EUROPE, SOUTH AFRICA, AND SOUTHERN AFRICA: REGIONAL INTEGRATION IN A GLOBAL CONTEXT

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Abstract

Southern Africa is strongly tied to the European economy, but their bilateral trade occurs in the context of a global economy. Any change with respect to one trading partner will have repercussions for other partners. This study aims to inform trade negotiations between South Africa and the European Community by simulating the impacts of several possible trade agreements on themselves and on other trading partners. Excluding agriculture from any trade agreement, a sure EU aim, would be very costly to Africans. An agreement between Europe and South Africa would impose significant costs on the rest of southern Africa due to trade diversion unless the region undertakes its own liberalization.

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1. INTRODUCTION

Accelerated economic growth, poverty reduction, and adjustments to social shocks continue to be priority aims of economic policy. A preferred tool to arrive at these objectives is trade policy, often within the scope of successive rounds of international negotiations, such as debates currently under way, to strengthen trade integration among Europe, South Africa, and the rest of Southern Africa.

This study proposes a quantitative analysis of various regional integration scenarios including Europe, South Africa, and the rest of Southern Africa, to orient national policies and international negotiations among these three regions. Economic impacts considered imply the interaction among sectors and countries and this requires a general balance and global scope analysis of. The general balance approach shows us how, for example, how a change in policy to facilitate imports of industrial goods originating in Europe to South Africa will encourage South Africa to reduce its imports of industrial goods from other sources, as well as increase its exports of other products to new destinations. A simple European trade measure can result in a complete sectoral and geographical reorientation of South Africa's foreign trade, and our analysis allows us to assess this kind of impact.

The global general balance model we apply for this analysis is developed based on social compatibility matrix (SCM) of each region studied, as well as bilateral trade exchange flow. The national SCM provide a detailed picture of economic transaction detail among sectors, and trade flow matrix cover sectoral trade exchanges that exist among these countries. All of this data allows us to project all productive activity and trade exchange of the entire world over one year.

The matrices used by us for this project were supplied by the *Global Trade Analysis Project* (GTAP) of Purdue University (Hertel 1997). The database generated by GTAP contains amounts in millions of US$ in 1995, representing the trade flow for 50 countries/regions and 45 products/sectors in 1995, with five production factors applied in each region and each sector (land, other natural resources, capital, and qualified and unskilled labor.) In the scope of this analysis we have added this initial database to be able to better isolate those regions and sectors of interest to us. We finally kept five regions and seven sectors.

The regions kept for analysis are South Africa (corresponding to the *South African Customs Union* or *SACU*, including the Republic of South Africa, Botswana, Lesotho, Swaziland, and Namibia), Southern Africa (including all the other countries of the *Southern African Development Community*, such as Angola, Malawi, Island of Maurice, Mozambique, Tanzania, Zambia, and Zimbabwe), the rest of Sub-Saharan Africa, The European Union, and the rest of the world. In the context of this application of the GTAP, the five regions are respectively named SAFRICA for South Africa (reflecting the SACU) RESTSAF for the remainder of Southern Africa, RESTSSH for the rest of Africa, EUNION for Europe, and RESTWLD for the rest of the world.

Sectors maintained include agriculture (AGRIC), extraction of natural resources (EXTRACT), food transformation industries (FOOD), the service sector (SVCES), and

three types of industries: light industry, which is relatively labor intensive (LITMNFC), industry of technology, relatively intensive in human capital (TECHMNFC), and heavy industry relatively intensive in physical capital (HVYMNFC). It is important to mention that it is easy to establish other groups based on the GTAP database, and that our approach was chosen because of general interest. Readers who are more particularly interested in certain sectors can make their own analyses with different groupings, using our approach as an example for reference.

The GTAP database supplies the amount of flow of resources, goods and services, among sectors and countries, for the year 1995. To simulate the eventual consequences of a policy change, we have to modify the different variables related to the policy measures in question. Consequently, we use a neo-classical model, that allows us to simulate the adjustments in terms of price and quantities traded, that resulted from these policy impacts. Once prepared, the model generates a new group of world economy transaction matrix, in 1995, considering the different policy measures. We must point out that this model presumes that the productive sector allocates resources and activities according to a series of functions inherent in the *Constant Elasticity of Transformation (CET) model*, and that consumers distribute their budgets following an expense approach of the type *Constant Difference of Elasticities (CDE).* All documentation of the GTAP model, including the source for the database and simulation details used in the scope of this study, are available on-screen at the following address: www.agecon.purdue.edu/gtap

1.1 CONTEXT AND OBJECTIVES OF THE STUDY

Many economists have shown that weak growth of African economies is directly linked to economical distortions that isolate these countries and prevent them from exploring their comparative advantages (Savvides 1995, Ng and Yeats 1996, Sachs and Warner 1997, McMillan and Masters 1998). African governments are largely responsible for implementing trade barriers and until now few free trade efforts have been carried out by these countries in the scope of the Uruguay Round (Harrold 1995, Sorsa 1996).

Without national reforms, African countries are not only marginalized, but also the victims of free trade measures undertaken by their trade partners. A number of studies have tried to measure the costs thus imposed on Africa by global negotiations, such as the Uruguay Round (Fontagné and Péridy 1995, Hertel, Masters and Elbehri 1998) and regional integration, such as the European Union (Pohl and Sorsa 1992, Winters 1995). Africa is hit by a series of economical costs, especially in terms of the deterioration in trade conditions, and the intensification of the effect of its own distortions. Given that the African governments are not in a position to begin, or even to sustain, their own free trade programs, it is the responsibility of their trade partners to engage Africa in a movement toward strengthened regional integration. These partners have already carried out strong efforts to reduce trade barriers that contribute to the limitation of African exports, in particular through the Lomé Convention with Europe and the *African Growth and Opportunity Act* of the United States. This type of reform is generally positive for Africa, but mostly progress is very limited, given that there are only a few trade barriers remaining to be lifted.

