluated at Agents' prices, VDFA) and investment goods to the savings sector (NETINV). Under the zero profit assumption employed in GTAP, these revenues must be precisely exhausted on expenditures for intermediate inputs (VDFA) and primary factors of production (VOA).

The nested production technology in GTAP exhibits constant returns to scale and every sector produces a single output. Furthermore, it is assumed the technology is weakly separable, such that individual intermediate inputs and primary factors in fixed proportions to produce its output. Profit maximising firms therefore choose their optimal mix of primary factors independently of the prices of intermediate inputs. Utilising this type of separability also means that the elasticity of substitution between any individual primary factor as well as between any intermediate inputs is equal. Accordingly, the derived CES factor demand equations of domestically produced intermediate inputs and primary factors only depend on the relative prices of intermediates and primary factors, respectively.

Among the primary factors, the GTAP model additionally distinguishes between endowment commodities, which are perfectly mobile and those, which are sluggish to adjust. In the former case, the factor earns the same market return regardless of where it is employed. In the case of sluggish endowment commodities, returns in equilibrium may differ across sectors.

The complete accounting relationships in this one region closed economy model form a simultaneous equation system in which one identity is redundant and can be dropped. In GTAP the savings-investment identity is not imposed. A separate computation of savings and investment therefore offers a consistency check on the accounting relationships and verifies that Walras' Law is satisfied. Since the model can only be solved for  $N-1$  prices, the

price of savings is set exogenously, and all other prices are measured in proportion to this numeraire.

The one-region model forms the basis of the model. The GTAP framework is however extended to cover various regions and markets to account for trade flows. This enables the user to impose various tariff structures between regions and analyse the effects of tariff changes on welfare.

### 3. EXPERIMENTAL DESIGN

As mentioned earlier, the GTAP framework 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.

#### 3.1 Time structure of tariff changes

Because the GTAP model is based on a static general equilibrium model, in other words it portrays a picture of trade flows at a given point in time, analysis of the gradual lifting of trade barriers between the EU and South Africa pose some problems. Intuitively one can imagine that a speedy or slow pace of tariff change would have different effects and that within twelve years there could well be structural changes taking place. The different pace of liberalisation 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 post-agreement rates will reflect the effect of the bilateral tariff change after 12 years.

#### 3.2 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 a highly disaggregated agricultural sector is desired. 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         | OthAnnProd |
| 7.  | Other agricultural products   | OthAgProd  |
| 8.  | Other processed food products | OthPrFood  |
| 9.  | Manufactures                  | Mnfcs      |
| 10. | Services                      | Svcs       |

### 3.3 Data

When attempting such an in depth study, data requirements become immense. GTAP has very extensive databases, which are frequently updated. For the EU, the data is sufficient without any doubt. Trade flows between the EU and South Africa should also be well enough documented. Furthermore, the macro data from South Africa should still be acceptable, although the structure of the economy has undergone quite some 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. This is unfortunate, especially in the light of possible policy implications stemming from this research. There was however no better data available to the researcher at the time, to rectify these problems within a reasonable amount of time. However it needs to be mentioned, that a lot of work is currently being done in this regard, and more up to date data and structures should be readily available within the foreseeable future.

### 3.4 Shocks

The GTAP model does already have a reciprocal tariff structure for South Africa and the EU installed, on the basis of 1996 numbers. To calculate the effect of the agreement, therefore, a shock file needs to be created, which simulates the tariff changes to the agricultural sectors of both parties. The actual level of the tariffs are not important, but rather the changes to the tariff structure, from which the changes to trade flows and welfare effects are deducted, when solving the model once again with the shock file in place. The shock file for this particular scenario was created using the actual tariff reductions as stipulated by the agreement, shown in Table 1 and Figure 2. The calculations can be traced to Appendix 1. The tariff reduction structure was taken out of the actual documents compiling the South African and European offers. Note that on the South African Offer, all products identified as "Prot", meaning protocol, were considered as excluded from the agreement. The same counts towards the products identified under the EU Offer as number 5.



