ESTIMATING THE IMPACT ON MOZAMBIQUE OF DIFFERENT TRADE POLICY REGIMES: SADC, SACU OR MFN?

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Abstract

Using a partial-equilibrium methodology, this paper estimates and discusses the likely impact on imports, prices, tax revenue and welfare in Mozambique of a number of potential trade policy regimes: full implementation of the SADC free trade area, membership of the SACU customs union (with or without an accompanying FTA with the EU), and full unilateral MFN liberalization. Initial findings are that liberalization scenarios imply a welfare loss due to the fact that consumer surplus from cheaper imports does not fully compensate revenue loss. However, when suitable adjustments are made to the revenue calculations to account for exemptions, fraud and, in the SACU scenarios, revenue redistribution from the SACU revenue pool, the MFN and, especially, the SACU scenarios become welfare-improving. This implies a significant positive revenue transfer from the SACU pool.

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1. Introduction

Mozambique has been implementing a gradual process of trade liberalization since the start of its Economic Rehabilitation Programme in 1987, when market-oriented economic reforms were first introduced. On the import side, duty rates have been lowered and harmonized into five ad-valorem tariff bands from zero to 20%. On the export side, the country is eligible for non-reciprocal duty-free access into most developed country markets for most products (for example through the European Union's Everything But Arms scheme or the United States' AGOA concessions).

During the same period, Mozambique has also demonstrated a commitment to regional integration in Southern Africa by participating in the SADC Trade Protocol, which will lead to the creation of a free trade area among a dozen countries in Southern Africa by 2008 (with certain product-specific exceptions until 2015). The country has separately been invited to join the five-member SACU customs union.[1] Both SADC and SACU include South Africa, which is by far the largest and most advanced economy in sub-Saharan Africa, as well as Mozambique's largest, most diversified and most consistent trade and investment partner.

The government of Mozambique is now presented with strategic options for its trade policy. It can decide to continue implementing only the SADC Trade Protocol, leading to a free trade area in the region; it can advance towards a customs union through SACU; or it can accelerate the process of unilateral liberalization on a Most-Favoured Nation basis for all trade partners worldwide.

The purpose of this paper is to estimate and discuss the expected impact on Mozambique's trade and revenue flows, as well as on welfare, from reforming international trade under these different policy scenarios. A simple static partial equilibrium methodology is used, in order to disentangle the reform impact at the product-specific level. Product-specific estimates show where, and in what way, most of the gains and losses from granting trade preferences are likely to be concentrated, so they can help trade negotiators and policy makers to design trade and fiscal policies to maximize the benefits while minimizing the losses.

[1] Mozambique is also committed in principle to forming a customs union with other SADC Members by 2010. However, this deadline is unlikely to be met, for the reasons outlined in part 2.3 of this paper. In practice, the SADC customs union, if it happens at all, is likely to come about through the expansion and metamorphosis of SACU, since all SACU members are also members of SADC.

The paper does not focus directly on the impact on exports, mainly due to the fact that Mozambique is already eligible for duty free access for most products in most of its important partner country markets (including South Africa and the European Union), so there are no additional tariff reductions possible. Nevertheless, the paper does discuss briefly the likelihood that regional integration would have a positive impact on exports through different channels: increased foreign investment, the elimination of non-tariff barriers or the elimination of rules of origin, especially in the case of a customs union.

The paper is organized as follows. The next section describes the context of trade policy in Mozambique and the existing tariff and tax structure. Section 3 illustrates the partial equilibrium methodology employed in the analysis. Section 4 summarizes the main results from the estimations. Section 5 discuses the revenue implications of the different trade reform scenarios considered. In Section 6, non-tariff issues such as the expected impact on investment and the potential impact of non-tariff-barrier and rule-of-origin elimination are briefly analyzed. Section 7 briefly explores issues related to production. Section 8 deals with the sustainability of the trade deficit. Section 9 analyzes the main implications for trade policy of the results of the paper. The last section concludes with policy implications of the results and a list of issues for further research. A more exhaustive treatment of the methodology and results is included in two appendices.

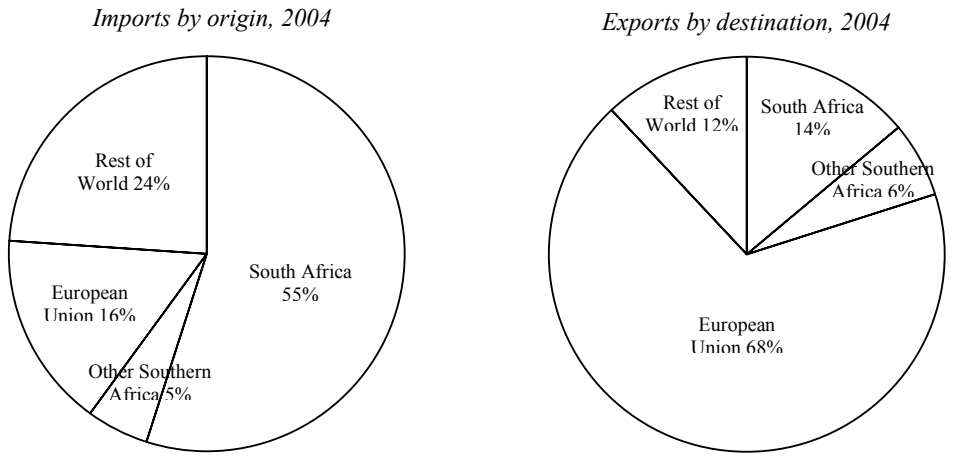
2. Context of trade policy

2.1 Mozambique

Mozambique's total recorded imports in 2004 amounted to USD 2.0 billion.[2] South Africa was by far the largest partner (55% of total imports) with all other SACU and SADC countries representing only 5% of imports altogether (2% for SACU Members and 3% for non-SACU SADC Members). The EU was a major source of imports (16%) while the USA, China and India each represented less than 5% of Mozambique's total imports.

[2] National Institute of Statistics (INE) data, CIF values. Subtracting goods of unknown classification (HS Chapter 99), the result is USD 1.7 billion. Comtrade mirror data report imports worth USD 1.8 billion (FOB values), or USD 1.5 billion excluding HS99.

Figure 1: Import and export shares of Mozambique's trading partners



Source: INE; authors' calculations, including adjustments for goods of unspecified origin/destination

In the same year, Mozambique exported a total of USD 1.5 billion.[3] The EU was the major destination with 68% of total exports (due largely to Mozal aluminium, see below). South Africa was the second-largest importing partner, receiving 14% of Mozambique's exports, while exports to the rest of SACU and SADC were marginal (6%).

Mozambique's exports are mostly limited to a small number of industrial "mega-projects" such as the Mozal aluminium smelter, the Cahora Bassa hydroelectric dam and the Sasol natural gas pipeline, as well as certain agricultural/forestry/fishery commodities such as prawns, sugar, cotton and wood. Except for Mozal aluminium, there are very few value-added manufacturing exports. Imports are diversified and include fuel, electricity (for Mozal) vehicles, machinery, consumer goods, wheat...

As a result of the implantation of mega-projects, as well as the recovery and development of the agricultural sector since the end of the civil war, exports have grown rapidly over the last few years. Rapid import growth has been driven by the needs of the mega-projects and by the emergence of a class of consumers with disposable income, especially in Maputo. The consistent trade deficit has been made possible by foreign exchange inflows due to foreign

[3] INE data, FOB values. The value of goods of unknown classification is not significant. Comtrade mirror data yields essentially the same results.

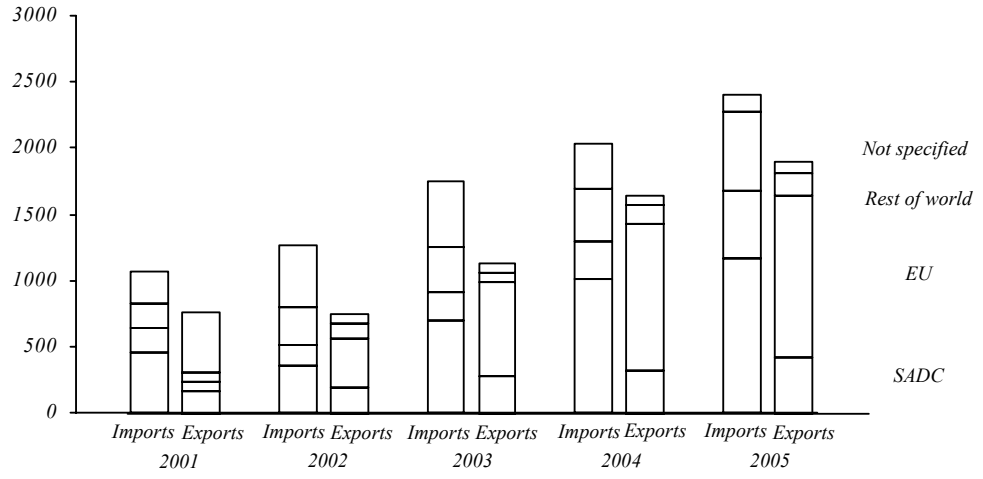
aid, mega-project investments, remittances from migrant labour abroad and certain service industries, especially tourism.

Table 1: Mozambique's top imported and exported product groups, 2004

Imports						*Exports*					
HS	*USD Million*	*From SADC*	*From EU*	*From rest of world*	*% of all imports*	*HS*	*USD Million*	*To SADC*	*To EU*	*To rest of world*	*% of all exports*
99	332	--	--	--	16.3%	76	915	0%	100%	0%	60.8%
27	308	98.9%	0.1%	0.9%	15.1%	27	136	100%	0%	0%	9.0%
87	171	64.6%	9.9%	25.6%	8.4%	03	107	12.1%	72.0%	15.9%	7.1%
85	167	41.0%	41.9%	17.1%	8.2%	84	58	93.2%	0.4%	6.4%	3.9%
10	145	5.8%	4.7%	89.5%	7.1%	17	48	0%	62.6%	37.4%	3.2%
84	134	48.0%	36.9%	15.1%	6.6%	24	41	100%	0%	0%	2.7%
90	68	76.1%	18.5%	5.4%	3.3%	52	34	12.3%	21.4%	66.3%	2.3%
40	53	21.4%	66.5%	12.1%	2.6%	44	30	14.6%	6.9%	78.5%	2.0%
73	52	66.4%	9.7%	24.0%	2.6%	08	30	3.7%	4.7%	91.5%	2.0%
48	39	83.1%	4.9%	12.1%	1.9%	12	12	10.5%	17.9%	71.6%	0.8%

Source: INE; authors' calculations, including adjustments for goods of unspecified origin/destination

Figure 2: Mozambique's evolution of trade, 2001-2005, USD million



Source: INE; authors' calculations

Mozambique reformed its applied MFN duty structure significantly during the 1990s in agreement with the adjustment programmes proposed by the World Bank and IMF. Overall rates have been reduced, all duties have been converted into ad-valorem tariffs and the number of bands has been harmonized to the existing five. In 2004 the simple average MFN applied tariff was 12.1% while the weighted average tariff amounted to 8.5%. Tariff

liberalization has continued since then, with the highest duties falling from 25% to 20% in 2006 and set to fall further in future years.

Table 2: Mozambique's MFN tariff structure, 2004[4]

MFN duty (%)	*Number of lines*	*% total lines*	*Imports ($1,000)*	*% total imports*[5]	*Average imports ($1,000)*
0	116	2.16%	83,871.6	12.19	723.03
2.5	1,151	21.46%	94,101.6	13.68	81.76
5	662	12.34%	134,269.1	19.52	202.82
7.5	1,564	29.16%	253,812.3	36.89	162.28
25	1,871	34.88%	121,912.6	17.72	64.95
All lines	5,364		687,967.2		
Average MFN tariff			12.10%		
Weighted average MFN tariff			8.50%		
Standard deviation			9.67		

Source: Mozambique tariff book; INE; authors' calculations

The tariff structure is organised in such a way that high duties, which are used mainly for the purpose of revenue collection rather than for the protection of import-competing industries, fall mostly on consumer goods, while inputs – raw materials, capital goods and intermediate goods – are taxed at lower rates.

Special duty exemptions are granted in certain cases:

- About 50 manufacturing firms that are able to demonstrate yearly revenue of more than USD 250,000 and value addition greater than 20% on imported inputs benefit from a special exemption programme, the *Regime Aduaneiro para a Industria Transformadora*;
- Registered investors may claim duty exemptions on 642 tariff lines (11% of all lines) considered to be "capital goods";
- "Mega-project" investments (those exceeding USD 500 million) may benefit from special incentives and exemptions, granted on a case-by-case basis by the Council of Ministers;
- Certain projects with a strong social component (such as those related to health or education) may be granted exemptions on a case-by-case basis;
- Finally, VAT on inputs re-exported after processing or assembly should be reimbursed, although in practice firms are not reimbursed directly but are granted a credit for duties payable on future imports.

[4] The calculation referred to MFN excludes imports originated in South Africa and SADC.
[5] Figures calculated using the total volume of trade net of good classified under Ch.99.

There are no specific duties currently being applied, nor are any anti-dumping, countervailing or safeguard measures being implemented. However, there are a small number of fixed and variable surcharges applied on top of normal duties to protect some "sensitive" products (see Table 3). The most important surcharge is in the case of sugar, where the surcharge was given as an incentive to foreign investors in the sector. It is currently being debated whether these surcharges should be maintained.[6]

Table 3: Mozambique's applied tariff surcharges

Tariff line code	*Product description*	*Surcharge*
17011100	Raw cane sugar	Variable duty (average 2004: 77%)
17011200	Raw beetroot sugar	Variable duty (average 2004: 77%)
17019100	White sugar with flavourings or colourings	Variable duty (average 2004: 54%)
17019900	Other white sugar	Variable duty (average 2004: 54%)
25232900	Portland cement	10.5%
72104100	Corrugated iron or steel sheets	20%
73063000	Round tubes of iron or steel	10.5%
73066000	Other tubes of iron or steel	10.5%

Source: Mozambique tariff book and National Sugar Institute

In addition to duties and duty surcharges, goods imported to Mozambique may also be subject to excise taxes and VAT. These taxes are calculated cumulatively. That is, customs duties are calculated as a percentage of CIF import values, excise (where applicable) is a percentage of CIF plus duties, and VAT is a percentage of CIF plus duties plus excise.

Excise taxes on specific luxury products such as cars and alcoholic drinks range from 15 to 65%. However, few products (2.7% of tariff lines) are presently covered by such a tax. By contrast, VAT is charged on 97% of tariff lines at a uniform rate of 17%. Exempted products are mostly organic chemicals, pharmaceuticals, fertilizers, mechanical products, cereals and other basic agricultural products. VAT exemptions are also currently granted to specific industries (e.g. sugar, certain mega-projects) and government-supported projects (e.g. in education or health).

[6] The sugar surcharge depends on a fixed reference price. Currently, existing high prices in the international market imply that the CIF import price is above the reference price and therefore the surcharge is currently set to 0%.

Taxes on imports are an important source of government revenue. In 2004, customs duties (including surcharges) represented 14%, excise on imported goods 3% and VAT on imports 21% of total government revenue raised through taxes.[7]

Mozambique grants duty preferences to Members of the SADC Trade Protocol. Through this agreement, duties are being progressively lowered and a free trade area will be established in Southern Africa by 2008, although certain "sensitive" goods are exempted until 2012 or even 2015 in some cases. In 2004 SADC countries benefited from duty-free access into Mozambique on 30% of tariff lines, equivalent to 53% of total SADC imports. South Africa benefits from preferential access on roughly the same amount of lines (28.1%), 21.7% of imports originated in South Africa.