More important and also more complicated is finding reciprocity measures to free up not only imports, but also exports by African economies to third countries as well. In this regard, Collier and Gunning (1994) proposed an integration approach with Europe

that is open to all African countries, but very little progress in this direction has been observed until now. A more realistic approach would be integration associating one or two African countries to Europe, using a model like NAFTA, as in the case of Mexico, the United States, and Canada. Negotiations in this regard are currently under way between the European Union and South Africa (*Financial Times* 1998.)

The aim of this study is to quantify the impact of a regional integration scenario between Europe and South Africa. This is to determine the impact of free trade measures on these two regions more precisely, as well as on the remainder of Southern Africa, which, once again, can find itself marginalized by these bilateral free trade measures. It is quite possible that the acceleration of economic growth in South Africa could create a boost for the entire region, but it is also very likely that freeing trade between Europe and South Africa could reorient the structure of trade in neighboring countries, and also contribute to the impoverishment of the rest of the region. What impact dominates the other remains an empirical question that can not be resolved *a priori*. Below, we present some initial data, followed by results obtained by applying models and the implications derived from this. Certain supplementary details are presented in the Annex.

1.2 Role of Europe in African foreign trade

Various decades after de-colonization, Europe continues to be Africa's main trade partner. Europe represents close to half of Africa's imports and exports, while it reflects only one quarter of imports and exports of the rest of the world. Figures 1 (imports) and 2 (exports) show Europe's trade impact in detail, in terms of geographical regions as well as sectors kept in our database. In comparison to the remainder of Africa (RESTSSH) it is interesting to point out that foreign trade of South Africa (SAFRIC) and the rest of Southern Africa (RESTSAF) is generally less directed at Europe. Undoubtedly, this is partially because of the relatively high volume of trade between SAFRIC and RESTSAF, as well as the volume of trade with North America and Asia Pacific. In terms of sectoral distribution of trade, we must mention that agriculture (AGRIC) is the sector least oriented toward Europe in relation to imports, but instead mostly directed at the Old Continent in terms of exports.

Figure 1. The importance of imports from Europe, 1995

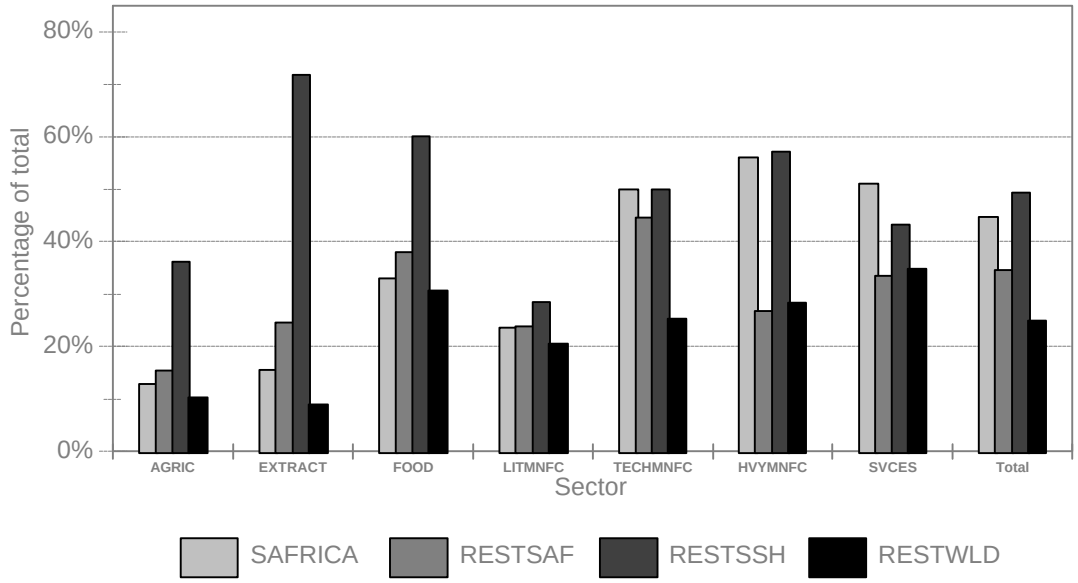
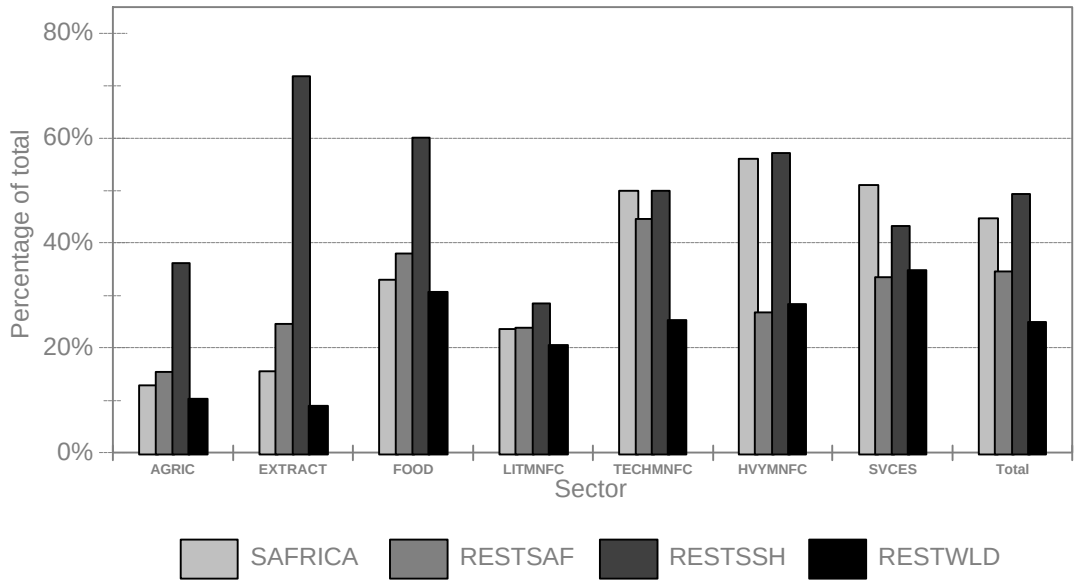