These are highly sensitive products, such as red meat, dairy, winter grains, etc. Further negotiations will clarify their tariff reduction schedules, if ever.) Some of the tariff rates might seem high, however, as was stated before, 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 paper did not take the quotas under the agreement into consideration. However they should not be underestimated, as they amount to 12% of total agricultural exports to the EU. Studies by the National Department of Agriculture have shown that especially the dairy sector stands to gain a lot in the short to medium term as a result of the quota. The dairy and sparkling wine quotas will fall away after 10 years, because by then tariffs on these products will have been eliminated. All the other quotas will continue to exist beyond this period).

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 manufactures and services were left unchanged for the analysis. They were however quite low for both countries anyway.

Table 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	10.7
LvstMeat	99.51	2	33.21	0
Fish	9.57	0	0	0
Dairy	101.68	14.66	7.3	0
OthAnmProd	0.07	0	0.03	0
OthAgProd	25.03	7.79	0	4.62
OthPrFood	25.36	1.6	0	14.89
Mnfc	1.77	0	5.16	0
Svcs	0.03	0	0	0

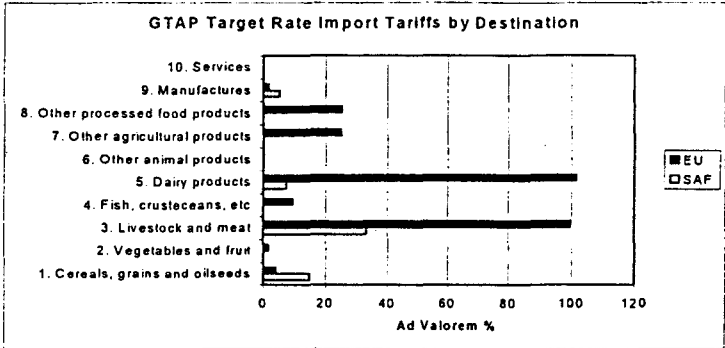


Figure 2: Target import tariffs between South Africa and the EU according to the FTA agreement

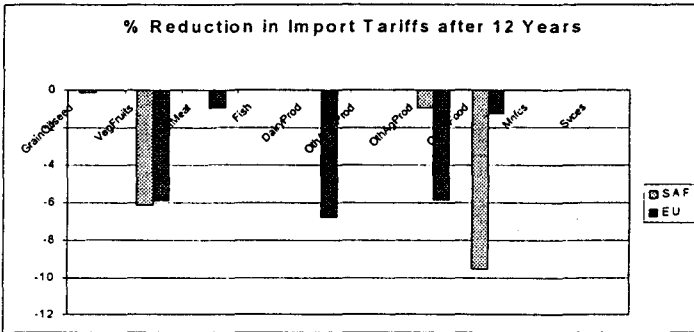


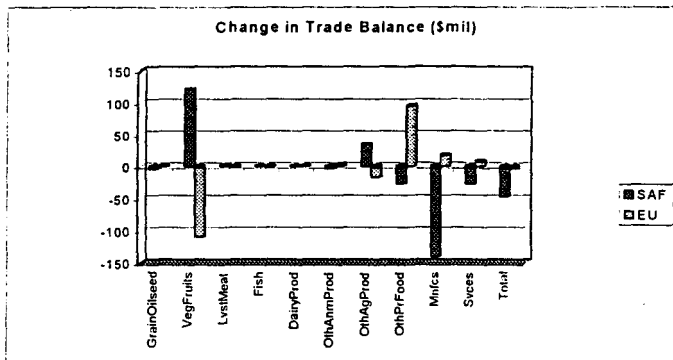
Figure 3: Reduction in import tariffs in percentage in terms of the EU free trade agreement.

Figure 2 illustrates the envisaged import tariffs between South Africa and the EU. Note the extremely high tariffs for *Livestock and meat* and *Dairy products* in the EU. EU meat imports are also faced with high tariffs in South Africa. EU import tariffs are substantially higher than South African ones, except for grains and manufactures. Figure 3 shows the reductions in import tariff rates after 12 years.

