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UPDATE

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Global Trade Analysis for Southern Africa

Implementation of the SA-EU agreement is scheduled to begin in the year 2000, but is threatened by uncertainty and conflict over its possible effects. In order to help policymakers take account of the effects of trade policy, EAGER/Trade researchers have compiled a database of production, trade and policy relationships. In this issue of the *Update*, ***William Masters*** reports on how this database and software can be used to simulate the consequences of different policy options.

The South Africa-European Union (SA-EU) trade agreement signed in October 1999, together with the Southern African Development Community (SADC) trade protocol of 1996, raises the prospect of substantial gains in equity and growth for Southern Africa. Lower tariffs and expanded market access combine to offer gains from trade, but require correspondingly large adjustments in production and consumption, and may have major spillover effects on other countries.

Implementation of the SA-EU agreement is scheduled to begin in the year 2000, but is threatened by uncertainty and conflict over its possible effects. To predict these , it is necessary to consider the linkages across countries and across sectors of the economy, as well as any agreement's interaction with other economic policies. Accounting for these interactions allows policymakers to anticipate change and take appropriate action.

EAGER/Trade research

To inform the policy debate in Southern Africa, Equity and Growth through Economic Research (EAGER)/Trade researchers built the first database ever to integrate production, trade and policy relationships between South Africa and the rest of Southern Africa. Further, the data was made compatible with data for Europe and the rest of the world compiled earlier by the Global Trade Analysis Project (GTAP). We then constructed new computer software (*RunGTAP*) that allows policy analysts to access this data using a standard Windows interface, and to simulate the consequences of alternative policy options.

In January 1998, a large-scale training exercise in Johannesburg put the GTAP data and *RunGTAP* software on the desks of more than a dozen policymakers and analysts around the region. The data and software are also

freely available for downloading at *http://www.eagerproject.com/* *http://www.agecon.purdue.edu/gtap*, where further documentation of the data, software and the Johannesburg course are also available. The result of this research is thus not to argue for a specific policy outcome, but rather to promote informed debate by allowing regional policy makers to anticipate the effects of each option, bringing African researchers into the global community of trade policy analysts using state-of-the-art data and analytical methods.

The approach

The Global Trade Analysis database shows the value of production and consumption in 1995 for each of 50 sectors for 45 regions of the world, along with the value of trade in each sector between all regions, and the major policy interventions affecting production and trade. Southern Africa is divided into the South African Customs Union (South Africa, Botswana, Namibia, Lesotho, and Swaziland), and the rest of SADC (Angola, Malawi, Mauritius, Mozambique, Tanzania, Zambia and Zimbabwe). The next update of the database, scheduled to be released during 2000, will provide separate national data on Botswana, Mozambique, Tanzania, Zambia, and Zimbabwe, with Malawi data scheduled to be available later in the year.

Table 1. Policy options for regional integration in Southern Africa

Type of Tax	Direction of trade	Sectors	1	2	3	4	5	6	7	8
Import	SAFRICA	Non-ag.	x	x	x	x	x		x	x
Import	SAFRICA	Agricult.		x		x	x			x
Import	EUNION	Non-ag.			x	x	x		x	x
Import	EUNION	Agricult.				x	x			x
Export	EUNION	all					x			
Import	RESTSAF	all						x	x	x
Import	SAFRICA	all						x	x	x

Table 2. Average Import Duties on Goods by Origin and Destination

Origin/Destination	SAFRICA	RESTSAF	EUNION
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
Including intra-regional trade	10.0	8.8	1.7
Excluding intra-regional trade	10.0	8.9	4.7

Specific results

The results presented below simulate the consequences of eight specific reform scenarios, regarding two different kinds of intervention (import restrictions and export subsidies), three negotiating partners (South Africa, the European Union, and the rest of Southern Africa), and two categories of goods (agricultural and non-agricultural). These scenarios, detailed in Table 1, cover a broad range of the policy options available over the coming years during implementation of the SA-EU and SADC agreements.

The results show a version of the database aggregated to five regions, namely the South African Customs Union (SAFRICA), the rest of Southern Africa (RESTSAF), the rest of Sub-Saharan Africa (RESTSSH), the European Union (EUNION), and the rest of the world (RESTWLD). A key influence on the results is each region's initial level of restriction on trade from each other region. In particular, as shown in Table 2, as of 1995, SA-EU trade was already subject to relatively low import duties, averaging 8.2 percent on trade from the EU to SA and 5.5 percent in the other direction, whereas SA and EU duties against imports from the rest of Southern Africa were over twice as high (17.6 percent and 15.4 percent, respectively).