Table 4: SADC and South African market access into Mozambique, 2004

South Africa					
MFN duty (%)	*Number of lines*	*% Total lines*	*Imports ($1,000)*	*% Total imports* [8]	*Average imports ($1,000)*
0	1509	28.10%	202,068.7	21.67	133.91
2.5	10	0.19%	8,224.0	0.88	822.40
5	554	10.32%	337,892.9	36.23	609.92
7.5	1437	26.76%	230,140.6	24.68	160.15
25	1860	34.64%	154,312.7	16.55	82.96
All lines	5370		932,638.9		
Average MFN tariff			11.19%		
Weighted Average MFN tariff			7.80%		
Standard deviation			9.01		
SADC					
MFN duty (%)	*Number of lines*	*% Total lines*	*Imports ($1,000)*	*% Total imports* [9]	*Average imports ($1,000)*
0	1613	30.04	43,651.8	53.22	27.06
2.5	6	0.11	0.1	0.00	0.02
5	548	10.20	5,455.4	6.65	9.96
7.5	1405	26.16	18,472.3	22.52	13.15
25	1798	33.48	14,440.5	17.61	8.03
All lines	5370		82,020.1		
Average MFN tariff			10.85		
Weighted Average MFN tariff			6.42%		
Standard deviation			10.44		

Source: Mozambique tariff book; Comtrade; authors' calculations

[7] Calculations based on the General State Accounts for 2004.
[8] Figures calculated using the total volume of trade net of good classified under Ch.99
[9] Figures calculated using the total volume of trade net of good classified under Ch.99

The SADC Trade Protocol suffers from various problems. This includes only partial implementation by certain members, low utilization rates and overly restrictive rules of origin. Some of these issues are discussed further in parts 2.3 and 6 of this paper. In part as a response to the weaknesses of the SADC Trade Protocol, in recent years Mozambique has sought to sign bilateral free trade agreements with neighbouring countries. So far, agreements have been signed and implemented with Malawi and Zimbabwe. These agreements allow for duty-free trade (with a very small number of exceptions) under a more liberal rule-of-origin regime.

On the export side, Mozambique is eligible for duty-free access into most of its major markets (the EU through the Cotonou Convention and Everything But Arms, the USA through AGOA, South Africa through the accelerated implementation of the SADC Trade Protocol). However, in practice preference utilization rates are low, due in part to the cost of complying with restrictive rules of origin but mostly because of the limited supply capacity of Mozambican producers.

2.2 SACU

The Southern Africa Customs Union (SACU) is the oldest customs union in the world, dating from 1910. The agreement was modified in 1969 and most recently in 2002. Botswana, Lesotho, Namibia, South Africa and Swaziland are equal Members, although traditionally South Africa has dominated decision-making.[10]

SACU Members have a common external tariff with 6690 product-specific lines. Customs duties are charged on the basis of the FOB transaction price, in contrast with international standard practice which is based on the CIF value of goods. Duties are calculated in a variety of ways depending on the product, including ad valorem, specific, mixed and compound tariffs and formula duties based on reference prices. Around 97% of tariff lines have one of the 39 different ad valorem rates. The simple average tariff is 8% and the maximum applied tariff is 55%. Over half the tariff lines are duty free; the highest ad-valorem rates are concentrated mostly among textile and clothing products. Specific and mixed duties are imposed almost exclusively on agricultural products.

[10] With the new SACU agreement, decisions about the CET need to be agreed among all members. This is expected to water down South Africa's dominance of decision making.

Table 5: SACU's MFN tariff structure, 2004

Type of duty	*Number of lines*	*%*
Ad valorem	6491	97.0%
Specific	103	1.5%
Compound	1	0.0%
Mixed Total	90	1.4%
Type 1 (25% or 70c/kg)	66	1.0%
Type 2 (325c/kg with a maximum of 39%)	24	0.4%
Formula	5	0.1%
Total lines	6690	

Source: SACU tariff book, authors' own calculations.

In addition to customs duties, goods imported into the SACU area may be subject to excise taxes, levies and VAT (or sales tax). Customs duties, customs valuation, trade remedies and excise taxes have been harmonised between SACU Members, but this is not true of all rebates and exemptions nor of VAT.

Regarding excise taxes, SACU countries levy ad valorem, specific and formula excise taxes on a total of 149 tariff lines. Excises are calculated on the basis of the FOB reference price plus 15% and any non-rebated customs duties. Ad valorem excise rates range from 5 to 7% and are levied mainly on manufactured products. Specific excise taxes are levied on prepared foodstuffs; beverages and spirits; tobacco; mineral products; and products of the chemical industries. The excise duty on certain categories of tractors, motor vehicles and chassis, are calculated on the basis of a formula, with a maximum rate of 20%. Specific levies are also charged on fuel.

Each SACU country applies a different VAT regime. Botswana charges a VAT rate of 10%, Lesotho and South Africa 14%, and Namibia 15%, while Swaziland levies a sales tax at a rate of 14%. All rates are lower than Mozambique's 17%. The lack of harmonisation of VAT is an obstacle to the free circulation of goods inside the union, since monitoring and control of trade flows within SACU are required in order to administer the diverging VAT regimes.

SACU countries apply anti dumping, countervailing and safeguard measures. Such measures are mainly imposed by South Africa and applied by all members even though the 2002

Agreement does not establish any common mechanism to implement trade remedies. Thus, South African legislation on the subject is at the moment the point of reference for all members of the customs union. In 2005, around 170 measures were applied.

Import duties and excise taxes are collected in the common customs area through a common revenue pool distributed according to a sharing formula. The revenue sharing formula is made of two separate pools: the customs pool and the excise pool, this latter further split into an excise component and a development component. The customs pool is distributed among member states according to their share of intra-SACU imports (providing an additional incentive for member states to monitor closely trade flows within SACU) while the excise component (85% of the excise pool) is distributed according to the country's share of SACU GDP and the development component (15%) is assigned inversely to GDP per capita.

Prior to 2002, individual SACU Members could enter into bilateral trade agreements with countries outside the customs union. Under the 2002 agreement this is expressly prohibited (Article 31) but existing arrangements can be maintained. This is problematic since in 2000 South Africa signed a Trade, Development and Cooperation Agreement (TDCA) with the EU establishing reciprocal duty-free access into each other's market for substantially all products by the end of a 12-year transitional period. Botswana, Lesotho, Namibia and Swaziland (the BLNS countries) found EU products entering their markets duty-free via South Africa. Furthermore, Namibian ports were losing business to competing South African ports because of the differences in duties for European cargo shipments. Thus the BLNS have found themselves obliged to apply the TDCA preferences, and it is likely that they will formally adhere to a modified version of the TDCA as an outcome of the Economic Partnership Agreement (EPA) negotiations with the EU.

Apart from the TDCA, South Africa also has bilateral trade agreements with Malawi and Zimbabwe. Botswana has bilateral trade agreements with Malawi and Zimbabwe, while Namibia has a bilateral trade agreement with Zimbabwe.

2.3 The SADC Trade Protocol

As previously mentioned, the SADC Trade Protocol is being implemented by 11 countries in Southern Africa, including Mozambique and all SACU countries.[11] Although a fully-fledged free trade area will only be achieved in 2008 (or 2015 in the case of all "sensitive" products), many goods already enjoy duty-free or preferential treatment. For example, Mozambique has duty-free access to the South African market for almost all goods and provides duty-free access to other SADC members on about a third of its tariff lines.

Two sectors have special arrangements within SADC. Sugar will be liberalised only by 2013, subject to suitable economic conditions within the region. In the meantime preferential trade is limited by a quota system.[12] For textiles and clothing, access to SACU countries under favourable rules of origin (single transformation) is limited by a quota for the LDCs within SADC, all other members being required to demonstrate that products have undergone double transformation in order to benefit from preferential treatment. The time-limited derogation for LDCs will lapse in July 2006 unless it is renewed.

Rules of origin have been a source of intense discussion since their final approval in 2002. They are based on a mix of criteria ranging from value-added to specific rules to changes of tariff heading. It is a widespread opinion that the present rules are restrictive and complex. A relaxation of the rules would probably lead to a significant increase in utilization of the SADC preferential trading arrangements and enhance the competitiveness of SADC producers.

While the protocol specifically mentions several non-tariff barriers to be eliminated, such as import quotas, cumbersome customs procedures, and export subsidies, it does not identify other measures which impede trade, such as levies, import (and export) licensing restrictions, and abusive design of technical requirements or sanitary and phytosanitary measures. These kinds of barriers are increasingly hindering trade, especially with respect to exports to South Africa, by far the largest market in SADC.

[11] The Members of the SADC Trade Protocol are: Botswana, Lesotho, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. Angola and Madagascar are in the process of acceding to the Protocol.

[12] Non-SACU sugar-producing countries with a surplus (defined as domestic production minus preferential deliveries to the EU and USA minus domestic consumption) obtain a duty-free quota into the SACU market. This quota is based on an initial level of 138,000 tonnes adjusted upwards yearly according to market growth in SACU.

The regional integration process should continue, and the mid-term review process of the protocol suggests the creation of a customs union by 2010 and a monetary union by 2012. Both targets seem overly optimistic. Very little preparatory work has been undertaken on essential issues such as the design of an appropriate common external tariff or revenue sharing mechanism. This is due not only to resource limitations but also to doubts among some Members about the pace, manner and direction of regional integration:

- Malawi, Zambia and Zimbabwe have in recent years experienced significant delays in implementing their tariff cuts as agreed under the Trade Protocol, and Malawi remains behind schedule; meanwhile non-tariff issues such as restrictive rules of origin and escalating non-tariff barriers remain unresolved;
- Angola, DR Congo, Madagascar, Malawi, Mauritius, Swaziland, Zimbabwe and Zambia are all members of COMESA as well as of SADC, and COMESA too has been in the process of creating a free trade area and designing a customs union; meanwhile, Tanzania is a member of the EAC customs union with Uganda and Kenya.

In the EPA negotiations with the EU, Malawi, Mauritius, Zambia and Zimbabwe chose to negotiate through the COMESA group rather than through the SADC group, reinforcing the suspicion that these countries are not fully committed to the SADC regional integration agenda. Furthermore, the proliferation of bilateral agreements between members of SADC suggests a loss of confidence that the Trade Protocol will prove a suitable vehicle to enhance cross-border trade.

Until recently, Mozambique's regional integration strategy was premised on the existence of a common sense of purpose among all countries of Southern Africa. Since recent developments in regional trade negotiations are suggesting otherwise, there is a growing perception within the government of Mozambique that it is time to re-evaluate a number of other strategic trade policy options, including increased collaboration with SACU and unilateral liberalization. It is in this context that this paper has been prepared.

3. Methodology

The methodology used in the paper is based on that developed by Panagariya (2000) and extended by Milner et al (2005). The methodology has all the caveats associated with static partial equilibrium analysis; however, it allows the estimation of revenue loss, welfare effects, trade creation and trade diversion at the specific product level with a relatively low data requirement.

3.1 Main assumptions

It is a *static partial equilibrium* model. This implies that any dynamic gains or the path of adjustment from trade reform cannot be analyzed. Furthermore the partial equilibrium nature of the model implies that linkages between sectors and impacts on the labour market and main macroeconomic variables cannot be analyzed.

Markets are *perfectly competitive* and *constant returns* are assumed, ruling out the possibility of economies of scale and market power, which may vary the potential impact of preferential integration by affecting prices and therefore the terms of trade between countries.

Imported products are *perfect substitutes* between different import sources and between foreign and domestic products. Since the analysis is carried out at the most disaggregated level possible (8-digit national tariff lines, or 6-digit Harmonized System tariff lines in the scenarios involving the SACU tariff book due to incompatibility with Mozambique's trade data at 8-digit national tariff lines), in the case of agricultural and primary products it is reasonable to assume that the elasticity of substitution between products sourced in different countries is very high. But this may not be the case for manufactured products.

Perfect transmission of tariff reform. It may be the case that tariff reductions in some products will not be translated into price reductions. This is related to the possibility of market power by exporters in the source country or importers in the destination country and/or of products not being perfect substitutes. Furthermore, trade reform may be transmitted quite unevenly across space. Cirera and Arndt (2006) show lack of integration in maize markets in Mozambique between the different provinces of the country. This implies that the estimates of

the impact of the different reform scenarios quite likely will indicate the impact in the Southern provinces neighbouring the South African border, but will over-estimate the impact further North.

Price elasticities. Lack of data availability implies that data on import demand own price elasticity needs to be assumed based on other empirical work (see Milner et al (2005)). Regarding export price elasticity, it is assumed that for the rest of the world and the EU it is very high or infinity, while for South Africa, following the small country assumption, it is assumed that it is positive and equals one for simplicity.

Trade data limitations. It is assumed that 2004 trade data is accurate on the whole, although some adjustments are made (e.g. customs evasion is considered when computing revenue implications – see below). Furthermore, it is assumed that 2004 is an appropriate base year for analyzing reforms which would be completed many years in the future, when the economic situation might be very different.

Lack of production data at the product level implies that it is not possible to incorporate supply data in the analysis. Thus, we will assume that demand refers to the net demand for imports. The demand and supply for home goods is unknown and the impact of the analysis on domestic products depends on the elasticity of substitution between home and foreign goods. Thus, when domestic and imported goods are perfect substitutes, the implication of the analysis on domestic production is that when prices do not change domestic producers keep their market share and only trade is diverted from the rest of the world towards preferential partners. On the other hand when prices decrease (increase), consumption effects occur and imports are increased (reduced). In this case, we would expect a reduction (increase) in domestic producer share, the extent of which will depend on the degree of substitution between imported and domestically produced goods.

It is important to keep in mind the implications of the assumptions described above when interpreting the results. The estimations are rough estimates considering these assumptions, nevertheless they give a clear orientation of the sign and magnitude of the changes expected in imports and revenue as a result of the different reform scenarios.

3.2 Scenarios

The purpose of the paper is to analyze the impact of different trade reform scenarios. The fact that a static model is used implies that two periods in time are needed: the situation before the trade policy changes being investigated (i.e. the year with the most recent available data, 2004), and the situation after the trade policy changes, once the reform process is completed. While the initial period is easy to characterize (since the trade policy environment of 2004 is known already), the post-reform period in every scenario is subject to uncertainty.

As far as possible, known changes to trade policy after 2004 (e.g. the reduction of Mozambique's top duty rate from 25% to 20%) are incorporated into the post-reform period in the scenarios. However, there are many problems. For example, how the current SACU institutional arrangements might be modified if Mozambique were to negotiate its entry into the union is open to speculation. Indeed, Mozambique, with a population of about 20 million, could probably exert a great deal more influence over South Africa (with a population of 44 million) than the BLNS countries (none of which has a population exceeding 2 million). Rather than trying to guess what might happen, the SACU scenarios used in this paper are based on the SACU common external tariff and related institutional arrangements *as they currently stand*. This makes the post-reform results "unrealistic" but it allows trade negotiators and policy-makers to see what aspects of the current arrangements are most favourable and which are most unfavourable to Mozambique.

The scenarios and their implications are described in table 6 below.

Table 6: Trade reform scenarios

Scenario	*Description*
2004	This is not a scenario as such but the starting-point for the simulations in each of the scenarios. The base year is 2004. Thus: • The institutional and policy environment is as described in part 2.1 of this paper.
FTA	This scenario is characterized by the formation of a free trade area between Mozambique and SADC countries. The end result is equivalent to the SADC Trade Protocol once fully implemented (i.e. after 2015). The scenario is characterized by the following policies: • SADC countries have duty free access to the Mozambican market for all products. • MFN rates for those products taxed at 25%, final goods, are reduced to 20% as planned for 2006. • Consumption tax and VAT structure stays the same.
SACU 1	In this scenario, Mozambique joins SACU under existing SACU arrangements, thus liberalizing trade with SACU countries and adopting the SACU CET. This means that: • SACU countries have duty free access to the Mozambican market for all products. • Mozambique adopts the existing SACU MFN tariff structure. • Mozambique adopts the SACU excise structure, but keeps its own existing VAT structure. • Mozambique participates in the existing SACU revenue-sharing mechanism.
SACU 2	This scenario is the same as SACU 1 except that it includes the Trade, Development and Cooperation Agreement (TDCA) liberalization schedule with the EU. Therefore Mozambique also gives duty free access to all imports from the EU to the same extent as South Africa does by the end of the implementation period.
MFN	This scenario is characterized by complete elimination of tariffs on all imported goods, keeping the existing consumption tax and VAT structure.

The FTA scenario represents a successful implementation of the SADC protocol or, in case of problems during the implementation of the SADC protocol, and since South Africa is Mozambique's main trade partner, a free trade agreement between Mozambique and SACU. This scenario implies that Mozambique keeps its planned MFN tariff structure.[13]

There are two SACU scenarios. As highlighted in part 2.2 of this paper, the BLNS are *de facto* applying TDCA preferences due to the problems associated with tariff-jumping through South Africa. Mozambique might be able to avoid similar problems, but equally it might not. For this reason, SACU membership with and without EU preferences are considered as two separate scenarios.

For a significant proportion of product lines (28%), South Africa already had duty-free access to the Mozambican market in 2004. This implies that these cases are already in the FTA

[13] This implies, however, a reduction from 25% to 20% of the rate for final goods as planned for 2006.

scenario. Therefore, the only change that applies to these product lines are an MFN change to 20% in the FTA scenario, and the adoption of the SACU common external tariff in the two SACU scenarios.