## 4. ANALYSIS

### 4.1 Trade flows

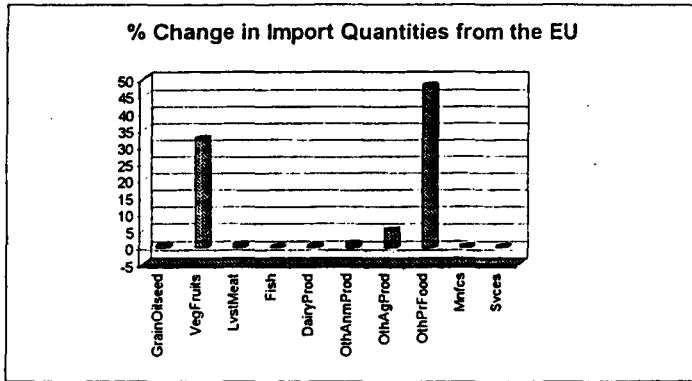
The GTAP model provides an extensive output of results, of which only the trade flows and welfare effects will be presented. The changes in the trade flows are nonetheless the catalyst for all the other changes within the South African economy. Figure 4 highlights the change in the trade balance for South Africa and the EU. The big losses in the manufacturing and services sectors are partly offset by gains in the other processed foods and other agricultural products sector. 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, whereas the balance for the EU stays more or less the same.



**Figure 4: Change in the South African Trade Balance per Sector (\$million)**

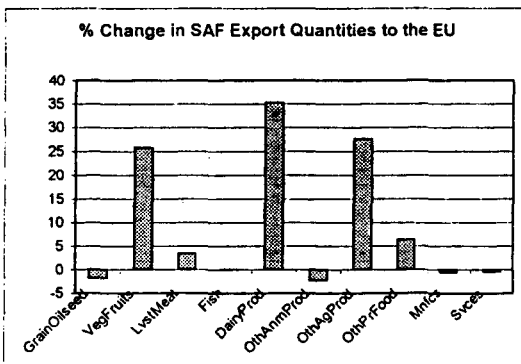
We first concentrate on imports. Figure 5 indicates the percentage changes in imports from the EU into South Africa. Significant import changes from the EU under the FTA agreement occur in the *VegFruit* and *OthPrFood* sectors. These can be traced back to tariff reductions according to the agreement. The dairy sector shows no dramatic changes in spite of its huge tariffs, because of its very small import and export shares. The changes in imports under the FTA agreement can also partially be explained by relative changes in import prices. Import prices of other processed foods are much cheaper (10% cheaper) under the agreement because of reduced tariffs and therefore more is imported. The same holds for vegetables and fruit (6%), and other agricultural

products (1%). Figure 5 isolates the changes in imports from the EU under the FTA scenario, and the correlation with tariff reductions becomes clearer.



**Figure 5: Changes in South African Imports from the EU (%)**

Figure 6 depicts the changes in exports from South Africa to the EU. Noteworthy are the export changes of dairy products, other agricultural products and vegetables and fruit. The exports of manufactures and services decline, 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.



**Figure 6: Change in South African Export Quantities to the EU (%)**

The FTA agreement between South Africa and the EU produces higher prices for all South African export commodities. The "Other Agricultural Products", "Vegetables and Fruits" and the "Other Animal Products" sectors also experienced the biggest price change, which can be traced back to the reduction in import tariffs by the EU. They thus become the most lucrative export sectors, drawing resources out of the other sectors, especially manufactures, which can be imported more cheaply.

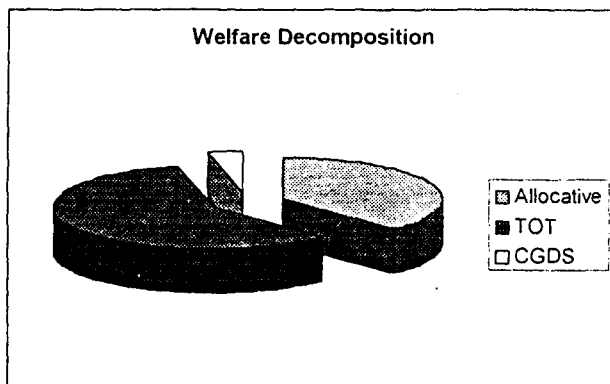
#### 4.2 Welfare analysis

The GTAP software allows the researcher to conduct 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 at the summarised welfare decomposition. In contrast to the belief of many critics, South Africa as well as the EU gains as a result of the Free Trade Agreement. 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 bigger gains.