Figure 2. The importance of exports to Europe, 1995



2. ANALYSIS OF INTEGRATION AGREEMENTS TO IDENTIFY THE ECONOMIC CONSEQUENCES OF TRADE POLICY CHANGE, WE MUST DEFINE A VERY PRECISE TYPE OF REFORM. ALSO, TO ISOLATE THE RESPECTIVE IMPACT OF EACH ELEMENT OF THIS REFORM, IT IS IMPORTANT TO DEFINE A GROUP OF SCENARIOS WITH VARIOUS CHANGES THAT ADD UP PROGRESSIVELY. IN PRACTICE, IT IS POSSIBLE TO ENVISION AN INFINITY OF REFORMS AND A MULTITUDE OF SIMULTANEOUS SCENARIOS. FORTUNATELY, THE

***GTAP* DATABASE AND THE COMPUTER SIMULATION *RUNGTAP* OFFER ANALYSTS THE OPPORTUNITY OF GENERATING A LARGE NUMBER OF SIMULATIONS RAPIDLY, THUS ALLOWING A DETAILED ANALYSIS OF EVERY PROPOSITION SUBMITTED DURING NEGOTIATIONS. SINCE THIS STUDY IS OF GENERAL INTEREST, WE HAVE DECIDED TO CONCENTRATE ON THE MOST REPRESENTATIVE SCENARIOS. TABLE 1 SHOWS A SUMMARY OF SCENARIOS ENVISIONED IN THE CONTEXT OF THIS STUDY.**

The initial database represents a *status quo* situation, or in other words, the basic scenario. The first column of the table represents scenario 1, in which the only reform expected is the elimination of restrictions on non-agricultural imports coming from South Africa, destined for Europe: this is the case of a non-reciprocal European liberation with an exclusion clause for agriculture. The second column represents scenario 2. This extends the preceding reform to all products including the agricultural sector. Scenario 3 is reciprocal, but non-agricultural reform and scenario 4 is reciprocal and universal. Scenario 5 extends the preceding reform to exports. Scenario 6 simulates the liberation of imports among South Africa and other SADC countries. In scenario 7, we add non-agricultural liberation with Europe, and scenario 8 simulates total liberation of imports among the three regions. Consequently, a comparison among scenarios allows us to identify the marginal impact of each type of reform, as well as their interactions.

Table 1. Freed-up fees in each scenario

Freed-up fees			Scenario							
Type of Fee	Trade direction	Type of goods	1	2	3	4	5	6	7	8
Imports	SAFRICA --> EUNION	Non-Agricultural	✔	✔	✔	✔	✔		✔	✔
Imports	SAFRICA --> EUNION	Agricultural		✔		✔	✔			✔
Imports	EUNION --> SAFRICA	Non-agricultural			✔	✔	✔		✔	✔
Imports	EUNION --> SAFRICA	Agricultural				✔	✔			✔
Exports	EUNION <-> SAFRICA	(all sectors)					✔			
Imports	RESTSAF --> SAFRICA	(all sectors)						✔	✔	✔
Imports	SAFRICA --> RESTSAF	(all sectors)						✔	✔	✔

Note: «Y» indicates «Yes.»

2.1 LEVEL OF CUSTOMS DUTIES BEFORE INTEGRATION AGREEMENTS

The economic importance of each reform depends firstly on the scope of trade restrictions in place in the initial database. In each country these restrictions vary according to product. Tables 2 and 3 indicate average values by origin (Table 2) and by product (Table 3) for each trade policy measure. For non-agricultural goods these numbers represent only the customs rights declared at the United Nations, as they are registered in the *TRAINS* database. For agricultural products, data in this table indicate the implicit nominal rate of protection that varies equally between the purchase price on the world market and the sales price on protected markets, as calculated by OECD in agricultural and economic policy analyses.

The most striking data on Table 2 are the high levels of customs duties levied on goods coming from the rest of Southern Africa. South Africa imposed customs duties on imports (excluding services) coming from this region, that are double those imposed on goods imported from Europe -- 17.6% compared to 8.2%. The European Union «taxes» imports of goods coming from the rest of Southern Africa in an amount three times

higher than that imposed on goods imported from South Africa -- 15.4% compared to 5.5%. Southern Africa, facing relatively high trade barriers, is a relatively efficient economic source of imports: one unit of imported goods from this region can cover the same level of demand than a unit of goods coming from another source. Conversely, the high number of existing barriers generates more revenue for the importing country. It is clear that any reform benefiting trade between Europe and South Africa risks aggravating these distortions and therefore causes economic loss, through a relative increase in preferential margins in comparison to other source regions. The preferential margin, or the difference in the rate of fees imposed on two activities, offers stimulation to find opportunity costs and thus leads to substitution, which reduces the effectiveness of the national economy.