The results of the different reform scenarios need to be compared with the present situation and with each other. When doing so, however, an important problem arises. The level of revenue effectively collected does not correspond to the level of imports. This is due to several factors:

- As mentioned in part 2.1, some imports are exempted from paying duties or other taxes at the border. However, it is difficult to compile all information on project exemptions. For this reason, an adjustment factor is calculated. This is based on the difference between the "theoretical" initial revenue level (calculated by applying the 2004 tariff and tax structure to the actual 2004 imports), and the actual level of revenue collected in the same year.
- Due to smuggling and evasion, some imports are not registered. The likelihood of fraud at the border decreases when duties are lower because the margin from smuggling the good is narrower. Van Dunem (2005) provides an estimate of 1.4 for "fraud elasticity" in Mozambique. This is applied to the results of the different scenarios.

3.3 The model

The model used here is extensively described in Appendix 1. It has three regions: Mozambique, SADC (including South Africa) and the rest of the world (ROW).[14] For each product line, the total demand for imports, M, is equal to the sum of exports, X, from all sources. For a given level of income, the total demand for imports depends negatively on the price of the good in the market, while the export supply from each source depends positively on the existing price in the market. The equilibrium price in the market equals the international price at the border, p^*, plus an *ad valorem* tariff τ_n (and other applicable taxes). The tariff may be equal for all n sources of imports or different, depending on whether the tariff structure gives preference to this good under the SADC protocol. The model is represented by the following two equations:

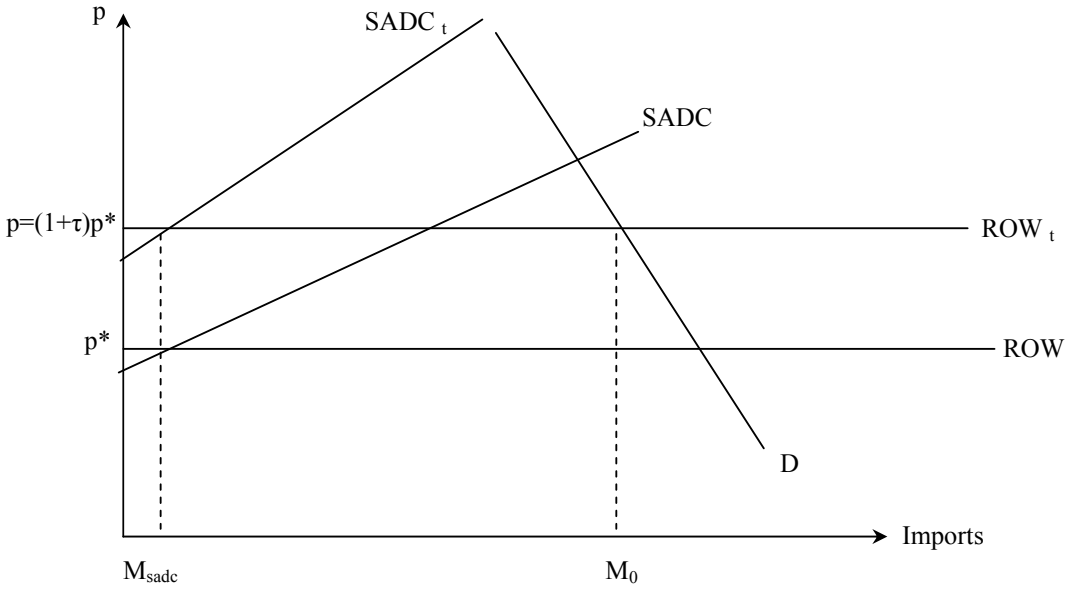
[14] For the SACU scenario where the TDCA is included, there are three regions: SADC, the EU and the ROW. Because non-SACU SADC trade with Mozambique is marginal, the SADC and SACU regions are considered to be equivalent for data purposes.

$$M(P,\bar{y}) = \sum X_n(P,\bar{y}) \qquad (1)$$

$$P = (\ 1 + \tau_n\ )\ P^* \qquad (2)$$

This corresponds to the diagram shown in figure 3:

Figure 3: Impact of tariff on import quantities and prices



For each product line, the initial export supply and import demand functions need to be benchmarked in order to estimate the effects of the reform scenarios. Initial total value of imports of the product (M_0), value of imports of the product from each source (M_{sadc}, M_0– M_{sadc}), and the ad valorem tariffs for the product, are all known. Meanwhile, initial observed prices can be normalized to one (i.e. import quantities are taken to be equivalent to import values in the base year), dispensing with the need to obtain data on imported unit quantities.[15]

The slopes of the import demand and export supply curves (which it is assumed are linear) can be expressed as a function of the price elasticity of demand η or of the price elasticity of

[15] This means, in effect, that a hypothetical unit of quantity is created for this exercise. If prices are affected as a resut of the trade reform scenarios, then values and quantities are no longer equivalent post-reform and new import values need to be calculated using the new prices and the new hypothetical quantities.

supply γ respectively. For the case of import demand, after the demand function is differentiated and manipulated, this means:

$$dM = -\beta dp \qquad (3)$$

$$\frac{dM}{dp}\frac{P_0}{M_0} = -\beta\frac{P_0}{M_0} \qquad (4)$$

$$\beta = -\eta\frac{M_0}{P_0} \qquad (5)$$

where the subscript $_0$ stands for the observed initial imports and price in 2004.

Since it is the inverse of the demand function that is being worked with, the slope of the inverse demand function can be re-expressed as:

$$\beta = -\frac{P_0}{\eta M_0} \qquad (6)$$

The intercept of the import demand curve is therefore:

$$\alpha = P_0 - \frac{p_0}{\eta M_0}M_0 = P_0(\frac{\eta-1}{\eta}) \qquad (7)$$

$$P = P_0(\frac{\eta-1}{\eta}) + \frac{P_0}{\eta M_0}M \qquad (8)$$

A similar manipulation can be done for the export supply curve, using export supply elasticities. So for every product and every region *n*, we have:

$$P_t = a + bX_t \qquad (9)$$

$$b = \frac{P_0}{\gamma^n X_0} \qquad (10)$$

$$a = P_0(\frac{\gamma^n-1}{\gamma^n}) \qquad (11)$$

$$P = P_0(\frac{\gamma^n-1}{\gamma^n}) + \frac{P_0}{\gamma^n X_0}X \qquad (12)$$

Finally, in order to complete the benchmarking exercise the different import demand and export supply price elasticities need to be identified. Import demand elasticities are not available for Mozambique, and therefore are taken from those sector-specific import demand elasticities calculated in Stern et al.(1976). Export supply elasticity is initially assumed to be 1 for SADC and very high or infinity for the ROW.

Once the equations are benchmarked, different reform scenarios can be simulated by changing the tariff τ in to the system formed by *(1), (2), (8*) and *(12)*. This gives the new vector of import quantities for every source and the new price in the market. The new import quantities and prices can then be used to estimate the levels and changes of revenue associated to duties, excise and VAT, and also measures of trade creation, trade diversion, consumer surplus and welfare, for every scenario. The precise methodology for the different scenarios is extensively described in the appendix.

4. Results

This section describes the results from the estimations. Nevertheless, the results related to revenue only indicative of potential levels of revenue due to the fact that they need to be adjusted to take account of tax exemptions, as well as misclassified and unregistered (smuggled) imports. These adjustments are carried out in section 5.

4.1 Scenario comparison

The main results of the estimations can be summarized as follows:

- As expected, the greatest overall increase in imports takes place under complete MFN liberalization, followed by membership of the SACU customs union with the TDCA, and then by a free trade area in Southern Africa (i.e. the SADC Trade Protocol). By contrast, SACU membership without the TDCA implies greater protection than existed in 2004 in terms of value of imports, with an increase in the weighted average tariff and a reduction in the level of imports.
- The weighted average price reduction is -7.09% in the MFN scenario, -6.51% for the SACU scenario with the TDCA, -3.55% for the SACU scenario without TDCA, and -

1.43% for the SADC free trade area. This implies that in all scenarios, the increase in the *value* of imports is smaller than the increase in the *volume* of imports.

- The scenarios that imply more liberalization are clearly associated with larger revenue loss. However, these results need to be adjusted for existing exemptions and, in the SACU scenarios, for the transfer of revenue from the revenue pool (see part 5 of this paper).
- An interesting result is the fact that despite the increase in imports for most of the scenarios, VAT revenue decreases. This is due to the fact that VAT is applied in cascade to the other taxes and the tax base is reduced because of reductions in prices and duties.
- Greater liberalization is associated with higher consumer surplus. However, this result depends on the degree of price transmission from the border to consumers[16].
- The revenue losses are larger than the consumer gains in all scenarios, implying overall national welfare losses as compared to 2004. However, in the SACU scenarios these results change when adjusted for revenue transfer from the common pool.

Table 7: Estimated aggregate impact on value of imports

Scenario	*% change in value of imports from*			
	Southern Africa	*European Union*	*Rest of the world*	*Total*
FTA	4.41%	Included in "Rest of the world", see right	-4.55%	0.79%
MFN	-5.98%	Included in "Rest of the world", see right	20.40%	4.68%
SACU no TDCA	0.15%	Included in "Rest of the world", see right	-4.04%	-1.54%
SACU with TDCA	-4.08%	66.84%	-29.53%	1.17%

Source: authors' own calculations

Table 8: Estimated aggregate impact on revenue and welfare, *before adjustment*

Scenario	*% change in*					
	Duty revenue	*Excise revenue*	*VAT revenue*	*Total revenue*	*Consumer surplus*	*Net welfare*
FTA	-101.5 (-67.27%)	-2.4 (-9.43)	-12.2 (-5.11%)	-116.08 (-27.99%)	25.46	-90.62
MFN	-150.1 (-100%)	-1.8 (-7.21)	-7.8 (-3.26%)	-160.47 (-38.7%)	133.51	-26.97
SACU no TDCA	-116.4 (-77.15%)	1.8 (7.07)	-15.2 (-6.38)	-129.86 (-31.3%)	65.99	-63.87
SACU with TDCA	-141.4 (-93.7%)	2.81 (11.04%)	-10.65 (-4.46%)	-149.24 (-35.99%)	117.86	-31.38

Source: authors' own calculations

[16] Traders may have market power and may be able to absorb some or all of the change in prices, reducing the benefits of liberalization for consumers. Moreover, the evidence on incomplete spatial market integration in maize markets suggests that consumers in central and northern parts of Mozambique will not benefit as much as implied by the estimations (Cirera and Arndt, 2006).

The results from the estimation are, of course, partial equilibrium results. These ignore general equilibrium effects such as terms of trade changes, cheaper inputs, reallocation of resources, the impact on domestic production or income changes, which the partial equilibrium setting used here does not capture. Therefore, these results should be interpreted as a first order approximation of the impact of different reform scenarios on imports and revenue at the product level. The following sub-sections describe in greater detail the results of the different reform scenarios.

4.2 FTA scenario

This scenario involves the complete implementation of the SADC Trade Protocol, with all other policy arrangements taken as they stand for Mozambique in 2006.[17] It is important to point out that in the base (pre-reform) year, 2004, Mozambique was already partially implementing the free trade agreement, with 1509 product lines duty free for South Africa, corresponding to 21% of imports by value.

The estimations imply a relatively low increase in the value of imports (+0.79%)[18] and a weighted average decrease in prices of -1.42%. About USD 49 million of trade is diverted from the rest of the world to Southern Africa, and the increase in consumer surplus from cheaper imports do not compensate revenue losses.

Appendix 2 shows the results aggregated by HS chapter. Tables 9-11 list the top 10 product groups (grouped by HS chapter) for selected variables: impact on revenue, change in consumer surplus and net welfare effect. The product groups where there is a larger loss of revenue and larger increase in consumer surplus are those with a greater value of imports (such as Ch.87, vehicles, or Ch.27, fuel), or higher taxes (such as Ch.17, sugar).

[17] This implies the reduction of the tariff for final products from 25% to 20%. In addition, the variable duty surcharges on sugar have been taken at their average rates in 2004.
[18] Even if the export supply elasticity of the SADC region is changed to infinity rather than 1, imports increase by only 4.4%.

Table 9: HS chapters with the greatest change in revenue, *before adjustment*, under the FTA scenario

HS	*Change*			*HS*	*Change*	
	in USD Million	*as % of total decrease in revenue from all chapters*			*in USD Million*	*as % of revenue from own chapter in 2004*
87	-15.22	13.11		17	-14.43	-67.84
17	-14.43	12.43		43	0.00	-31.21
27	-13.37	11.52		8	-0.23	-30.40
90	-12.20	10.51		93	-0.03	-28.32
85	-6.70	5.77		20	-1.06	-23.77
39	-4.57	3.94		9	-0.26	-23.61
84	-4.36	3.75		52	-3.37	-22.22
94	-3.75	3.23		94	-3.75	-21.44
73	-3.43	2.95		92	-0.01	-20.25
52	-3.37	2.90		97	-0.01	-19.63

Source: Authors' own calculations

Table 10: HS chapters with the greatest change in consumer surplus under the FTA scenario

HS	*Change*			*HS*	*Change*	
	in USD Million	*as % of total increase in C.S. from all chapters*			*in USD Million*	*as % of C.S. from own chapter in 2004*
17	5.25	20.62		17	5.25	24.69
90	2.94	11.53		8	0.08	10.38
27	2.75	10.80		43	0.00	8.32
87	1.67	6.57		52	1.23	8.09
52	1.23	4.81		51	0.01	6.73
39	1.04	4.08		93	0.01	6.45
94	0.77	3.04		9	0.07	6.11
63	0.74	2.89		12	0.18	5.92
48	0.64	2.52		7	0.10	5.60
40	0.64	2.52		60	0.02	5.42

Source: Authors' own calculations

Table 11: HS chapters with the greatest change in net welfare under the FTA scenario

HS	*Change*			*HS*	*Change*	
	in USD Million	*as % of total decrease in welfare from all chapters*			*in USD Million*	*as % of welfare from own chapter in 2004*
87	-13.55	14.95		17	-9.18	-43.15
27	-10.62	11.72		43	0.00	-22.89
90	-9.26	10.22		93	-0.02	-21.87
17	-9.18	10.12		8	-0.15	-20.02
85	-6.07	6.70		20	-0.85	-18.99
84	-4.04	4.46		9	-0.19	-17.50
39	-3.53	3.90		94	-2.97	-17.01
73	-3.04	3.35		92	-0.01	-16.12
94	-2.97	3.28		97	-0.01	-15.78
48	-2.48	2.74		22	-1.14	-15.16

Source: Authors' own calculations

4.3 MFN scenario

This scenario corresponds to the case of unilateral liberalization and the total elimination of tariffs and duty surcharges, while keeping existing VAT and excise taxes. In this case, the level of imports is maximized and increased by 4.68%.[19] Also, consumer surplus is maximized at USD 160 million with a weighted average reduction in prices of 7.09%.

The results are similar to the previous scenario, where those chapters with greater imports and with higher taxes such as vehicles (87) and sugar (10) experience the largest loss of revenue, while vehicles (8), electrical machinery (85) and fuel (27) experience the greatest increase in consumer surplus. It is important to point out that unilateral liberalization implies a significant reduction in revenue from cereal imports (10), which is compensated by a reduction in prices.

Table 12: HS chapters with the greatest change in revenue, *before adjustment*, under the MFN scenario

HS	*Change*		*HS*	*Change*	
	in USD Million	*as % of total decrease in revenue from all chapters*		*in USD Million*	*as % of revenue from own chapter in 2004*
87	-18.19	11.34	17	-14.80	-74.94
17	-14.80	9.22	97	-0.02	-51.07
27	-12.83	8.00	93	-0.03	-38.61
90	-12.61	7.86	22	-2.66	-35.82
85	-11.68	7.28	8	-0.24	-33.50
10	-7.77	4.84	46	-0.01	-31.99
84	-7.09	4.42	43	0.00	-31.66
39	-5.49	3.42	9	-0.33	-31.50
94	-4.87	3.03	57	-0.13	-31.10
63	-4.75	2.96	16	-0.95	-30.00

Source: Authors' own calculations

Table 13: HS chapters with the greatest change in consumer surplus under the MFN scenario

HS	*Change*		*HS*	*Change*	
	in USD Million	*as % of total increase in C.S. from all chapters*		*in USD Million*	*as % of C.S. from own chapter in 2004*
87	16.30	12.21	17	8.93	45.22
85	14.00	10.48	46	0.01	23.05
27	9.68	7.25	9	0.24	22.74
84	9.20	6.89	16	0.72	22.60
17	8.93	6.69	18	0.15	22.53
10	7.34	5.50	50	0.00	22.39
90	7.21	5.40	57	0.09	22.30
63	4.30	3.22	2	1.46	22.01
39	4.22	3.16	58	0.16	21.93
73	3.99	2.99	93	0.02	21.93

Source: Authors' own calculations

[19] Imports increase to 4.88% when changing the elasticity of export supply of the SA-SADC region to infinity.