Protection by country is largely due to differences in protection by commodity category, which in the data

Table 3: Average Import Duties on Goods and Services by Product and Destination

Origin/Destination	SAFRICA	RESTSAF	EUNION	EUNION*
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
Ave. excl. SVCES	10.0	8.8	1.7	4.7

* *Note*: the final column shows averages excluding intra-EU trade.

Table 4. Impact of Each Policy Option on Welfare (US$ 1995)								
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
Reciprocal? :	no	no	yes	yes	yes	yes	yes	yes
Incl. agriculture? :	no	yes	no	yes	yes	yes	no	yes
Incl. export sub.? :	no	no	no	nol	yes	no	no	no
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 : The participants are SA (SAFRICA); EU (EUNION) and SADC (SAFRICA+RESTSAF).

Table 5. Impact of Each Policy Option on Low-Income Families (percent change in returns to labour and the price of food)								
Scenario:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
South Africa								
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
Food	0.64	3.26	-0.09	1.80	1.93	0.48	0.46	2.37
Rest of Southern Africa								
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
Food	0.03	0.20	-0.10	0.02	0.05	1.51	0.95	1.10

Note: All prices are relative to a global numéraire.

presented here are aggregated into seven sectors, namely production agriculture (AGRIC), extraction of natural resources (EXTRACT), service industries, (SVCES), the food manufacturing industries (FOOD), and three other types of manufacturing industries divided by whether they are relatively heavy users of unskilled labor (LITMNFC), skilled labour (TECHMNFC), or physical capital (HVYMNFC). Table 3 shows that South Africa heavily protects its light manufacturing and food production sectors, while the rest of Southern Africa has lower protection levels.

Because protection varies greatly across sectors and trading partners, different regional-integration scenarios can have very different consequences. Key effects of the policy options presented in Table 1 are shown in terms of their effect on total national income, in the sense of equivalent variation in welfare.

Comparing the first four scenarios we can see that South Africa gains greatly and the EU loses greatly from the inclusion of agriculture, whether or not the agreement is reciprocal. It is not surprising that much of the conflict in SA-EU negotiations has centred on this area. In a reciprocal agreement that excludes agriculture (scenario 3), South Africa actually loses US$276 million per year from the agreement.

A key to avoiding such losses is to include liberalisation towards SADC in a policy package. Because barriers against trade within Southern Africa are relatively high, intra-SADC liberalisation has disproportionately large effects when combined with an EU-SA agreement. Including SADC is particularly important from SADC countries' own point of view. If SADC countries remain on the sidelines of SA-EU integration, they stand to suffer substantial losses. In contrast they would gain from joining any type of agreement, particularly if it includes agriculture.

The impact of the reforms on poverty alleviation is perhaps best seen through the returns to skilled and unskilled labour relative to the price of food. These distributional consequences are shown in Table 5. (Impacts on Europe and the rest of the world are not shown since they are very low, less than one-twentieth of one percent).

Table 5 demonstrates most vividly the negative consequences for the rest of SADC of remaining outside an SA-EU agreement. While South Africans' real wages rise in most cases, workers in other SADC countries would see substantial declines in their real wages relative to food prices — unless they too liberalise trade as in scenarios 6, 7 and 8. In those cases, SADC's real wages rise sharply, by more than 2 percent. This would represent a very substantial improvement in

social equity and poverty alleviation, as well as an engine of economic growth.

Policy implications

The immediate result of our analysis is that SADC countries not participating in the SA-EU agreement are correct to protest its negative effects on them, and that their principal remedy against these effects is to join a larger liberalisation effort. Doing so would produce gains in both growth and equity.

More generally, our research demonstrates the value of building and maintaining a continually updated, comprehensive database on trade, production and policy. Using *GTAP* and *RunGTAP*, officials in Southern Africa can quickly produce far more accurate and detailed simulations of specific reform agreements than has ever been possible in the past. An even more detailed updated database will become available in the year 2000, and further updates will be released every year or two. These tools offer a much improved "infostructure" for policy dialogue within and between countries, promising more informed debate and more appropriate policy choices.

Endnotes

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