Table 2. Average customs duties by source

Destination:	SAFRICA	RESTSAF	EUNION
Origin:			
SAFRICA	0.0	6.0	5.5
RESTSAF	17.6	6.5	15.4
RESTSSH	2.0	10.0	3.2
EUNION	8.2	9.4	0.0
RESTWLD	11.4	10.6	4.6
Average incl. Intra	10.0	8.8	1.7
Average excl. intra	10.0	8.9	4.7

In our database, apparent differences in the level of customs duties by various sources depend entirely on variations in the make-up of imports, given that customs' duties in the original database are *MFN* customs duties per product. Data in Table 3 shows that the average levels of custom duties vary greatly, and are particularly high in South Africa and Southern Africa for light industry (LITMNFC) as in Europe for food manufacturing and agricultural products. As in the distortions by origin, any reform that would increase trade distortions among the different sectors would risk aggravating the inefficiency of the system and cause inherent losses, and not economical gains. For example, any reform accentuating the difference between agricultural or food import customs duties and customs duties applied to other imports in Europe would risk bringing about these results.

Table 3: Average customs duties per product

Destination:	SAFRICA	RESTSAF	EUNION	EUNION*
Product:				
AGRIC	5.9	8.3	4.7	10.3
EXTRACT	0.5	6.0	0.4	0.5
FOOD	12.7	10.4	3.4	21.4
LITMNFC	36.6	17.3	3.1	6.8
TECHMNFC	10.6	7.2	1.4	3.9
HVYMNFC	4.9	7.5	0.8	2.8
SVCES	0.0	0.1	0.0	0.0
Average	8.0	7.0	1.4	3.7
Avg. ex.SVCES	10.0	8.8	1.7	4.7

**Average calculated only on trade from the European Union.*

Sound knowledge of the database allows us to issue various hypotheses on the consequences of each reform scenario, however, only one simulation on the computer, using the global model, can result in millions of calculations required to identify the consequences of such reform in a generally balanced economy. The software *RunGTAP* greatly facilitates this somewhat cumbersome task.[1]

2.2 Impacts of Integration Agreements

For a policy to have a marginal effect it needs to be viewed in the context of other possible policies. Table 4 allows us to assess the impact of adopting one agreement over another. Here, we present the net results of each scenario in terms of social wellbeing, using the "equivalent variation" approach. This indicator provides us with the monetary value of change anticipated by all the consumers in each country. For reasons of clarity, we indicate the participants and the nature of the reform on the table.

[1] In this regard, we encourage all readers to consult the homepage http: //www.agecon.purdue.edu/gtap/RunGTAP to obtain this software and the data presented hereunder, from which it is possible to generate the results of the simulations presented in this article.

Table 4. Impact of agreements on social well-being (US$ in1995)

Scenario:	1	2	3	4	5	6	7	8
Participants:	SA-EU	SA-EU	SA-EU	SA-EU	SA-EU	SADC	SADC-EU	SADC-EU
Reciprocity:	no	no	yes	yes	yes	yes	yes	yes
Agricultural	no	yes	no	yes	yes	yes	no	yes
products:	no	no	no	no	yes	no	no	no
Exports:								
Region:								
SAFRICA	306	973	-276	338	281	164	6	609
RESTSAF	-17	-58	-6	-47	-31	170	101	67
RESTSSH	-8	-26	-2	-22	-8	-2	-6	-25
EUNION	-131	-374	907	702	662	-157	741	540
RESTWLD	-115	-300	-726	-954	-830	-257	-941	-1164
TOTAL	35	214	-104	16	74	-82	-100	27
Total Africa	281	889	-284	269	242	332	100	651

Note : Participants are SA (South Africa, SAFRICA) ; EU (Europe, EUNION); and SADC (South Africa plus other SADC members).

From this table we can arrive at the following conclusions and results:

(1) South Africa (SAFRICA) has a lot to gain by non-reciprocal agreements (scenarios 1 and 2), but the most important gains are obtained with the inclusion of agricultural goods (scenarios 2 and 4). South Africa looses in a reciprocal agreement without agriculture (scenario 3) and has no interest in having export subsidies included in negotiations. South Africa wins in the case of an agreement with the rest of SADC (scenario 6), sharing the benefits almost equitably with its partners in the rest of Southern Africa (RESTSAF). To include Europe in the agreement without liberating the agricultural sector eliminates this gain (scenario 7) but to include Europe with agricultural liberation would be very advantageous.

(2) The rest of Southern Africa (RESTSAF) looses in all scenarios where it does not participate in free trade scenarios (scenarios 1-5) and wins in all scenarios where it frees trade barriers along with the others (scenarios 6-8); it has no advantage in the inclusion of Europe in agreements with South Africa.

(3) The rest of Africa (RESTSSH) and the rest of the world (RESTWLD) are always losers.

(4) Europe knows its looses in all scenarios in which agriculture is excluded, and also looses in scenario 6 where Europe does not participate in lifting trade barriers along with SADC members.

The net results presented hereafter indicate the impact of each agreement in domestic wellbeing without indication on the distribution within the country. As a result of interest in equity matters, and for indicating the direction and scope of social changes induced by each integration agreement, Table 5 presents the impact of agreements on prices of primary production factors in each region. Our database only contains one

aggregate representing each county or region; thus it is impossible to establish a wellbeing indicator for different social classes inside each country. Changes in relative prices, however, among primary factors, offer a good assessment of change in social equity, in the sense of evolution of values and their source of revenue. In Table 5, land prices represent a large part of revenue from agricultural producers, and the price for unskilled labor («UnskLab») represents the largest part of reduced revenue. The best placed in each region receive their revenue from the price of skilled labor («Skylab») capital, and natural resources. The price of a single consumer product is indicated: such as the price for food, which allows us to follow the progress of the most reduces real revenue in terms of price for its relative labor costs relative to the cost of food («Unsk-Food».)