Table 14: HS chapters with the greatest change in net welfare under the MFN scenario

HS	Change		HS	Change	
	in USD Million	*as % of total decrease in welfare from all chapters*		*in USD Million*	*as % of welfare from own chapter in 2004*
17	-5.87	21.77	17	-5.87	-29.71
90	-5.40	20.02	97	-0.01	-29.39
27	-3.16	11.70	43	0.00	-22.48
52	-2.14	7.93	93	-0.02	-16.68
87	-1.89	7.01	22	-1.16	-15.68
39	-1.27	4.71	52	-2.14	-14.12
22	-1.16	4.32	8	-0.10	-13.95
94	-1.04	3.86	51	-0.02	-11.55
15	-0.95	3.51	67	-0.01	-9.11
40	-0.81	2.99	46	0.00	-8.94

Source: Authors' own calculations

4.4 SACU without TDCA scenario

Regarding the SACU scenario when the TDCA agreement with the EU is not considered, the most important result is that it implies a higher level of protection than the current tariff structure in Mozambique. For the increase in consumer surplus, the results are similar to previous scenarios, with vehicles (87), optical materials (90) and electrical machinery (85) highest. Revenue change and net welfare effects depend on the application of the SACU revenue sharing mechanism, which is examined in part 5 of this paper.

Table 15: HS chapters with the greatest change in consumer surplus under SACU (no TDCA)

HS	Change		HS	Change	
	in USD Million	*as % of total increase in C.S. from all chapters*		*in USD Million*	*as % of C.S. from own chapter in 2004*
87	14.87	22.53	97	0.03	81.55
90	7.96	12.06	22	2.50	38.37
85	7.19	10.89	17	6.19	29.61
84	6.68	10.12	71	0.04	28.35
17	6.19	9.37	93	0.02	25.52
27	6.11	9.26	43	0.00	22.52
10	6.10	9.25	50	0.00	22.39
22	2.50	3.79	67	0.02	21.77
25	2.37	3.60	92	0.01	21.04
33	1.45	2.20	75	0.00	20.15

Source: Authors' own calculations

4.5 SACU with TDCA scenario

This scenario is similar in terms of liberalization to the unilateral MFN liberalization due to the fact that there is liberalization for the two main sources of imports, Southern Africa (i.e. South Africa) and the EU. Regarding consumer surplus, the sectors with the largest increases in consumer surplus are vehicles (87) and electrical (85) and mechanical machinery (84). The final impact on revenue and welfare depends on the transfer from the SACU revenue pool.

Table 16: HS chapters with the greatest change in consumer surplus under SACU (with TDCA)

HS	*Change*		*HS*	*Change*	
	in USD Million	*as % of total increase in C.S. from all chapters*		*in USD Million*	*as % of C.S. from own chapter in 2004*
87	24.68	20.95	97	0.03	84.31
85	12.97	11.01	22	3.19	51.17
84	8.73	7.41	93	0.03	36.07
90	8.10	6.87	71	0.04	31.25
27	6.37	5.41	17	6.19	29.64
17	6.19	5.25	46	0.01	27.32
10	6.10	5.18	67	0.02	25.99
63	3.89	3.30	09	0.24	22.88
22	3.19	2.71	95	0.35	20.02
73	3.09	2.62	20	0.87	19.85

Source: Authors' own calculations

5. Implications of revenue adjustments

Before drawing any conclusions from the results in the estimations in part 4 of this paper, it is fundamental to adjust expected revenue flows to take account of tax exemptions, as well as misclassified and unregistered (smuggled) imports. Indeed, as demonstrated below, the model used in this paper heavily over-estimates expected revenue for the 2004 base year, as compared to actual collected revenue in 2004. This implies that the potential for revenue losses arising from the trade reforms modelled in the scenarios is in reality much lower than estimated in part 4 of this paper. Additionally, in the case of the SACU scenarios, it has to be taken into account that customs revenue is pooled and redistributed according to a formula. When expected revenue is adjusted for these factors, as seen below, the MFN and SACU scenarios *become welfare improving*.

An additional consideration to bear in mind, with respect to the FTA and MFN scenarios, is that one could design a revenue-neutral reform by reducing the average rate of taxation on imports at the same time as removing exemptions and improving the actual collection of taxes due (thus keeping the *effective* average rate of taxation at the same level). This in turn would have the double advantage of leading to greater transparency in the trade policy environment (with positive implications for good governance) and requiring fewer resources to implement and monitor exemptions schemes.

5.1 Exemptions

The estimations in part 4 of this paper omit 16% of imports that are misclassified in Chapter 99 as "other products from other countries". For these imports, there is no information about the country of origin or the applicable taxes. In addition, the large number of exemptions granted (as described in part 2.1 of this paper) implies that revenue collected is always lower than the theoretical revenue that would be obtained from taxing imports as specified in the customs tariff book.[20] The revenue totals obtained in part 4 of this paper need to be adjusted to reflect these discrepancies.

Table 17 summarizes the adjustments required. The first column reflects actual revenues collected in the national currency, as reported in the State accounts. These are converted to USD in the second column. It should be noted that, when divided by actual imports, these values translate into very low effective taxation rates: a 4.84% average tariff rate, a 1.05% excise rate (across all products) and a 7.27% VAT rate. The fourth column indicates the theoretical level of revenue expected for the 2004 base year, applying tax rates as they appear in the tariff book, without any exemptions, to actual 2004 imports (disaggregated by tariff line and by country of origin). These yield expected average taxation rates of 8.9%, 1.5% and 14.0% respectively for duties, excise and VAT, all of which are significantly higher than the actual effective rates.

[20] It must be made clear that the term "Exemptions" in this paper does not include the concept of preferential trade: thus, an import from South Africa claiming duty-free status under the SADC Trade Protocol is *not* considered to have been exempted.

In the second-last column, the amount of expected revenue is adjusted upwards to take into account the fact that some 16% of imports are misclassified as Ch.99. The expected taxes for these goods are calculated by applying a linear approximation that assumes the same average effective tax rates as for other goods. Finally, the last column shows the ratio of collected to expected revenue for every type of tax. The ratios are low, implying that around half of imports are effectively exempted from paying duties and VAT.

Table 17: Actual and expected trade-related revenue in 2004

Trade-related revenue	*2004 actual revenue (MZM billion)*	*2004 actual revenue (USD million)*	*Effective average rate of taxation*	*Theoretical revenue expected for 2004 (USD million)*	*Expected average rate of taxation*	*Theoretical revenue expected for 2004 incl. Ch.99 (USD million)*	*Actual revenue as % of expected revenue in 2004*
Duties & surcharges	2,223	98.4	4.8%	150.9	8.9%	180.25	54.60%
Excise on imports	485	21.5	1.1%	25.4	1.5%	30.37	70.65%
VAT on imports	3,340	147.9	7.3%	238.4	14.0%	284.84	51.92%
Cumulative total	6,047	267.8	13.2%	414.7	24.4%	495.46	

Source: General State accounts; INE; authors' own calculations

Taking the required revenue adjustments for the 2004 base year as a starting point, and assuming a constant relationship between actual and expected revenue among all scenarios, adjustments can be made to the revenue estimations in all scenarios, as shown in table 19. The theoretical revenue for the 16% misclassified imports (Chapter 99) is added to the estimated total revenue reported in part 4 of this paper, and then the effective collection ratios as listed in the last column of table 18 is applied to this intermediate result, to take exemptions into account.

The values in bold are the total expected revenue, after adjustment: USD 191.97 million in the FTA scenario, USD 162.99 million in the MFN scenario, USD 183.98 million in the SACU (no TDCA) scenario and USD 171.83 million in the SACU (with TDCA) scenario. These values correspond to effective taxation rates of 9.36% (FTA), 7.62% (MFN), 9.18% (SACU no TDCA) and 8.33% (SACU with TDCA).

Table 18: Adjusted aggregate revenue estimations for each scenario

Trade-related revenue	FTA			MFN		
	Estimated theoretical revenue (USD Million)	*Estimated theoretical revenue incl Ch.99 (USD Million)*	*Anticipated effective revenue (USD Million)*	*Estimated theoretical revenue (USD Million)*	*Estimated theoretical revenue incl Ch.99 (USD Million)*	*Anticipated effective revenue (USD Million)*
Duties & surcharges	49.37	58.98	32.21	0.00	0.00	0.00
Excise on imports	23.02	27.50	19.43	23.59	28.18	19.91
VAT on imports	226.22	270.28	140.33	230.64	275.56	143.07
Cumulative total	298.61	356.76	***191.97***	254.23	303.74	***162.99***
	SACU no TDCA			**SACU with TDCA**		
Duties & surcharges	34.49	41.21	22.50	9.53	11.39	6.22
Excise on imports	27.22	32.52	22.98	28.23	33.73	23.83
VAT on imports	223.27	266.75	138.50	227.84	272.21	141.34
Cumulative total	284.98	340.48	***183.98***	265.60	317.32	***171.38***

Source: Authors' calculations

The revenue adjustments required to account for exemptions and misclassified imports are highly significant. Once adjusted, expected revenue collection both in the 2004 base year and in the post-reform scenarios is reduced significantly, reducing the expected revenue loss – and thus the negative impact on welfare – from reform. Table 19 recalculates the impact of the FTA and the MFN scenarios with the adjusted level of expected revenue flows. In the FTA scenario, the negative net welfare effect is considerably lower than originally estimated in $40 millions, and in the MFN case the net welfare effect actually becomes positive.

Table 19: Estimated aggregate impact on revenue and welfare, *after adjustment*

Scenario	*Change in*					
	Duty revenue	*Excise revenue*	*VAT revenue*	*Total revenue*	*Consumer surplus*	*Net welfare*
FTA	-66.19 (-67.3%)	-2.07 (-9.6%)	-7.57 (-5.1%)	-75.83 (-28.1%)	25.46	-50.37
MFN	-98.4 (-100%)	-1.59 (-7.4%)	-4.83 (-3.3%)	-104.81 (-39.1%)	133.51	28.7

Source: authors' own calculations

As with the results in part 4 of this paper, however, consumer surplus is probably still over-estimated because of the assumption of perfect transmission of price changes to consumers. This probably leads to a positive bias in the net welfare effect of reform.

5.2 Fraud

The reduction in tariff rates reduces the incentives to smuggle goods by decreasing the price spreads between legally and illegally imported goods. Van Dunem (2005), based on Fisman and Wei (2004), calculates the relationship between trade taxes and the level of unregistered imports. He regresses estimated unregistered imports (obtained by observing the ratio between the CIF export value to Mozambique registered by South Africa and the CIF value of imports from South Africa registered in Mozambique for each product line), with respect to the level of import taxes for each product line. He finds a "fraud elasticity" of 1.4, suggesting that for every 1% increase in taxes there is an increase in 1.4% of imports not registered.

This elasticity coefficient can be applied to the results obtained in part 5.1 of this paper to account for a potential reduction in non-registered imports arising from tariff reduction. Concretely, the following equation is applied to every product line in every scenario:[21]

$\text{Log}(X/M) = \beta\ \text{Taxes} + \varepsilon$ where the estimated parameter $\beta=1.38$

Given that M, the expected level of imports registered by Mozambique, is known for each scenario in 2004, we can apply the equation above and solve for X, which can be interpreted as the potential level of imports without smuggling in 2004. Then the different scenarios are re-estimated to obtain the new X^*. Finally, to the new potential registered imports X^* , we apply again the formula to obtain the final expected imports M, which account for both the liberalization exercise and the potential increase in registered imports from reducing taxes at the border.

The following two tables show the results in terms of imports revenue and welfare. Clearly there is a significant increase in the level of imports resulting now from the combined trade and fraud reduction effects when reducing trade taxes. Registered imports increase from 23% in the MFN case to 10.9% in the SACU no TDCA scenario.

21 The intercept originally in the equation is used to adjust imports from re-exports. Since the original model in Van Dunem (2006) is only applied to South Africa's imports, and in our case we estimate imports from all the sources we have only used the slope coefficient as a rough estimate of the elasticity without adjusting for re-exports from one source.

Table 20: Estimated aggregate impact on value of imports after adjusting for fraud

Scenario	*% change in value of imports from*			
	Southern Africa	*European Union*	*Rest of the world*	*Total*
FTA	23.81%	Included in "Rest of the world", see right	-4.55%	12.35%
MFN	9.5%	Included in "Rest of the world", see right	42.6%	22.9%
SACU no TDCA	16.8%	Included in "Rest of the world", see right	2.14%	10.86%
SACU with TDCA	8.03%	99.6%	-23.5%	15.12%

Source: authors' own calculations

Table 21: Estimated aggregate impact on revenue and welfare *after adjustment for exemptions and fraud*

Scenario	*change in*					
	Duty revenue	*Excise revenue*	*VAT revenue*	*Total revenue*	*Consumer surplus*	*Net welfare*
FTA	-66.19 (-67.26%)	4.33 (20.12%)	9.79 (6.62%)	-52.07 (-19.44%)	28.26	-23.81
MFN	-98.40 (-100%)	8.09 (37.64%)	23.73 (16.04%)	-66.58 (-24.86%)	133.67	67.09
SACU no TDCA	-76.28 (-77.52%)	5.73 (26.64%)	12.9 (8.17%)	-58.5 (-21.8%)	65.98	7.51
SACU with TDCA	-91.84 (-93.34%)	16.59 (77.18%)	18.13 (12.26%)	-57.12 (-21.33%)	118.8	61.68

Source: authors' own calculations

Regarding revenue, when fraud reduction is considered, the reduction in duties from liberalization is partially compensated by increased excise and especially VAT revenue. The resulting reduction in revenue loss and the consumer surplus imply a significant net welfare gain as compared to the previous calculations. Therefore, considering the reduction in fraud from trade taxes reduction has a significant impact on the welfare impact of trade reform.

Two important issues should be stressed in this section. As suggested above, it is unlikely that price transmission is complete in the presence of high transport costs and a not very competitive retail sector, which imply the overestimation of the consumer surplus. Nevertheless, the existing level of smuggling may put downward pressure on domestic prices, below the price plus the wedge introduced by taxes, compensating part of the overestimation of the consumer surplus.

The second issue is related to the fact that the level of exemptions and effective taxation do not necessarily have to remain constant. It is possible to combine an effective reduction of trade duties with a reduction in exemptions. This could bring about two positive outcomes.

First, it would add more clarity and transparency to the exemptions system, since there would be a very short list of exemptions that could be more easily implemented and monitored. Second, it partially offsets the effective reduction in tax revenue arising from liberalization, and these resources could be used to finance adjustment costs from liberalization.

5.3 Revenue sharing in SACU

In the scenarios involving SACU membership, revenue flows depend on the results of applying the revenue-sharing formula, as introduced in part 2.2 of this paper. Therefore, once tax revenue collection is calculated, final retained revenue has to be extrapolated from an estimation of revenues collected in all SACU member states.

In the absence of a regional CGE model, it is impossible to calculate the impacts in terms of exports and imports for other SACU countries. For this reason simplified calculations are made, adding the estimated revenue flows obtained in the two SACU scenarios to the pool contributions in 2004. Despite being a simplification, this helps to approximate the revenue impact of SACU membership in static terms.

The formula for the revenue pool is described in Box 1. The calculations have been carried out according to information about the revenue pool in 2004.[22][23] For duties, the revenue allocation depends on each country's share of imports from other SACU members. We add the resulting SACU imports from the simulations and the observed exports from Mozambique to SACU in 2004. Adjusting the other countries' shares to include Mozambique's imports from SACU and exports to SACU in total intra-SACU imports, yields a share of imports between 9% and 11%, depending on the scenario (see Table 22). Clearly, all SACU countries would experience a reduction in the share of the pool as a result of Mozambique's membership. However, and due to the significance of Mozambique's exports of electricity to South Africa, the customs pool share for South Africa would remain constant, while being

[22] The official figures of SACU generated revenue in 2004 are 8,479 million rands for custom duties and 12,381 for excise duties.
[23] SACU revenues increased significantly in 2005, mainly due to a consumption boom. Thus, we may expect that if the revenue shares remain, more or less, constant, SACU payments from 2005 may increase significantly. On the other hand, we may also expect in the future the reduction of the customs pool due to the implementation of the TDCA and other MFN liberalization.

significantly reduced for the BLNS.[24] This may be a significant element of conflict between SACU countries if considering Mozambique membership. In addition, a controversial element when implementing the formula is the incentive to over-declare higher intra-SACU imports in order to obtain more revenue from the duties pool.