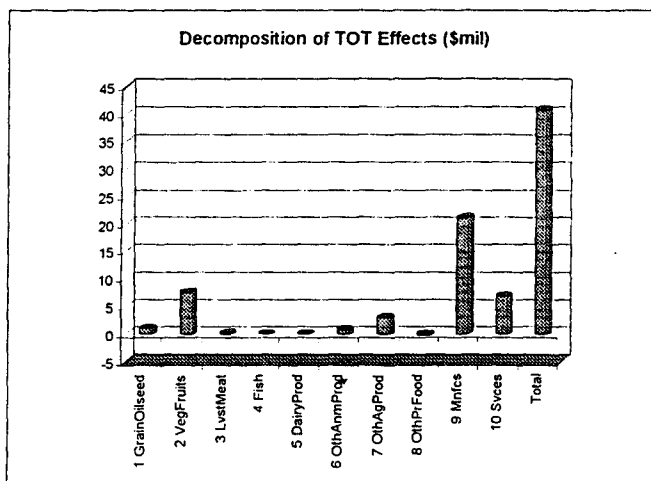
Figure 7 illustrates why critics possibly erred in their evaluation of the FTA agreement between South Africa and the EU. Although the trade balance worsened for South Africa for most commodities, the terms of trade (TOT) effects might have been left out of the equation. Terms of trade measures the relative prices between 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. As illustrated, South Africa receives most of its gains from an improvement in TOT.

Figure 8 presents a further breakdown of the terms of trade effects according to sectors. The biggest gains come from the manufacturing sector, which experienced lower import prices and higher export prices as indicated earlier, and also is responsible for the greatest trade flow. The same holds for services, but to a much smaller extent. Next in line is the "Vegetables and Fruit" sector, which experienced big cuts in import and export tariffs, resulting in lower import and higher export prices.

A further decomposition is presented by Figure 9, which identifies welfare gains from the various trade flows under the FTA scenario. These are representative of both volumes and price changes. The biggest gains come



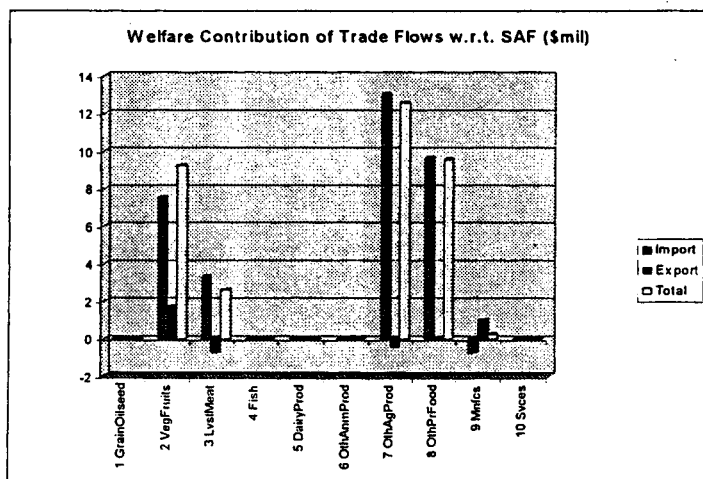
**Figure 7: Decomposition of South African welfare gains as a result of the EU free trade agreement**



**Figure 8: Breakdown of terms of trade effects per sector**

from the "Other Agricultural Products" sector in terms of total welfare contribution, followed by the "Other Processed Foods" and "Fruits and Vegetables" sectors. Although the "Dairy" sector experiences the biggest change in export quantities, the above mentioned sectors have much larger

volumes, and hence the greater contribution to welfare. The reverse applies to the manufacturing sector, which has the biggest TOT effect, however its volume of decreasing exports is much greater, which therefore crowds out the TOT effect. The same analysis can again be conducted for the services sector.



**Figure 9: Contribution of trade flow changes to South African welfare gains**

The losses occurring in the export flows of the "Other Animal Products" and "Livestock and Meat" sectors can both be traced back to the incidence of allocative inefficiencies. Both show an increase in export volumes and export prices. However the internal flow of production factors and endowments as well as prices are responsible for these losses. The rationale behind this exchange is that as other sectors experience higher export prices, they draw more resources, bidding up the prices of intermediary products in the process. Less profitable sectors therefore are bound to suffer inefficiencies.