Table 5. Impact of agreements on the price of primary factors (in percentages)

Scenario:	1	2	3	4	5	6	7	8
South Africa								
Land	-1.41	38.37	-0.13	38.89	39.15	-0.28	-0.59	37.54
UnskLab	0.94	3.19	0.32	2.33	1.74	0.79	1.23	3.20
SkLab	0.95	3.16	0.46	2.42	1.84	0.79	1.37	3.30
Capital	0.88	3.13	0.31	2.32	1.74	0.78	1.17	3.15
NatRes	0.33	-3.26	2.80	-0.39	-6.61	-0.91	1.63	-1.43
Food	0.64	3.26	-0.09	1.80	1.93	0.48	0.46	2.37
Unsk.-Food	0.30	-0.07	0.41	0.53	-0.19	0.31	0.77	0.83
Europe								
Land	0.04	-0.74	-0.11	-0.77	-0.91	0.17	0.02	-0.63
UnskLab	0.00	-0.02	0.06	0.05	0.04	0.00	0.05	0.04
SkLab	0.00	-0.01	0.06	0.05	0.05	0.00	0.05	0.05
Capital	0.00	-0.02	0.05	0.04	0.04	0.00	0.05	0.04
NatRes	-0.01	0.04	-0.05	-0.01	0.10	0.02	-0.03	0.01
Food	0.00	-0.05	0.04	0.00	0.00	0.01	0.05	0.00
Unsk.-Food	0.00	0.03	0.02	0.05	0.04	-0.01	0.00	0.04
Rest of Southern Africa								
Land	0.10	0.88	0.39	0.97	1.02	-4.06	-2.43	-1.75
UnskLab	-0.10	-0.26	-0.20	-0.41	-0.28	5.15	3.83	3.65
SkLab	-0.14	-0.45	-0.20	-0.54	-0.39	5.39	4.00	3.69
Capital	-0.10	-0.33	-0.21	-0.46	-0.34	5.05	3.75	3.52
NatRes	0.00	-0.04	0.21	0.22	0.19	-3.07	-1.97	-2.03
Food	0.03	0.20	-0.10	0.02	0.05	1.51	0.95	1.10
Unsk.-Food	-0.13	-0.46	-0.10	-0.43	-0.33	3.64	2.88	2.55

Note: The prices are certainly relative. The numbers reflect the *global savings good*.

The first important result in Table 5 is the relatively weak importance of agreements by Europe in relation to their impact on Southern Africa—which does not even participate in the first five scenarios. This reflects the relative importance of South Africa in these two economies: any change in South Africa implies in strong repercussions on the rest of Southern Africa, although neither are considerable partners for Europe.

A second result that stands out is the relatively strong sensitivity of land prices. In South Africa, the price for land increases close to 40 percent when agriculture is included in the agreement (scenarios 2, 4, 5, and 8). In Europe the effect is lesser but land is the

only product that registers a change of close to one percent. This results from the specificity of this factor and the impossibility of re-deploying it in another sector.

Thirdly, we observe the enormous importance for the rest of Southern Africa to participate in freeing trade itself. The last three scenarios (agreements 6-8) offer the possibility of substantial growth in relative labor prices. The most reduced real revenue, measured by the price of unskilled labor prices in relation to food prices, can be increased by over three percent within the scope of a free trade agreement within SADC (scenario 6). This impact would be of great importance for equity and poverty reduction in this region.

To prepare a more in-depth analysis, we should pay attention to a sub-group of agreements of particular political or economic importance. In terms of dialogue between Europe and South Africa the first four scenarios are the most pertinent. These four agreements also contain strong economic interest because, among them, only the fourth provides net gains for the two participants. How is it that the first three agreements result in a looser among the participants in the negotiations? Normally, we would expect that freeing trade increase national wellbeing in spite of the costs linked to resource reallocation. Can certain lessons be learned from these four examples to analyze and assess other free trade agreements?

To carry this out, we propose to break down the results presented in Table 4 and proceed to a rearrangement reflecting the global impact of each agreement. Huff and Hertel (1996) developed a numerical integration technique adapted to this task. Their algorithm is programmed into the *RunGTAP* software, allowing the analyst to see economical change elements induced by each agreement.

2.3 Breakdown of Integration Agreement Impact

Without any doubt, the most important breakdown is the distinction to be made between the changes in the *effectiveness of national economies* and changes in the *terms of trade* or distribution among regions. Change in policies can improve the effectiveness of all countries simultaneously, but changes in the terms of trade can only result in redistribution among countries. To obtain consensus during negotiations, we must find reforms that result in a maximum number of winners, and therefore maximum gains in effectiveness, with a minimum of change in distribution.

It is often expected that freeing trade always leads to gains in effectiveness, but the “second best” theory informs us that this result is not sustainable unless there is an absence of all other distortions. This famous article by Lipsey and Lancaster (1956) informs us that in the presence of multiple distortions – which is almost always the case – the liberation of certain distortions can increase losses caused by others. For example, a freeing of trade barriers that increases production of a subsidized product will increase the social cost of subsidies, and thus reduce the overall effectiveness of that economy.