Table 22: SACU Revenue Shares with Mozambique's membership

	Botswana	Lesotho	Namibia	Swaziland	South Africa	Mozambique		Total
						Imports from SACU	% Pool share	Intra-sacu imports
SACU 2004	2,404.69	1,153.93	2,414.37	1,592.06	1,906.76			9,471.81
	25.39%	12.18%	25.49%	16.81%	20.13%			
SACU 2004 incl Moz exports	2,405.49	1,154.07	2,414.57	1,595.01	2,139.46			9,708.60
SACU no TDCA	22.43%	10.76%	22.51%	14.87%	19.95%	1,016.18	9.48%	10,724.78
SACU TDCA	22.52%	10.80%	22.60%	14.93%	20.03%	973.30	9.11%	10,681.90
SACU no TDCA (fraud adj)	22.08%	10.59%	22.17%	14.64%	19.64%	1,184.90	10.88%	10,893.50
SACU TDCA (fraud adj)	22.26%	10.68%	22.35%	14.76%	19.80%	1,096.10	10.14%	10,804.70
Excsise pool shares	3.67%	0.58%	2.31%	1.02%	90.07%		2.35%	
Development pool shares	16.49%	16.77%	16.64%	16.70%	16.55%		16.81%	

Source: authors' own calculations

The excise component of the formula (worth 85% of total excise revenue) is based on the relative GDP size of each member. Using GDP at current USD from the WDI (2006), Mozambique's share in SACU GDP in 2004 was 2.4%. Finally, the development component (worth 15% of excise revenues) is more or less equally shared among members; although the SACU formula introduces a very minor bias in favour of those members with lower GDP per capita. Based on 2004 WDI (2006) GNI per capita, Mozambique obtains 16.81% of this component, marginally higher than the average for all members (16.66%).

An important element to consider is the fact that excise taxes on domestic products also have to be transferred to the revenue pool. It is not possible to estimate the total size of excise taxes collected in Mozambique with the model used in this paper, since domestic production is not modelled. An assumption is made that excise revenue on domestic production in Mozambique would be the same under the SACU scenarios (applying the SACU excise structure) as was actually the case in 2004, namely about USD 34.86 million.[25]

[24] Due to the significant increase in Mozambique's exports of gas to South Africa starting in 2005, we should expect that South Africa may even slightly increase its share of the duties pool

[25] Note that this figure is likely to underestimate the real excise revenue collection applying the SACU excise structure, since SACU excise are higher than current excises in Mozambique.

Box 1: The SACU revenue-sharing formula

The revenue sharing formula of the 2002 SACU Agreement, for a given financial year, is:

$$Ri = C (Ai/A) + (0.85) E (GDPi/GDP) + (0.15) (1/n) E (1-((Yi/Y)-1))$$

where:
Ri = revenue share of SACU country i;
i = Botswana, Lesotho, Namibia, South Africa or Swaziland;
C = all customs duties actually collected on goods imported into SACU, less the cost of financing the Secretariat, the Tariff Board, and the Tribunal, less the customs duties rebated or refunded;
Ai = CIF value (at the border) of imports of SACU country i from all other SACU members, less re-exports;
A = total CIF value (at the border) of intra-SACU imports, less re-exports;
E = all excise duties actually collected on goods produced in the SACU area, less the cost of financing the Secretariat, the Tariff Board, and the Tribunal, less the excise duties rebated or refunded;
GDPi = Gross domestic product of SACU country i;
GDP = total gross Domestic product of SACU members;
n = number of countries in SACU
Yi = Gross domestic product per capita of SACU country i;
Y = average gross domestic product per capita of all SACU members.

After some algebraic manipulations, Ri becomes:

$$Ri = C (Ai/A) + (0.85) E (GDPi/GDP) + (0.3) E (11- Yi/Y)$$

The customs component: C (Ai/A)

The pooled customs revenue will be distributed according to intra-SACU imports, excluding re-exports and net of rebates . Even though country shares are expected to remain stable over time, the size of the customs pool (C) will depend upon the value of imports and changes to the SACU tariff regime.

The excise component: (0.85) E (GDPi/GDP)

The size of the excise component has been set initially at 85% of the excise pool, and will be distributed on the basis of the GDP of each of the SACU countries.

The development component: (0.15) (1/n) E (1-((Yi/Y)-1))

The size of the development component has been set initially at 15% of the excise pool, and will be distributed inversely to each country's GDP per capita: the smaller the GDP per capita, the greater the share of the development pool.

The data for the calculation of the income shares accruing to each country is obviously a source of conflict among member states. Discrepancies to track intra-SACU imports between SARS (SA) data and National Statistics from BLNS countries are quite significant, leading to prolonged discussions.

Source: SACU Trade Policy Review 2003 (WTO)

Table 23 shows the results of applying the formula to both scenarios, SACU no TDCA and SACU TDCA. Under both scenarios, SACU membership implies a revenue payment of around USD 200 million. Clearly, SACU membership would imply a positive redistribution

of revenue to Mozambique, with respect to its contribution, net revenue transfer, of USD 123 million for the SACU no TDCA scenario and USD 132 million for the SACU TDCA scenario. These figures represent around USD 35-39 million more than the revenue collected in 2004. The fact that SACU membership allows to raise and keep the country's own VAT, implies that revenue is maximized under SACU membership. The figures in terms of total revenue transferred from the SACU revenue pool are very similar under both scenarios due to the fact that Mozambique contributes a very small share to the pool.

Table 23: SACU revenue pool calculations, before adjustment for exemptions and fraud

	Revenue Pool 2004		*Mozamb.*	*SACU no TDCA*		*SACU with TDCA*	
Revenue Component	*Rand Million*	*USD Million*	*Share*	*Revenue pool incl. Moz*	*Revenue transfer*	*Revenue pool incl. Moz*	*Revenue transfer*
Duties	8,479.00	1,234.21	9.48%	1256.71	119.14	1240.43	113.02
Excise	10,523.85	1,531.86	2.35%	1581.02	37.15	1581.74	37.17
Development	1,857.15	270.33	16.81%	279.00	46.90	279.13	46.92
Total	20,860.00	3,036.39		3116.73	***203.19***	3101.30	***197.12***
VAT					138.50		141.34
Total Revenue after SACU transfer					***341.69***		***338.46***
Net transfer (SACU transfer-contribution)					122.85		132.21
Change with respect 2004 revenue					39.03		35.80

Source: Authors' calculations based on Kirk and Stern (2005) and WDI (2005)

Table 24 calculates the revenue formula using the revenue flows adjusted for exemptions and fraud reduction. In this case, since the VAT revenue obtained is higher than in the previous case, SACU membership implies an estimated increase of trade related revenue of around 25% as compared to 2004 collected revenue.

Table 24: SACU revenue pool calculations, adjusting for exemptions and fraud

	Revenue Pool 2004		*Mozamb.*	*SACU no TDCA*		*SACU with TDCA*	
Revenue Component	*Rand Million*	*USD Million*	*Share*	*Revenue pool incl. Moz*	*Revenue transfer*	*Revenue pool incl. Moz*	*Revenue transfer*
Duties	8,479.00	1,234.21	10.88%/ 10.14%	1,256.33	136.65	1,240.76	125.87
Excise	10,523.85	1,531.86	2.35%	1,584.63	37.24	1,593.87	37.46
Development	1,857.15	270.33	16.81%	279.64	47.01	281.27	47.28
Total	20,860.00	3,036.39		3,120.60	***220.90***	3,115.90	***210.61***
VAT					159.99		166.03
Total Revenue after SACU transfer					***380.89***		***376.64***
Net transfer (SACU transfer-contribution)					136.69		131.10
Change with respect 2004 revenue					78.23		73.98

Source: Authors' calculations based on Kirk and Stern (2005) and WDI (2005)

These results are somewhat different from Kirk and Stern (2004), who indicate a general loss of revenue from implementing SACU. The authors suggest a 3% decrease in government revenue, as opposed to an increase in our scenarios ranging from 12% to 26%. Kirk and Stern (2004) suggest a positive net transfer from the revenue pool of 12%, much lower than our estimates of an increase of 160% with respect to the contribution.[26]

Once the impact of the SACU transfer on revenue is accounted for, the picture of the final impact of the reform scenarios changes significantly. As shown in Table 25, the SACU scenarios become welfare improving with a higher level of welfare than the MFN and FTA scenarios. This is due to the fact that the net revenue transfer from SACU more than compensates for the higher MFN consumer surplus.

Table 25 Estimated aggregate impact on revenue and welfare, *after adjustment and SACU transfer*

	Change in Total revenue	*Consumer surplus*	*Net welfare*
SACU no TDCA	39.03	65.99	105.02
SACU with TDCA	35.80	117.86	153.66
Fraud Adjusted			
SACU no TDCA	78.23	65.98	144.21
SACU with TDCA	73.98	118.8	192.78

Source: authors' own calculations

An important implication of these results is that if regional integration is an important goal of Mozambique's external trade policy, SACU membership seems a better option than the current SADC process.[27] This is mainly due to the extent of revenue transfer in the SACU scenarios as they have been set up.

Despite the importance of this result, it is important to point out that with the process of MFN liberalization being carried out in South Africa, it is expected that the customs component,

[26] Kirk and Stern (2004) use 2002 as the base year, while the base year in this paper is 2004, and the simulation methodologies for the impact of the liberalization scenario under SACU are different.
[27] This result is highly dependent on whether SADC will effectively be a customs union, the type of revenue redistribution that will be established and the timing and costs of adjustment for both scenarios.

which is the main source of redistributed revenue, will decrease significantly in coming years. The size of the pool, of course, will also depend on the trend on consumption and import growth in SACU countries[28]. In addition, lack of data on the impact of applying SACU excises domestically imply that the revenue transfer figure is likely to be overestimated because of higher average excise tax under SACU. Therefore, the figures reported should be taken as upper limits of the transfer.

6. Non-tariff issues

On its own, a static analysis of the impact of potential customs tariff changes on Mozambique's economy omits a number of non-tariff issues which, although difficult to model and quantify, would be likely to prove highly significant. Choosing one trade policy regime rather than another might have direct and indirect effects on inward investment, trade facilitation and the business environment in Mozambique that may far outweigh all adjustment, revenue and trade diversion impacts. Benefits could include:

- The unilateral MFN liberalization scenario would render unnecessary much of the red tape associated with importing goods into Mozambique, thus improving transparency at the border and encouraging the establishment of industries that require imported inputs;
- In the SACU scenarios, the removal of rules of origin would lower transaction costs and could thus boost exports to the region directly;
- In the SACU and FTA scenarios, depending on whether the regional institutions function effectively, the creation of a framework for mutual oversight and for further integration might lead to a concerted effort to remove non-tariff barriers, harmonize regulations and generally facilitate trade;
- In the SACU and FTA scenarios, again depending on the manner in which the regional institutions function, Mozambique could be signalling to potential foreign investors that the country is committed to good governance and to deepening its relationship with South Africa, thus attracting FDI, enhancing long-term export capacity and economic development.

[28] The size of the revenue pool increased significantly in 2005.

6.1 Trade facilitation

One of the major advantages of a customs union as compared to a free trade area is that, since the same duties are applied throughout the region and duty revenues are pooled, it eliminates the scope for tariff arbitrage by private operators and thus reduces the need for restrictive border controls on intra-regional trade. This has the effect of encouraging cross-border trade between the members of the customs union, which is desirable to the extent that increased trade is thought to be beneficial.

Progressing from a free trade area to a customs union renders rules of origin unnecessary, lowering the transaction costs involved in preferential trade. Indeed, ensuring and demonstrating compliance with rules of origin is an administrative burden for producers and traders. Brenton et al. (2005) suggest that the costs of providing the appropriate documentation to prove origin can be around 2-3 percent or more of the value of the export shipment for companies in developed countries, but may be higher, and possibly prohibitive, in countries where customs mechanisms are poorly developed.

Additionally, in order to meet the requirements of rules of origin producers may be obliged to use regional inputs even though these may not be from the most competitive source. And thirdly, rules of origin carry the risk that, once at the border, goods will not after all be granted the preferences which are being claimed for them. So rules of origin may reduce or even eliminate the effective margin of preference they are meant to provide through higher production and administrative costs and through a risk premium. For example, Carrière and de Melo (2004) estimate that, in the case of NAFTA, preferential margins of about 10% would be required to compensate for a "typical" regional value content rule of origin.

As it happens, SADC rules of origin are particularly restrictive and complex (Estevadeordal and Suominen (2003)). This is compounded by the fact that, with the partial exception of South Africa, the region has a very weak productive and industrial base and often does not have competitive inputs for incorporating into products which might then benefit from regional preferences. It is not surprising, therefore, that the utilization of SADC preferences by Mozambique is very low, even though it enjoys duty-free access or significant preference

margins into the South African and other regional markets for most goods.[29] To the extent that low preference utilization is at least partly due to the difficulties associated with complying with SADC rules of origin and other cumbersome customs formalities, joining a functioning customs union in Southern Africa would facilitate trade with the region (and in particular with South Africa). This would be likely to increase both imports and exports, though it is not clear by how much.

The transaction costs of exporting from Mozambique to the region could also be lowered by making it easier and cheaper to import inputs for manufacturing industries into Mozambique – most obviously under unilateral MFN liberalization, which would render all exemption schemes unnecessary. Under appropriate and effective institutional arrangements for regional integration, meanwhile (whether in the context of a customs union or of a free-trade area) countries in the region could take steps to coordinate the removal or minimization of non-tariff barriers, such as ending the abuse of technical regulations and SPS measures for protectionist motives, and harmonizing customs procedures and documentation.

The impact of trade facilitation measures on intra-regional trade should not be over-estimated. Even in a hypothetical situation of cost-free rules of origin, it is doubtful whether Mozambique's current supply capacity – in many sectors characterized by limited production, unreliable quality, uncompetitive prices and poor marketing and logistics – would allow it to export a great deal more to the region. However, it might have the effect of attracting new foreign direct investment to benefit from the newly remunerative preferential market access, based on the new relative costs of factors of production. It could divert new FDI flows that would otherwise have been destined for other countries in the region (e.g., South Africa) and lead to the relocation of some existing labour-intensive manufacturing that would otherwise remain in South Africa. Additionally, the existence of a larger, integrated regional market (South Africa + Mozambique + others) could create new opportunities for economies of scale that might make new investments viable, when they otherwise would not have been attempted.

[29] According to Mozambican Customs, who are the only institution legally authorized to issue SADC certificates of origin, only 12 Mozambican companies have correctly utilized SADC preferences (in the agriculture, fisheries and clothing sectors). However, it may be the case that other exports are being allowed into SADC markets at preferential rates in spite of having obtained only non-preferential origin certificates issued by the Chamber of Commerce.

6.2 Signalling

Regional integration with a larger and more developed partner tends to lead to increased FDI, exports and economic growth for the junior partner, to an extent that cannot be explained solely by the improved access to the senior partner's market. Although the determinants of FDI are many and varied (political and economic stability, market size, existence of exploitable resources, geographic proximity, etc.), there is a correlation between integration with a more developed regional partner on the one hand, and increased inward FDI flows and stocks on the other. Similarly, increased inward FDI flows and stocks (excluding investments in extractive industries) tends to go hand in hand with improved indicators of development such as export growth in the agricultural, manufacturing and services sectors (again, excluding mineral resources) and GDP growth.

Correlation does not always imply a causal relationship, and historically those countries that are invited to join a well-functioning customs union or other regional integration mechanism as a junior partner are already those that are committed to good governance, that have undertaken or are undertaking market-friendly reforms and that exhibit a strong growth potential.