## 5. CONCLUSION

This paper presented a very limited extract from the results of a more comprehensive study analysing the different effects of the free trade agreement between South Africa and the EU. The original study indicated that under a total reduction of tariffs, the welfare gains would be even greater. Unfortunately countries excluded from the agreement, such as other SADC countries, would suffer welfare losses due to trade diversion effects.

This paper has shown that South Africa and the EU will experience considerable welfare gains mainly flowing from Terms of Trade effects. Although the overall trade balance for South Africa weakens, cheaper imports and more expensive exports sway the welfare equation in South Africa's favour. There are also minor allocative efficiency and capital goods gains. Thus, in spite of an overall reduction in output, there is greater efficiency and most sectors become more competitive. The original study also analysed the effects of the agreement on the unskilled labour endowment. It was established that although heavy users such as the manufacturing and services sectors in terms of total share of unskilled labour use, either contracted or did not show any expansion, the total welfare effect for unskilled labour was positive.

In terms of changing trade flows the study showed significant import changes from the EU especially for vegetables and fruit as well as other processed foodstuffs. Again these can be traced back to tariff reductions according to the agreement. The FTA agreement between South Africa and the EU should produce higher prices for all South African export commodities resulting in noteworthy increases in exports of other agricultural products, dairy and vegetables and fruits. These sectors should experience growth during the implementation of the agreement, thereby earning much needed foreign currency and creating new employment opportunities.

Given these results, it is imperative for South Africa to rethink its regional role, being the largest economy in Africa. The study has indicated that all of its neighbouring countries would experience welfare losses if excluded from the deal. Therefore it is important for South Africa to seek further regional integration and to extend the FTA into the region, thus enhancing economic stability and growth in the region, which would benefit all. Furthermore it becomes absolutely critical to ensure that the input side in the agricultural sector is completely open and free as well. Having liberalised the output side, producers need to be able to compete globally, which can only be done successfully if the playing field is level. This applies also to the exercise of evaluating the efforts of the EU and monitoring the adherence to the FTA.

## REFERENCES

ARMINGTON, P.A. (1969). A theory of demand for products distinguished by place of production. *IMF Staff Papers* 16:159-178.



- ARROW, K.J., CHENERY, H.B. MINHAS, B.S. & SOLOW, R.M. (1961). Capital-labour substitution and economic efficiency. *Review of Economics and Statistics* 43:225-250.
- BROCKMEIER, M. (1996). *A graphical exposition of the GTAP model*. GTAP Technical Paper, Center for Global Trade Analysis, Purdue University, West Lafayette, IN.
- DAVIES, R. (1998). *Global trade analysis for Southern Africa: The resource allocative effects of free trade areas in Southern Africa*. Paper presented at the EAGER Semi-Annual Workshop, Johannesburg South Africa, February 1998.
- FRANCOIS, J., McDONALD, B. & NORDSTROM, H. (1995). *Assessing the Uruguay Round*. Paper presented at the World Bank Conference on Developing Economies and the Uruguay Round, January.
- HERTEL, T.W., HORRIDGE, J.W. & PEARSON, K.R. (1992). Mending the family tree: A reconciliation of the linearisation of levels schools of applied general equilibrium modelling. *Economic Modelling* 9:385-407.
- HERTEL, T.W., PETERSON, E.B., PRECKEL, P.V., SURRY, Y. & TSIGAS, M.E. (1991). Implicit additivity as a strategy for restricting the parameter space in CGE models. *Economic and Financial Computing*, 1(1):265-289.
- HERTEL, T.W., (1997). *Global trade analysis: Modelling and applications*. Edited by Thomas W. Hertel, Cambridge University Press.
- NDA. (1997). *Summary of RSA's supplementary offer to the EU on trade and development agreement*. June 1997.
- NDA. (1998). *EU trade offer to South Africa*. January 1998.
- STEVENS, C., & KENNAN, J. (1995). *South Africa and the EU: trade policy reform*. Draft Working Paper, Institute of Development Studies, University of Sussex.