It is also often expected that policy changes rarely lead to major changes in trading terms, in relation to export prices relative to import prices. This expectation, normally justified by the fact that trade of a given country is economically «small» in relation to world production, does not prevail except in a context of perfect substitution among products of one country and those of others. In a context where the demand for a product depends on its country of origin – the title of the famous article of Armington

(1969) – the trade conditions for a given country can be very sensitive to changes in its policies, through the increase (or decrease) of national offer and demand.

After all, the net impact of a policy change, and its breakdown during changes in effectiveness and changes in trade conditions is an empirical question that depends on the interaction between policies and economic conditions. The breakdown of changes in social wellbeing, proposed by Huff and Hertel, is ideal to understand the framework of this interaction. Table 6 presents the results of this breakdown, by country, for the first four scenarios.

Table 6. Breakdown of changes in social wellbeing resulting from integration agreements between Europe and South Africa (millions of US$

		Non-Reciprocal Agreements			Reciprocal Agreements		
		Scenario 1			Scenario 3		
		Effectiveness	Conditions	Total	Effectiveness	Conditions	Total
Agricultural Products Excluded from the Agreement	SAFRICA	75	231	306	-123	-153	-276
	RESTSAF	-2	-16	-17	-2	-4	-6
	RESTSSH	-3	-5	-8	4	-6	-2
	EUNION	-18	-113	-132	118	789	907
	RESTWLD	-17	-98	-115	-99	-626	-726
	Total	35	-1	35	-103	-1	-104
		Scenario 2			Scenario 4		
		Effectiveness	Conditions	Total	Effectiveness	Conditions	Total
Agricultural Products Included in the Agreement	SAFRICA	133	840	973	-64	401	338
	RESTSAF	-4	-54	-58	-5	-42	-47
	RESTSSH	-10	-17	-26	-2	-20	-22
	EUNION	167	-542	-374	221	481	702
	RESTWLD	-62	-238	-300	-131	-823	-954
	Total	225	-11	214	19	-3	16

Note: Total change in the conditions of trade is not exactly zero because of the differences of marginal wellbeing among countries, or the non-linear nature of application of this model. The numbers in grey areas are those that will be broken down completely in Tables 6 and 7

In the context of negotiations between South Africa and the European Union, one is particularly interested in the elements of Table 6, corresponding to these two regions (SAFRICA and EUNION). The breakdown reveals clearly that net results from scenario 1, for example, are mainly determined by a change in trade conditions between the two. South Africa obtains a small improvement in economic effectiveness, valued at US$ 75 million, but a strong increase in its trade conditions, in the amount of US 231 million; Europe suffers a small loss in effectiveness, but is subject to a strong deterioration in trade conditions.

The political importance of scenario 4 – the only agreement between Europe and South Africa that provides a net gain for both involved – is of particular interest, especially because this scenario benefits South Africa even while it reduces its economic effectiveness. Generally it is thought that freeing trade improves effectiveness because of increases in the amount of traded goods. This increase, however, can accentuate the

effects of existing distortions. To observe which distortions are responsible for such a phenomenon, we must carry out a progressive breakdown of effects. In the following analysis, one or various global indicators of effects are identified and broken down in Tables. Data in the grey areas of Table 6 are broken down in Tables 7 and 8, by sector and by type of distortions. Table 9 presents a breakdown of changes associated to the most pertinent distortions (Export and Import duties) and finally, our analysis takes us to Table 10, with the breakdown of changes associated to only one distortion in only one sector. To arrive there, however, one must start from the beginning, with a breakdown of changes in effectiveness by sector (Table 7 below) and by type of distortion (Table 8 below.)

Table 7. Breakdown by sector of changes in effectiveness resulting from scenario 4 (millions of US$)

	Total	AGRIC	EXTRACT	FOOD	LITMNFC	TECHMNFC	HVYMNFC	SVCES
SAFRICA	-64	6	10	-45	-35	-18	17	1
RESTSAF	-5	1	2	-0	-3	-3	1	-3
RESTSSH	-2	0	1	0	0	-1	-2	-1
EUNION	221	102	-7	47	37	44	11	-12
RESTWLD	-131	-46	9	-1	-11	-68	1	-15
Total	19	63	15	1	-12	-45	28	-31

Note: The numbers in grey areas are derived from Table 6.

In examining changes in effectiveness by sector in Table 7, we observe that losses in South Africa (- US$64 million) result mainly from reductions in the food industry (FOOD, -US$45 million) and light industry (LITMNFC, -US$35 million) with losses also in the high technology industry (TECHMNFC, -US$18 million) and gains in other sectors. If we observe the changes in effectiveness by type of distortion in Table 8, we can see that they are related mainly to export duties (xtax, -US$103 million) and to imports (mtax, -US$44 million.)

Table 8. Breakdown by type of distortion from changes in effectiveness resulting from scenario 4 (by US$ million.)

	Total	prodtax	inputtax	finaldtax	xtax	mtax
SAFRICA	-64	-13	7	89	-103	-44
RESTSAF	-5	-2	-4	-1	5	-3
RESTSSH	-2	1	-1	-1	-1	-1
EUNION	221	51	1	17	-108	260
RESTWLD	-131	2	-34	-20	55	-133
Total	19	40	-32	83	-151	80

Notes: Distortions consist of «prodtax» (fees on production) «inputtax» (fees on the use of inputs) «finaldtax» (fees on product consumption) «xtax» (export fees) and «mtax» (customs duties.) The grey shaded figures are derived from Table 6.

But which distortions affect the sectors? The Table below presents a breakdown of the effects of export and import fees. This indicates that in South Africa, the agreement with Europe increases the distortions associated with export fees, especially in the food industry. In terms of import fees, the agreement affects light industry and high technology.