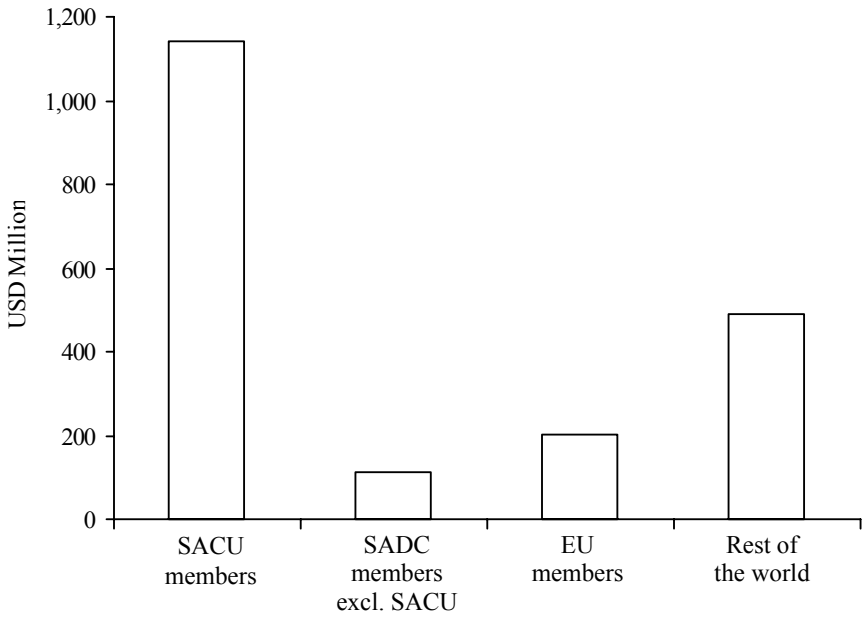
There are arguments to think that it is possible an additional boost to investment and growth derived from the expectation among investors that an ongoing process of regional integration with a senior partner will lock in and speed up reforms, build capacity, and lead to a virtuous cycle of investment, trade, economic growth and development. A key aspect of the improved economic performance of new entrants to the EC/EU has been that market integration goes hand in hand with large injections of structural and regional funds, with the adoption of a common regulatory and institutional framework (the *acquis communautaire*), and with increased influence by other European Member States and institutions in the domestic policy environment of the new Members. Nevertheless, it has to be seen whether the EC/EU experience can be replicated with an LDC such as Mozambique.

The extent to which Mozambique's participation in a regional organization in Southern Africa – whether SACU or SADC – might lead to a significantly positive outcome would therefore largely depend on the extent to which it was perceived as a credible signal of continuing,

long-term reform, development and integration with the regional economy, and especially with that of the regional powerhouse, South Africa.

For one thing, as indicated in Grobelaar (2004) and in figure 3, South Africa is by far Mozambique's largest and most consistent foreign investor. In 2005, South African investors submitted more than three times as many investment projects as the next-largest investing country (the United Kingdom), with an aggregate value almost four times as great (Centre for the Promotion of Investments (2006)). If only for this reason alone, closer integration with South Africa should be a priority.

Figure 3: Value of investment projects in Mozambique, by origin, 2001-2005



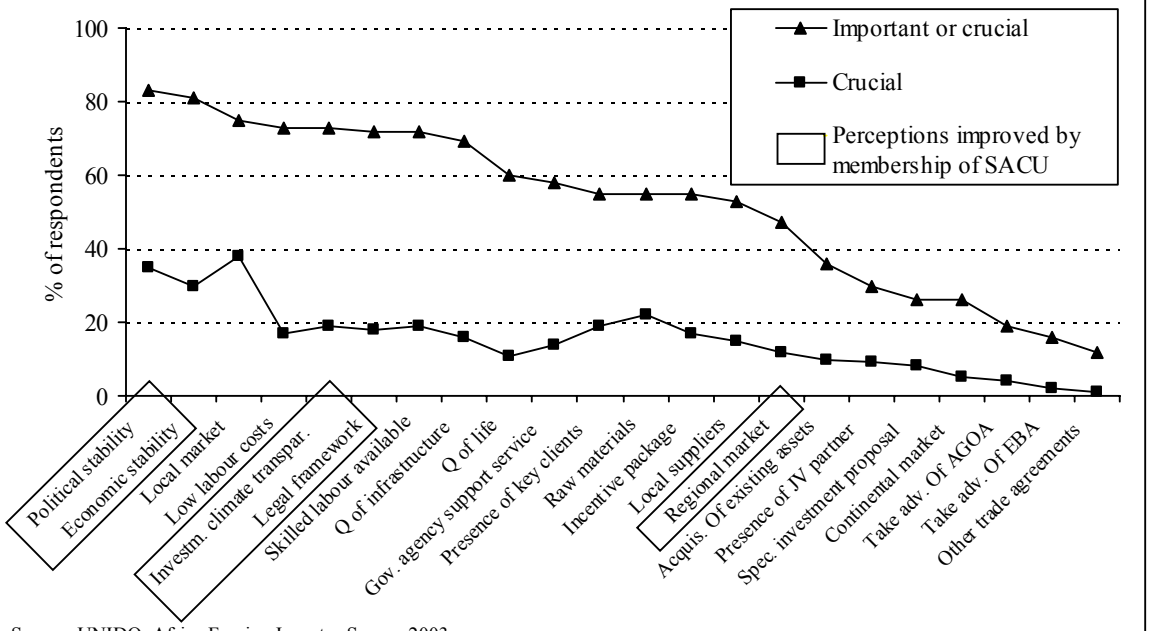
Source: Centre for the Promotion of Investments

More generally, there is a widely-held perception that South Africa is in general the most secure, welcoming and lucrative environment for foreign investment in Africa (UNIDO (2003)), and indeed, excluding investments in extractive industries, it attracts by far the greatest investment in sub-Saharan Africa (UNCTAD (2005)). In UNIDO (2003), four of the six most cited factors for choosing a location in which to invest (see figure 4) refer to conditions the perceptions of which would probably be improved or reinforced among

potential investors in Mozambique by greater integration with South Africa, as this would be taken as a sign of deeper cooperation, trust and peer pressure between the two governments.

Furthermore, the fourth most cited factor for investment – low labour costs – is one in which Mozambique has a clear competitive advantage over South Africa. And while the size of the regional market is not considered to be a important factor in the Africa-wide survey, arguably SACU's exceptional degree of regional market integration (but not SADC's) makes it more like a single, "local market" – which is the third most important factor for investment.

Figure 4: Investment location decision factors



Source: UNIDO, Africa Foreign Investor Survey 2003

SADC is in principle committed to trade facilitation, to the creation of a customs union, to further regional integration and to mutual oversight and the promotion of good governance among peers. However, as outlined in part 2.3 of this paper, SADC's repeated failures on many of these issues has eroded its credibility and put in doubt the commitment of certain member states. By contrast, joining SACU – an existing and functioning customs union with South Africa at its heart – would underline Mozambique's commitment to deep integration with South Africa, and give out strong signals of commitment to good governance and to business-friendly reform.

A word of caution is required, however. On its own, joining SACU would not guarantee improved perceptions of Mozambique among the business community. It would only have the desired positive effect on foreign investment flows if it was seen to be part of a coherent, strategic package of good governance, business-friendly reform, cautious management of the economy and deep integration with South Africa.

7. Domestic production

7.1 Substitutability and price transmission

Due to the lack of reliable production data at a disaggregated level in Mozambique, the model used in this paper does not consider the relationship between imports and domestic production. The model abstracts completely from the "domestic" market. Thus, it is not possible to draw conclusions about the impact on local production of the different scenarios by simply looking at the expected change in imports.

Nevertheless, the estimated changes in prices in the import market do give hints about the likely effect of the different scenarios on domestic industries. Normally, imports and domestically-produced goods compete in the marketplace, and a change in the price of imports affects the composition of total demand. If import prices increase (decrease), a greater share of demand shifts towards (away from) domestic suppliers.

The extent to which import price changes are felt by domestic producers is determined by the price elasticity of substitution between foreign and domestic goods. If the goods are perfect substitutes, changes in import prices can substantially affect domestic production. By contrast, goods which are characterized by a high degree of product differentiation do not compete on price alone. As it happens, Mozambique is a producer mainly of goods in the former category, such as basic agricultural products and other primary commodities. This suggests that the impact of trade reforms on domestic production is likely to be significant insofar as the trade reforms lead to changes in import prices in these sectors.

Moreover, because it is in sectors such as agriculture that most of the poor are concentrated, it is particularly important to understand the possible impact of trade reforms on domestic demand. Low-income households would be affected in a positive or a negative direction according to their status as net consumers or producers of a particular product. Understanding how import price changes could affect low-income households is an issue that requires further research.

But as suggested at various points in this paper, it is not clear to what extent anticipated cost changes at the border would be translated into price changes for consumers, and thus to what extent they would affect domestic producers. The model used in this paper assumes perfectly competitive markets, ensuring full price transmission. However, in those cases where intermediaries along the value chain have a degree of market power, the results of the estimations should be interpreted as changes in "costs" rather than "prices". In the event that intermediaries absorb all cost decreases as profit, rather than passing the savings on to consumers through lower prices, there is no impact at all on consumers or competing domestic producers. If different degrees of price transmission exist across different regions of the country, as suggested by Cirera and Arndt (2006), producers in some regions (namely, the southern provinces close to the South African border) are likely to feel the impact of trade reforms much more strongly than those in other regions.

Finally, it has to be borne in mind that the results in this paper do not capture any dynamic effects. The reactions of producers and consumers to the initial changes in prices and the subsequent adjustment of the whole economy to the trade reform process cannot be estimated in this model.

7.2 Estimated import price changes

Price reductions are expected, on average, for each of the liberalisation scenarios. Table 26 reports the percentage change between the average equilibrium price (trade weighted), compared to the initial price for each scenario.

Table 26: Weighted average price changes

	SADC FTA	MFN	SACU	SACU with TDCA
% Change in weighted average Price	-1.4%	-7.1%	-3.6%	-6.5%

Source: Authors' own calculations

The highest price reduction is achieved under the MFN liberalization scenario, even though liberalization for large trade partners such as South Africa and the EU (i.e. SACU with the TDCA) achieves a significant price reduction as well. The smallest expected price change is in the SADC FTA which in a way indicates the relatively low scale of trade with the rest of the region and its lack of competitive production compared to the rest of the world.

In the two SACU scenarios, despite an overall average price reduction, some products experience price increases due to higher tariffs under the SACU CET and the resulting trade diversion from more competitive producers to South Africa and the EU that are now receiving duty free access to Mozambique's market.

Disaggregating the price changes to the HS2 level, it can be seen which sectors will be more affected by price changes in each scenario, giving an indication of the likely impact on local industries. Table 27 below ranks the ten highest variations in the simple average price[30] for each scenario.

Table 27: Sector price variations under the different scenarios

SADC FTA			*MFN*			*SACU no TDCA*			*SACU with TDCA*		
HS	*Aver. Price*	*%*	*HS*	*Aver. Price*	*%*	*HS*	*Aver. Price*	*%*	*HS*	*Aver. Price*	*%*
7	0.9164	-8.36%	50	0.8002	-19.98%	97	0.5833	-41.67%	97	0.5833	-41.67%
3	0.9165	-8.35%	46	0.8003	-19.97%	24	0.6300	-37.00%	24	0.6298	-37.02%
8	0.9170	-8.30%	93	0.8108	-18.92%	22	0.6777	-32.23%	22	0.6306	-36.94%
2	0.9191	-8.09%	42	0.8135	-18.65%	71	0.7416	-25.84%	71	0.7126	-28.74%
60	0.9334	-6.66%	61	0.8153	-18.47%	95	0.7832	-21.68%	43	0.7660	-23.40%
16	0.9393	-6.07%	62	0.8155	-18.45%	50	0.8002	-19.98%	95	0.7751	-22.49%
1	0.9394	-6.06%	94	0.8162	-18.38%	92	0.8285	-17.15%	93	0.7857	-21.43%
58	0.9408	-5.92%	9	0.8184	-18.16%	33	0.8286	-17.14%	33	0.7970	-20.30%
17	0.9416	-5.84%	22	0.8188	-18.12%	93	0.8318	-16.82%	50	0.8002	-19.98%
57	0.9422	-5.78%	57	0.8213	-17.87%	43	0.8343	-16.57%	9	0.8266	-17.34%

Source: Authors' own calculations

[30] unweighted

The main results can be summarized as follows:

SADC FTA: Reductions are concentrated particularly among agricultural products (animal products, meat, vegetables, fruits and nuts), food preparations and fisheries products. Other sectors that may suffer reductions in local production are concentrated among textiles (carpets, special woven fabrics and knitted fabrics) and sugar.

At the product level, the highest price reduction is on sugar. Raw and white sugar have variable surcharges that in 2004 averaged 77% and 54% respectively.[31] The elimination of these levies is the main reason for the large expected price reductions.

Some products not belonging to the categories mentioned above but that also experience large reductions are wheat (-15%) and groundnuts (-12%). While the former could be of benefit for poor households who are largely net consumers of this good, the second may harm some since it is a product traditionally grown by the poor. Beer and ethyl alcohol, large industries in Mozambique, show price decreases of around 10%, while other industries such as cement and tyres may experience price cuts of 7% and 4%.

MFN: The reductions in this scenario comparatively large. The 10 product chapters with the largest changes all experience reductions twice or three times as large as those experienced in the SADC FTA scenario.

Textiles are still among the sectors with the largest reductions but in this scenario it seems that clothing (Ch. 61-62, where there is an operating local industry) may be significantly affected as well. Tea producers face price reductions around 19% (Ch.9). Agricultural products do not appear in the top 10 but further down the list fruit, vegetables, meat, dairy, fisheries products and sugar all experience reductions greater than 10%. Beverages and spirits report a price cut by 18%.

At an individual product level, raw sugar still experiences the largest price reduction (greater than 25%) followed by a series of horticulture products, tropical fruits and nuts with price reductions close to 20%. Among cereals, the wheat price decreases by 15% while maize

[31] However, in 2005 and 2006 the high price of sugar in the world market led to a drastic reduction in the surcharge (in April 2006 the surcharge dropped to 0%). Thus, the price reductions presented above may be overestimated compared to the present situation.

remains more or less unaffected. Plastic packaging shows reductions of around 19% while the price of cement price may decrease by roughly 14% and tyres by 17%.

SACU (no TDCA): Tobacco products and beverages seem to be the main sectors affected by potential membership of SACU. Cigarettes and processed tobacco experience reductions of 92% and 85% due to the change in excise taxes. The price of beer and spirits may be reduced significantly – between 28% and 50%. Sugar may have a price cut by roughly 30%, thus more than in the other scenarios. Reductions in the cement price are similar to the MFN case, not surprisingly since most imports come from South Africa. Fruit and vegetables on average report a price reduction respectively of 14% and 11%, while meat products seem to be less affected (-8%). Tyre prices are expected to decrease by 10%.

In this SACU scenario, 930 tariff lines (concentrated among clothing, plastic articles, electrical and mechanical appliances and vehicles) are expected to experience a rise in prices due to higher CET tariffs and trade diversion effects.

SACU (with TDCA): Results seem not to change much from the previous case both in terms of products experiencing higher price decrease and in terms of the scale of the decrease. However, higher CET tariffs and trade diversion effects seem to diminish since the number of lines having prices rising now is limited to 236 – concentrated among clothing and electrical equipment.

Generally, MFN liberalization confirms to be the most efficient option in terms of increasing consumers' welfare. However, the significant price reductions among agricultural products may imply a negative impact on those rural incomes on import competing goods. Even though similar results in terms of price reductions may be achieved by accessing SACU and implementing the TDCA, some prices in some products may increase due to a higher SACU CET. This may benefit some domestic sectors such as plastics and mechanic appliances, but may damage sectors that are consumers of these intermediate goods.

8. Trade deficit sustainability

A possible concern about liberalising trade is the impact that such policy may have on the trade balance. A surge in imports due to price reductions, for instance, may deteriorate the sustainability of the present Mozambique's trade balance deficit. In contrast, a boost to competitiveness of domestic industry thanks to cheaper imports of inputs may end up improving the trade balance and thus the balance of payments.

Unfortunately, our methodology does not allow a proper estimation of such impact since it does not capture any effect of the different scenarios on export nor, as we said before, it shows any dynamic adjustment of the economy (ex. consumption, domestic production, etc.) to the same scenarios. What we can do is simply to use our estimates for change in import demand and draw some partial conclusion on the impact that such change may have on the overall trade balance.

In recent years there has been a large increase in both imports and exports but overall, the trade deficit has been increasing at an average rate of 18.2%.