Table 9. Breakdown, by sector, of changes in effectiveness resulting from scenario 4: the case of export and import fees
(US$ million)

	Total	AGRIC	EXTRACT	FOOD	LITMNFC	TECHMNFC	HVYMNFC	SVCES
Export fees:								
SAFRICA	-103	1	4	-110	0	0	1	1
RESTSAF	5	1	2	0	1	1	0	0
RESTSSH	-1	-1	0	0	0	0	0	0
EUNION	-108	-7	0	-108	6	3	1	-1
RESTWLD	55	0	1	23	8	6	0	18
Total	-151	-6	8	-195	14	9	2	18
Import fees:								
SAFRICA	-44	8	0	29	-58	-27	5	0
RESTSAF	-3	0	0	0	-2	-1	0	0
RESTSSH	-1	2	0	1	0	-1	-2	0
EUNION	260	24	0	184	15	29	8	0
RESTWLD	-133	-44	3	-8	-11	-59	-12	-2
Total	80	-10	4	206	-56	-59	-3	-2

Note: Dash lined (*translator's note: not found) or double encased numbers contain information derived from Table 8. The triple encased number is broken down in Table 10.

The last stage of this progressive breakdown procedure of effects has the aim to study the elements of a relative change to imports for one product from one country and to observe how an increase in the latter can result in economic losses. Table 10 provides this breakdown for light industrial products (LITMNFC) in South Africa.

Table 10: Breakdown of changes in effectiveness resulting from imports of light industrial products in South Africa in scenario 4.

	Customs duties before reform (%)	Change in economic effectiveness (US$ m.)	Change in the volume of imports (US$ m.)
SAFRICA	0	0	-0
RESTSAF	40.9	-22	-53
RESTSSH	12.8	0	-3
EUNION	31.6	163	1284
RESTWLD	38.0	-198	-524
Total		-58	703

Note: The triple line encased number is derived from Table 9.

Table 10 indicates that this sector, in South Africa, has undergone a reduction in economic effectiveness (- US$ 58 million) resulting within the context of increasing import volume (+ US$703 million.) The growth in imports is similar to *trade creation*, and it is expected that this could improve the effectiveness of the economy, replacing a relatively expensive domestic production by less expensive imported products. Another factor also plays a role, however: it is *trade diversion*, which reduces economic effectiveness replacing relatively competitive imports with more expensive products. In this scenario the imports coming from the rest of Southern Africa and from the rest of the world are replaced by imports coming from Europe. Being that South Africa purchased its imports from sources that are less expensive than Europe – the preferential margin resulting from higher duty – this replacement represents a reduction in South-African wellbeing. Before reform, imports in this sector from the rest of Southern Africa, resulted in an average customs duty of 38.0 % and imports from the rest of the world resulted in an average of 40.9 %, to cover the same needs at the consumer level than imports coming from Europe, which only yielded an average customs duty of 31.6%.

Trade diversion will take place during any freeing of trade that expands the margins of preference among trade partners. The streamlining of fees to reduce preferential margins is therefore a priority objective for all reforms with the aim of improving global economic conditions This objective is lacking in the agreement between Europe and South Africa and thus gives rise to subtle effects that result in economic losses for the parties.

Trade diversion is certainly expensive for South Africa, but it is even more expensive for other countries, who do not participate in negotiations and who will be victims. The mechanism through which these countries loose is shown below, in Table 11. The first half of the Table shows the establishment and diversion of imports to Europe, indicating that it is in the sectors with highest diversion that South Africa earns the most (agricultural products and food industry). The second half of the table shows the same, from the South African perspective, which profits from the agreement, redirecting its exports toward Europe.

Table 11: European and South-African trade establishment and diversion resulting from scenario 4, by sector and trade partner (US$ million)

Increase or reduction of European Imports from:

	SAFRICA	RESTSAF	RESTSSH	EUNION	RESTWLD
AGRIC	58.82	-0.22	-0.41		-0.49
EXTRACT	1.07	0.14	0.02	-0.09	0.03
FOOD	345.84	-0.67	-0.51	-0.59	-0.55
LITMNFC	36.92	0.77	0.19	-0.12	0.13
TECHMNFC	17.57	0.34	0.24	-0.08	0.24
HVYMNFC	7.44	0.31	0.14	-0.04	0.14
SVCES	-5.97	0.88	0.20	-0.04	0.17

Increase or reduction of South African exports to:

	RESTSAF	RESTSSH	EUNION	RESTWLD
AGRIC	-15.45	-16.85	58.82	-16.54
EXTRACT	-2.97	-3.92	1.07	-4.06
FOOD	-6.50	-7.50	345.84	-7.67
LITMNFC	0.34	1.56	36.92	1.51
TECHMNFC	-5.12	-5.43	17.57	-5.52
HVYMNFC	-3.79	-5.07	7.44	-5.24
SVCES	-6.65	-6.18	-5.97	-6.18

3. CONCLUSION: IMPLICATIONS OF THE ANALYSES BY INTEGRATION AGREEMENTS

Our analysis of economical impact, resulting from agreements between Europe and South Africa, indicated clearly the importance of orientation of the agreements in terms of pre-existing distortions. Any agreement that increases preferential margins or inflates the volume of trade, submitted to existing distortions, can generate additional economic costs and question the net value of the agreement. The negotiation situation between Europe and South Africa offers an excellent illustration of these imposed costs, alternately because of trade diversion between partners, or by production distortions by sector.

An agreement that tends to deviate trade to Europe risks reducing trade with other partners. In the sectors where South Africa already offers preferential margins to Europe, this increases already privileged imports, and results in a loss of effectiveness.

Among sectors, an agreement that tends to increase relative protection offered to agriculture in Europe, risks inflating the cost of this protection imposed on other sectors. In the context of negotiations between Europe and South Africa, the initial European proposals included exclusions for agriculture, which effectively increased agricultural production and aggravated its economic cost.

The impact of trade diversion among partners and sectors thus requires a global analysis within a scope of general balance. Results presented in this article show the practical importance of these effects, but also leave us with a basic lesson learned: international agreements for regional integration can create economical benefits for the parties, however, this is not always true. An empirical analysis of their effects, considering existing distortions and trade diversion is required to determine their net impact

In the scope of negotiations between Europe and Southern Africa, the lessons from our analysis are clear: first of all, the exclusion of agricultural products is very

costly for Africa, which has a certain comparative advantage in this sector and therefore suffers from agricultural protection in Europe. Second, the rest of Southern Africa has strong interest in participating, with South Africa, in any agreement with Europe. To remain at the margin of integration would relatively delay the area, as it would also be subject to absolute losses, while a free trade agreement could generate huge benefits, with profits more specifically for the most deprived of this region.

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ANNEX 1. COMPOSITION OF SECTORS: CONCORDANCE WITH THE GTAP DATABASE

AGRIC:	Paddy rice, Wheat, Cereal grains nec, Vegetables, fruit, nuts, Oil seeds, Sugar cane, sugar beet, Plant-based fibers, Crops nec, Bovine cattle, sheep and goats, horses, Animal products, Raw milk Wool silk-worm cocoons, Bovine cattle, sheep and goat, horse meat prods,
FOOD:	Meat products nec, Vegetable oils and fats, Dairy products, Processed rice, Sugar, Food products nec, Beverages and tobacco products
EXTRACT:	Forestry, Fishing, Coal, Oil, Gas, Minerals nec, Petroleum, coal products
LITMNFC:	Textiles, Wearing apparel, Leather products, Wood products,
HVYMNFC:	Paper products, publishing, Chemical, rubber, plastic products, Mineral products nec, Ferrous metals, Metals nec,
TECHMNFC:	Metal products, Motor vehicles and parts, Transport equipment nec, Electronic equipment, Machinery and equipment nec, Manufactures nec
SVCES:	Electricity, Gas manufacture, distribution, Water, Construction Trade, transport, Financial, business, recreational services, Public admin and defence, education, health, Dwellings & Svces

ANNEX 2: SECTORAL IMPACTS OF AGREEMENTS

For the readers who are interested in a more in-depth examination of regional integration agreement simulation, Table A provides the relative changes in production in each sector and region, for all scenarios. This Table shows that intersectional movements caused by these agreements are relatively strong—especially in light industry (LITMNFC) which can attract resources when yields increase. In the framework of a free trade agreement among all SADC countries, the rest of Southern Africa could benefit of an increase of over 20% in production in this sector.

Table A. Impact of agreements on production in Africa and Europe (in percentages)

	Scenario							
	1	2	3	4	5	6	7	8
South Africa								
AGRIC	-0.46	5.83	-0.09	6.07	6.22	-0.21	-0.35	5.70
EXTRACT	-0.21	-2.34	0.90	-0.99	-3.11	-0.62	0.15	-1.67
FOOD	-0.12	7.87	-0.12	7.11	5.48	0.27	0.17	7.23
LITMNFC	1.92	-1.26	-1.54	-4.60	-3.93	0.49	-0.16	-3.36
TECHMNFC	-0.19	-2.74	-1.91	-4.29	-3.57	0.46	-1.71	-4.07
HVYMNFC	-0.28	-2.72	-0.10	-2.32	-1.78	-0.19	-0.48	-2.62
SVCES	0.04	0.16	0.27	0.36	0.37	-0.01	0.30	0.39
CGDS	1.01	3.73	5.00	7.52	7.00	1.11	6.13	8.59
Europe								
AGRIC	0.01	-0.15	-0.03	-0.17	-0.20	0.03	-0.01	-0.14
EXTRACT	0.00	0.02	-0.04	-0.02	0.02	0.01	-0.03	-0.01
FOOD	0.00	-0.14	-0.02	-0.11	-0.12	0.00	-0.02	-0.11
LITMNFC	-0.02	0.02	0.13	0.17	0.17	-0.04	0.07	0.10
TECHMNFC	0.00	0.04	0.03	0.06	0.06	0.00	0.03	0.06
HVYMNFC	0.00	0.03	-0.02	0.01	0.01	0.00	-0.01	0.01
SVCES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CGDS	0.00	-0.02	0.00	-0.02	-0.02	-0.01	-0.01	-0.03
Rest of Southern Africa								
AGRIC	0.04	0.23	0.12	0.27	0.26	-1.79	-1.21	-1.04
EXTRACT	0.02	0.06	0.10	0.15	0.12	-1.86	-1.31	-1.28
FOOD	0.08	0.37	0.15	-0.19	0.45	-0.68	0.04	-0.47
LITMNFC	0.05	-0.09	-1.62	-1.69	-1.84	28.95	19.45	19.52
TECHMNFC	0.03	0.01	-0.35	-0.31	-0.38	0.40	0.50	0.59
HVYMNFC	0.14	0.41	0.06	0.36	0.22	-3.50	-2.53	-2.26
SVCES	-0.06	-0.23	0.05	-0.09	-0.06	-0.31	-0.19	-0.33
CGDS	-0.60	-1.98	-0.37	-1.78	-1.22	15.15	12.22	10.81