Table 28: Trade balance

	2001	*2002*	*2003*	*2004*	*2005*	*Average rate of growth*
Exports	703.1	679.3	1043.9	1503.9	1,745.30	25.52%
Imports	-957.1	-1215.7	-1648.1	-1849.7	-2,242.30	23.72%
Trade balance	-254	-536.4	-604.2	-345.8	-497	18.27%

Source: Banco de Moçambique

According to our simulation, in any scenario except one (SACU), imports are growing but at a very low rate while, in absolute terms, these changes represent a relatively small share of the trade deficit even though not insignificant (between 2.7% and 16%). This is equivalent to say that if Mozambique implement one of the liberalisation scenarios next year, let's call it (t+1), import changes would be those indicated in the table 29 below.[32] Clearly, when considering the potential increase in imports arising from decreasing smuggling when taxes are reduced, registered imports rise substantially, and the officially recorded trade deficit increases significantly under all the liberalization scenarios.

[32] This assumes constant the value of imports that remain classified in chapter 999999 as in 2004.

Table29: Increase in registered imports

Scenarios	*Increase in Imports – Millions USD (%)*	*Increase in Imports – Millions USD (%) fraud adjusted*
FTA	13.40 (0.79%)	210.3 (12.35%)
MFN	79.68 (4.68%)	389.85 (22.9%)
SACU no TDCA	-26.27 (-1.54%)	184.96 (10.86%)
SACU with TDCA	19.93 (1.17%)	257.51 (15.12%)

Source: Authors' own calculations

By limiting import growth from year t to year t+1 to the above rates, much lower than the average experienced in the recent years, may imply a significant and positive impact on the trade deficit. This holds for the year (t+1) and only if we assume that exports will continue to grow at the recent pace. However, we do not know what will happen in year t+2 and the following years since we cannot predict how the economy will adjust to the new scenarios.

It has also to be considered that it is a widespread opinion that growth rates of both imports and exports as shown in Table 28 may not be realistic in the future. Nevertheless, forecasts by the IMF (up to 2008) indicate average growth rates for imports at 8.5% and for exports at 6.8%. Even with such estimates, the effects determined by the four liberalisation scenarios would not imply an extremely high import growth at least in year (t+1).

9. Conclusions

9.1 Summary of results

This paper has estimated the likely impact of four trade policy reform scenarios, SADC integration, SACU membership with and without the TDCA, and MFN unilateral liberalization, on imports and revenue at the product-specific level. Despite using some restrictive assumptions, the results are indicative of the size and direction of the impacts expected under the four scenarios.

The main results indicate that as expected the MFN liberalization scenario yields the largest increase in imports (around 5% in value), followed by SACU with TDCA and then FTA; SACU without TDCA would reduce the level of imports. Price effects are significant especially in the MFN and SACU with TDCA scenarios. In all four scenarios the increase in

consumption surplus does not fully compensate the loss of revenue, when no revenue adjustments are made to the model. Even VAT revenue is reduced despite increasing imports, due to the fact that the tax base is being reduced through tariff and price reductions.

The revenue (and hence also welfare) effects, however, need to be adjusted considerably. First, due to the large number of tax exemptions granted, actual trade revenue collected is around 50% of its potential level for duties and VAT and around 70% for excise. Effective tax rates are thus lower than the nominal rates, at 4.8% for duties, 1.1% for excise and 7.3% for VAT. When the calculations are adjusted to account for exemptions, the revenue loss decreases significantly and the MFN scenario becomes welfare improving.

A second type of adjustment is required due to the fact that lower trade taxes reduce the incentive for smuggling and therefore increase the level of registered and taxed imports. Using Van Dunem (2006) estimates, the data is adjusted to account for the reduction of fraud and re-estimate the scenarios. In this manner, the anticipated trade effect is compounded by an additional fraud reduction effect. The results indicate a much larger increase in registered imports, ranging from 23% in the MFN case to 12.3% in the FTA case. This implies a lower revenue loss and more favourable welfare impact for all reform scenarios.

A final adjustment required concerns the SACU scenarios. The revenue related to these scenarios is transferred to the SACU revenue pool, after which it is redistributed to the member countries according to a formula. When the formula is applied, the results indicate that the levels of redistribution in favour of Mozambique, the difference between contribution and transfer, is high, around USD 130 million; although this figure is likely to be reduced by larger revenue collected by higher SACU excise taxes on domestic production and the future reduction of the pool as a result of ongoing MFN and preferential liberalization by South Africa. This, in addition to VAT revenue (the main source of trade-related tax revenue), which is not shared, leads to the largest welfare gain for the SACU with TDCA scenario, when compared to all other scenarios.

These results suggest that, given Mozambique's intention to pursue a path of regional integration, SACU membership may be an attractive option – or at least that its costs are unlikely to be unreasonably high, and are likely to be accompanied by significant benefits, especially if accompanied by additional liberalization. Additional beneficial effects might be

felt through the attraction of foreign investment as a result of deep integration with South Africa and enhanced credibility of the Mozambican policy environment.

It is important to point out, however, that SACU membership alone would not be sufficient to attract investment, and would only be useful for this purpose as one supporting element among others in a coherent and credible strategy for the improvement of the business environment. Most importantly, without policies to foster exports and to enhance competitiveness, investment gains might not materialize and the trade balance would become difficult to sustain.

9.2 General issues for policy-makers

From the policy maker's perspective, a fundamental question that arises from this paper is how to interpret the main results and how they can contribute to a better design of trade policy. The results of the estimations are highly dependent on the assumptions used in the methodology. For this reason, it is important to keep in mind what are the main assumptions, and especially, what are the implications of such assumptions.

The main assumptions are listed in section 3, but there are four assumptions that deserve special consideration when interpreting the results. First, it is important to point out the partial equilibrium nature of the model. This implies that other impacts from trade liberalization on the non-tradable sector, investment, wages and other variables are not considered, despite the fact that these impacts may be substantial and important to consider for policy makers.

Secondly, the model is static. It attempts to describe what would have happened if Mozambique had joined SACU in 2004. But in reality, processes are dynamic. For example, the SACU revenue pool has changed substantially in 2006 and is likely to change again in coming years. Therefore, the greater the time taken in order to implement the liberalization scenarios considered in this paper, the greater the uncertainty about its predictions.

Thirdly, the welfare analysis is incomplete due to lack of data. This paper does not account for changes in producer surplus. Thus, we may expect some sectors to experience difficulties due to increased import competition. Some firms may have to close down or readjust, unable

to compete, with resulting losses in terms of production and employment. Keeping this in mind, however, the paper does provide information, at the product level, of where increased import competition is more likely to occur.

Fourthly, as already mentioned in previous sections, price transmission from the border is imperfect, which implies that not all price reductions suggested by the liberalization scenarios may materialize in local marketplaces. In fact, markets in different provinces in Mozambique are poorly integrated with each other. Since Mozambique's exposure to international markets is mostly limited to the South of the country, close to the border with South Africa, some more isolated provinces in the North may be completely unaffected by the trade reforms specified in this paper.

Given these many limitations, the main contribution of this paper for policymakers is that it provides a basis for analysis of imports and revenue at the product-specific level. It identifies in which trade policy regimes and for what products the most significant import increases and price reductions are most likely to occur. This information should be used when preparing for trade negotiations, and also when designing adjustment and complementary policies to trade policy.

9.3 SACU issues for trade negotiators

The results of the paper clearly point to SACU as the most attractive way, in terms of welfare, for achieving regional trade integration. SACU, however, is not free of problems and has substantial issues that need to be addressed. Should Mozambique take the decision to seriously consider joining SACU, these problems would need to be considered, and would need to be negotiated with existing SACU members.

The first problem is associated with moving from a very simple tariff structure to a far more complex system. This implies a significant increase of distortions at the border, and with increasing tariffs peaks for some products, a potential increase in the likelihood of smuggling of these goods from the rest of the world.

Linked to the previous point is the issue of moving to a tariff structure that reflects mainly South Africa's interests and sensitive sectors. The question here is how a new agreement could reflect Mozambique's interests, and whether this could be reflected in some modifications of the common external tariff.

Another element to consider is the fact that any individual SACU member policy that affects the revenue pool also impacts the net revenue received by all other SACU members. An example of this is South Africa's Motor Industry Development Program (MIDP), with its system of duty drawbacks. There are two options for solving this problem. The first option is to reach an agreement on such policies and establish compensating mechanisms. The second option is to harmonize and implement such policies for all SACU countries. The problem for this second option is whether the same industrial or agricultural policy can be flexible enough to accomodate the needs of countries with different degrees of development, such as Mozambique and South Africa.

A very controversial element in the way SACU currently functions is the implementation of the revenue sharing formula. More customs cooperation is required in order to agree on the level of intra-SACU imports, since there is a strong incentive for each member to exaggerate the level of its imports from other SACU members. Furthermore, as seen in Table 22, Mozambique's SACU membership would imply a loss of the customs pool share allocated to the BLNS. South Africa would maintain or even increase its share of the pool. This introduces significant strategic elements for the negotiations, where the BLNS may be reluctant to accept Mozambique's membership without a change in the revenue formula. On the other hand, this could be used, perhaps, in order to open discussions about the formula and reach an agreement that eliminates some of the problems stated above.

This cooperation between customs at the border should also include a better management and VAT transfer between countries. This could bring about a significant increase for Mozambique of VAT raised at the border.

Until 2002, decisions on the CET could be made unilaterally by South Africa. As a result, South Africa signed the TDCA and the BLNS countries are currently suffering the consequences of re-exports of European products from South Africa. A decision needs to be made to consolidate one CET, via the EPAs or via reformulating the TDCA to include the

BLNS. However, the implication for Mozambique is that most likely, SACU membership will imply some sort of preferential access to EU producers.

A final important element to consider is the need to go beyond the tariff and revenue dimension of SACU. Another dimension of SACU is required, especially to foster investment and growth in the poorer countries. This implies the need to develop common policies that benefit all the countries, and the elimination of defensive policies that may impede the economic integration of the region. The design of some sort of structural fund, perhaps, in a similar manner to the EU programmes, could benefit substantially countries such as Mozambique and foster real productive integration with South Africa and investment.

All these issues need to be addressed if Mozambique wants to gain the greatest benefit from SACU membership. Furthermore, Mozambique's potential entry would be an excellent opportunity for other SACU countries to address these issues. Nevertheless, in our opinion, any of these liberalization scenarios will not bring about large growth rates and increase in production and exports by themselves. Complementary policies in terms of industrial policy, agricultural policy, productivity, improved business environment, quality and reduction of transaction and transports costs, should be in place. This would maximize the benefits of trade liberalization. Furthermore, safety nets should be created to assist those sectors where employment and incomes may be damaged.

9.4 Issues for further research

The results of this paper yield some information about the likely effects of different trade policy regimes in Mozambique, allowing for improved policy-making and negotiation. Nevertheless, given the assumptions in the model and the likelihood that some of the data is inaccurate, the results have wider error margins. Improved data collection would allow for fewer assumptions, a more sophisticated model, and more definitive estimations.

In addition, this paper only touches upon certain issues which it is important to analyze, such as those related to investment, production, trade facilitation, rules of origin, market structure and others. These all deserve further analysis in order to gain a clearer picture of the positive and negative impacts of the different scenarios.

Concretely, areas that require further research include:

- General equilibrium analysis of the different scenarios;
- Analysis of export supply constraints, impact of rules of origin and trade preferences on Mozambican producers, and design of effective policy incentives;
- Optimal design of SACU revenue formula for Mozambique and institutional designs concerning VAT harmonization and collection;
- Analysis of the impact of adopting SACU excise on domestic production;
- Simulations of the impact of the different scenarios on households;
- Alternative sources of tax revenue;
- Improved understanding of market structure and transmission of cost changes along distribution channels and according to geographic location.

10. Methodological appendix

Contents

10.1 Structure of the model

$$M = \sum X_n$$

$$dM = dX_{sa} + dX_{row}$$

$$dM = -\beta dp$$

$$\frac{dM}{dp}\frac{p_0}{M_0} = -\beta\frac{p_0}{M_0}$$

$$\beta = -\eta\frac{M_0}{p_0}$$

$$P_{it}^{d} = \alpha - \beta M_{it}$$

$$dM = -\eta\frac{M_0}{p_0}dp$$

$$dp = -\frac{p_0}{\eta M_0}dM$$

$$X_{it\,n} = a + bp_{it}$$

$$dX_n = \gamma^n\frac{X_0}{p_0}dp$$

$$P_{it\,n} = a + bX_{it}$$

$$dp = \frac{P_0}{\gamma^n X_0}dX_n$$

Where:

$_0$ denotes in $t = 0$

* denotes in $t = T$

M^{sa} imples imports (exports) from South Africa

M^{EU} imples imports (exports) from the European Union

P^{sa} is the price when South Africa supplies all market.

P^{EU} is the price when the European Union supplies all market.

P^{w} is the world price.

P_0 is the observed price in $t = 0$, which is normalized to one.

P^{sacu} is the price in the SACU scenario.

First, we need to benchmark the supply and demand equations. For the case of the export supply from the ROW, the assumption of infinite elasticity implies a straight horizontal curve.

For the case of the supply from SA, we know the slope as above, which depends on the elasticity, so we only need to calculate the intercept:

$$X^* = 0 \rightarrow \hat{P} = a$$

$$dX = X^* - X_0 = 0 - X_0 = -X_0$$

$$dp = (\hat{P} - P_0) = \frac{P_0}{\gamma^{sa} X_0^{sa}} dX_n = \frac{P_0}{\gamma^{sa} X_0^{sa}} (-X_o)$$

$$\hat{P} = -\frac{P_0}{\gamma^{sa}} + P_0 = P_0 (\frac{\gamma^{sa} - 1}{\gamma^{sa}})$$

$$P^{SA} = P_0 (\frac{\gamma^{sa} - 1}{\gamma^{sa}}) + \frac{P_0}{\gamma^{sa} X_0^{sa}} X$$

For the net demand for imports:

$$M^* = 0 \rightarrow \hat{P} = \alpha$$

$$dM = M^* - M_0 = 0 - M_0 = -M_0$$

$$dp = (\hat{P} - P_0) = -\frac{P_0}{\eta M_0} dM = -\frac{P_0}{\eta M_0} (-M_o)$$

$$\hat{P} = \frac{P_0}{\eta} + P_0 = P_0 (\frac{\eta + 1}{\eta})$$

$$P = P_0 (\frac{\eta - 1}{\eta}) + \frac{P_0}{\eta M_0} M$$

10.2 For products where MFN tariff = SADC tariff in the initial situation

10.2.1 FTA scenario

In this case SA receives the preference and the SA export supply shifts to the right. The impact will depend on the relative efficiency and elasticity of supply of SA exporters relative to the rest of the world. First we need to look at the equilibrium when SA is the only supplier and has the tariff advantage. Now, however, SA supply curve shifts to the right, and therefore we need to calculate the new supply.

$$P_0 = P(1+\tau_i) \rightarrow P = P_0 \frac{1}{(1+\tau_i)}$$

$$P^{SA} = P_0 \frac{\gamma^{sa} - 1}{(1+\tau_i)\gamma^{sa}} + P_0 \frac{1}{(1+\tau_i)\gamma^{sa} M_0^{sa}} M$$

Now, we can calculate the equilibrium price:

$$X^{sa} = D$$

$$P^{sa} = P^D$$

$$M^{sa^*} = \frac{M_0^{sa} M_0 \left[(\gamma^{sa} - 1)\eta - (\eta - 1)\gamma^{sa}(1+\tau_i)\right]}{\gamma^{sa} M_0^{sa}(1+\tau_i) - \eta M_0}$$

$$p^{sa} = P_0\left(\frac{\eta - 1}{\eta}\right) + \frac{P_0}{\eta M_0}\left[\frac{M_0^{sa} M_0 \left[(\gamma^{sa} - 1)\eta - (\eta - 1)\gamma^{sa}(1+\tau_i)\right]}{\gamma^{sa} M_0^{sa}(1+\tau_i) - \eta M_0}\right] =$$

$$= \frac{P_0}{\eta}\left[(\eta - 1) + \frac{M_0^{sa}\left[(\gamma^{sa} - 1)\eta - (\eta - 1)\gamma^{sa}(1+\tau_i)\right]}{\gamma^{sa} M_0^{sa}(1+\tau_i) - \eta M_0}\right]$$

According to this equilibrium we have two possible cases in T:

10.2.1.1 Case 1

if $P^{sa} > P_0$ *where* $P_0 = P^w(1 + \tau_i)$

This is illustrated in the diagram by the supply SA. In this case, SA is still less efficient than the ROW and therefore the level of imports does not increase and we observe trade diversion from ROW to less efficient SA.

At *P* and with the new SA supply curve:

$$M^{safta} = \left[P_0 - P_0 \frac{\gamma^{sa} - 1}{(1+\tau_i)\gamma^{sa}}\right] \frac{(1+\tau_i)\gamma^{sa} M_0^{sa}}{P_0} = ((1+\tau_i)\gamma^{sa} - (\gamma^{sa} - 1))M_0^{sa} = (\tau_i \gamma^{sa} + 1)M_0^{sa}$$

The level of imports in USD from SA will be $M^{safta} * P_0$ and $(M_0 - M^{safta}) * P_0$ from the ROW

Trade Diversion $TD = (M^{safta} - M^{sa}{}_0) * P_0$

Trade Creation $TC = 0$

Revenue

$$R_1 = (M_0 - M^{safta})\frac{\tau}{1+\tau}P_0$$

$$\Delta R = R_1 - R_0 = -M^{safta}\frac{\tau}{1+\tau}P_0$$

There is no change in consumer surplus since prices do not change.

Excise Tax (τ_E) and VAT(τ_V)

$\Delta E = 0$

10.2.1.2 Case 2

if $P^{sa} \leq P_0$ *where* $P_0 = P^w(1 + \tau_i)$

This is illustrated in the diagram by the supply SA', with the equilibrium *(P^{sa}, M^*)* calculated above. In this case, the preference allows SA producers to supply all the market and reduce slightly the price. This generates consumption effects, increasing the level of imports and all trade is diverted from more efficient ROW. In the case however that SA is already supplying all the market, SA is most efficient and therefore there is no trade diversion.

The new level of imports in USD is $P^{sa} * M^{sa*}$ (where P^{sa} is calculated above)

This implies consumption effects $P^{sa} * (M^* - M_0)$

Trade Diversion TD = $(M_0 - M^{sa}_0) * P^{sa}$

= 0 if SA the most efficient in *t=0*.

Trade Creation TC =0

Revenue

$R_1 = 0$

$$\Delta R = R_1 - R_0 = -M_0\frac{\tau}{1+\tau}p$$

Consumer surplus

$$CS = (P_0 - P^{sa})M_0 + (P_0 - P^{sa})\frac{(M^* - M_0)}{2} = (P_0 - P^{sa})\frac{(M^* + M_0)}{2}$$

$CS \leq 0$ *if* $P^{sa} \geq P_0$

Welfare Effect $= \Delta R + CS$

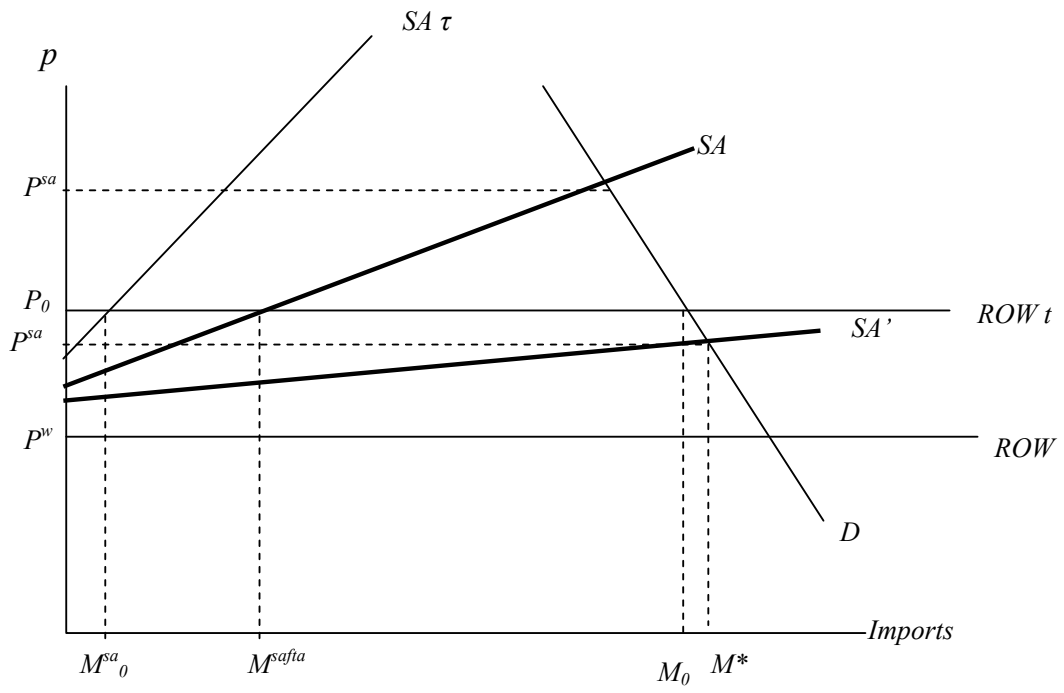
Excise Tax (τ_E) *and VAT*(τ_V)

$E_0 = (M_0 * \tau_E)(1 + \tau_V)$

$E^* = (M^* * \tau_E)(1 + \tau_V)$

$\Delta E = E^* - E_0$

10.2.1 FTA scenario (where MNF tariff = SADC tariff initially)



10.2.2 SACU (without TDCA) scenario

In this case, we consider the situation where the SACU CET does not consider preference for the EU. This case is similar to the previous case, we have a free trade agreement with SA, however, quite likely the CET will be different to the current MFN. Again we have two regimes depending on whether the price from the row after applying the CET is below or above the price that would exist with SA being the only supplier. As calculated in the previous case, the price of SA being the only supplier is:

$$p^{sa} = \frac{P_0}{\eta}\left[(\eta - 1) + \frac{M_0^{sa}\left[(\gamma^{sa} - 1)\eta - (\eta - 1)\gamma^{sa}(1 + \tau_i)\right]}{\gamma^{sa} M_0^{sa}(1 + \tau_i) - \eta M_0}\right]$$

Now we need to calculate the price with the rest of the world after applying the SACU CET. Clearly, the new price is:

$$P^{sacu} = P_0 \frac{(1 + \tau^{sacu})}{(1 + \tau)}$$

It is important to point out here that SACU membership implies not only the adoption of a common external tariff, but the excise structure. Therefore, not only tariffs may change between the pre and post-reform periods, but also excise taxes may change. The implication is that in this case will have that:

$(1+\tau_i) = (1+\tau_{iP})*(1+\tau_{iEP})$

$(1 + \tau^{sacu}) = (1 + \tau^{sacu}{}_{iP})*(1 + \tau^{sacu}{}_{iEP})$

where subscript $_P$ denotes pre-reform period, $_E$ excise and ^{sacu} the sacu tariff.

Again, we have two cases:

10.2.2.1 Case 1

if $P^{sa} > P^{sacu}$ *where* $P^{sacu} = P_0(1 + \tau^{sacu})/(1+\tau_i)$

In this case, SA is still less efficient than the ROW and therefore the level of imports depends on the supply from the ROW. The degree of trade diversion will depend on how large SACU CET is.

The new level of total imports M^* is determined by the new SACU CET price:

$$P = P_0(\frac{\eta - 1}{\eta}) + \frac{P_0}{\eta M_0} M$$

$$P^{sacu} = P_0 \frac{(1+\tau^{sacu})}{(1+\tau)} = P_0(\frac{\eta - 1}{\eta}) + \frac{P_0}{\eta M_0} M$$

$$M^* = \eta M_0 \left[\frac{(1+\tau_{sacu})}{(1+\tau)} - \frac{(\eta - 1)}{\eta} \right] = \frac{M_0}{(1+\tau)} \left[\tau(1-\eta) + \tau^{sacu}\eta + 1 \right]$$

The new level of imports in USD is therefore $P^{sacu} * M^*$

This implies consumption effects $P^{sacu} * (M^* - M_0)$, which in this case can be positive or negative

At the new P^{sacu} imports from SA are:

$$P^{sa} = P_0 \frac{(1+\tau^{sacu})}{(1+\tau_i)} = P_0 \frac{\gamma^{sa} - 1}{(1+\tau_i)\gamma^{sa}} + P_0 \frac{1}{(1+\tau_i)\gamma^{sa} M_0^{sa}} X$$

$$X^{sa*} = M^{sa*} = \gamma^{sa} M_0^{sa} \left[(1+\tau^{sacu}) - \frac{\gamma^{sa} - 1}{\gamma^{sa}} \right] = M_0^{sa} (\gamma^{sa}\tau^{sacu} + 1)$$

The level of imports is M^*:

$P^{sacu} * M^{sa*}$ from SA

$P^{sacu} * (M^* - M^{sa*})$ from ROW

Revenue will depend on the SACU CET

$$R_1 = (M^* - M^{sa*}) \frac{\tau^{sacu}}{1+\tau} P_0$$

$$\Delta R = R_1 - R_0 = P_0 \frac{1}{1+\tau} \left[\tau^{sacu} (M^* - M^{sa*}) - \tau M_0 \right]$$

The change in *Consumer Surplus* will also depend on the SACU CET

$$CS = (P_0 - P^{sacu})M_0 + (P_0 - P^{sacu})\frac{(M^* - M_0)}{2} = P_0\frac{(M^* + M_0)}{2}\frac{(\tau - \tau^{sacu})}{(1+\tau)}$$

$CS \leq 0$ *if* $\tau^{sacu} \geq \tau$

$$WelfareEffect = \Delta R + CS = P_0\frac{1}{1+\tau}\left[\tau^{sacu}(M^* - M^{sa*}) - \tau M_0 + \frac{(M^* + M_0)(\tau - \tau^{sacu})}{2}\right]$$

Trade diversion = $(M^{sa*} - M^{sa}_0) * P^{sacu}$

Trade creation = 0

Excise Tax (τ_E) *and VAT*(τ_V)

$E_0 = (M_0 * \tau_E)(1 + \tau_V)$

$E^* = (M^* * \tau_E^{sacu})(1 + \tau_V)$

$\Delta E = E^* - E_0$

10.2.2.2 Case 2

if $P^{sa} \leq P^{sacu}$ *where* $P^{sacu} = P_0(1 + \tau^{sacu})/(1+\tau_i)$

In this case, SA becomes the only supplier of the market diverting most trade from the ROW depending on the degree of efficiency of SA in relative terms to the ROW. This case is equivalent to regime 2 in the case of a FTA.

The new level of imports is as in the FTA case:

$$M^{sa*} = \frac{M_0^{sa}M_0\left[(\gamma^{sa} - 1)\eta - (\eta - 1)\gamma^{sa}(1+\tau_i)\right]}{\gamma^{sa}M_0^{sa}(1+\tau_i) - \eta M_0}$$

$$p^{sa} = \frac{P_0}{\eta}\left[(\eta - 1) + \frac{M_0^{sa}\left[(\gamma^{sa} - 1)\eta - (\eta - 1)\gamma^{sa}(1+\tau_i)\right]}{\gamma^{sa}M_0^{sa}(1+\tau_i) - \eta M_0}\right]$$

The levels of imports in USD is $P^{sa} * M^{sa*}$ and now there can be negative or positive consumption effects $P^{sa}(M^{sa*} - M_0)$

The other variables are calculated as in regime 2 in the case of FTA, with the only difference of the SACU excise taxes applied to imports from the ROW.

Trade Diversion TD $= (M_0 - M^{sa}{}_0) * P^{sa}$ if $M^* > M_0$

$= (M^* - M^{sa}{}_0) * P^{sa}$ if $M^* < M_0$

$= 0$ *if SA* the most efficient in $t=0$.

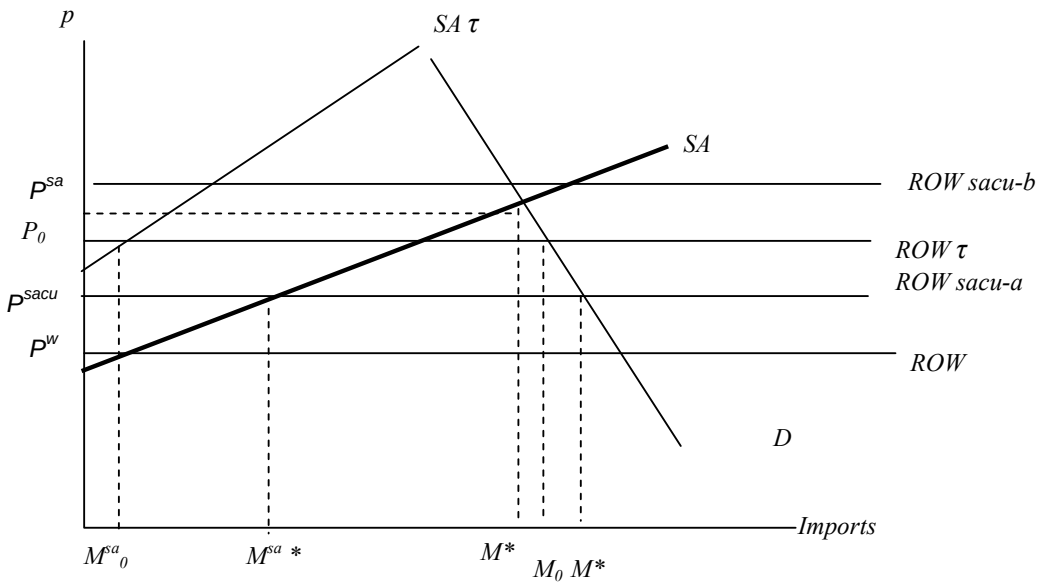
Excise Tax (τ_E) *and VAT*(τ_V)

$E_0 = (M_0 * \tau_E)(1 + \tau_V)$

$E^* = (M^* * \tau_E^{sacu})(1 + \tau_V)$

$\Delta E = E^* - E_0$

10.2.2 SACU (without TDCA) scenario (where MNF tariff = SADC tariff initially)



10.2.3 SACU (with TDCA) scenario

Again in this case as before, we need to consider the change in excise taxes

$(1+\tau_i) = (1+\tau_{iP})*(1+\tau_{iEP})$

$(1+\tau^{sacu}) = (1+\tau^{sacu}_{iP})*(1+\tau^{sacu}_{iEP})$

10.2.3.1 EU positive but not infinite elasticity of supply

In this case we have that liberalization not only occurs with SA, but also with the EU. As seen in the diagram, the EU supply curve shifts to the right. In this case, we need to look also at the price of equilibrium when the supply curves of the EU and SA are aggregated.

$$P^{EU} = P_0 \frac{\gamma^{EU} - 1}{(1+\tau_i)\gamma^{EU}} + P_0 \frac{1}{(1+\tau_i)\gamma^{EU} M_0^{EU}} M$$

$$M^{EU^*} = \frac{M_0^{EU} M_0 \left[(\gamma^{EU} - 1)\eta - (\eta - 1)\gamma^{EU}(1+\tau_i)\right]}{\gamma^{EU} M_0^{EU}(1+\tau_i) - \eta M_0}$$

$$p^{EU} = \frac{P_0}{\eta}\left[(\eta - 1) + \frac{M_0^{EU}\left[(\gamma^{EU} - 1)\eta - (\eta - 1)\gamma^{EU}(1+\tau_i)\right]}{\gamma^{EU} M_0^{EU}(1+\tau_i) - \eta M_0}\right]$$

Two different cases can be distinguished depending which one is the most efficient supplier.

10.2.3.1.1 Case 1

if P^{sa} *and* $P^{EU} > P^{sacu}$ *where* $P^{sacu} = P_0(1+\tau^{sacu})/(1+\tau_i)$

and $M^{sa*} + M^{EU*} < M^*$

This is the same as case 1 in the previous section. However, in this case trade diversion occurs from both SA and the EU. The ROW sets the price:

$$P^{sacu} = P_0 \frac{(1+\tau^{sacu})}{(1+\tau)}$$

$$M^* = \frac{M_0}{(1+\tau)}\left[\eta(\tau^{sacu} - \tau) + \tau + 1\right]$$

The new level of imports in USD is therefore $P^{sacu} * M^{*}$, this implies consumption effects $P^{sacu} * (M^{*} - M_0)$ that in this case can be positive or negative

At the new P^{sacu} imports from SA and EU are:

$$X^{sa} = M^{sa*} = M_0^{sa}(\gamma^{sa}\tau^{sacu} + 1)$$
$$X^{EU} = M^{EU*} = M_0^{EU}(\gamma^{EU}\tau^{sacu} + 1)$$

Thus, $P^{sacu} * M^{sa*}$ is imported from SA and $P^{sacu} * (M^{EU*})$ from the EU and $P^{sacu} * (M^{*} - M^{sa*} - M^{EU*})$ from the ROW

Revenue will depend on the SACU CET

$$R_1 = (M^{*} - M^{sa*} - M^{EU*})\frac{\tau^{sacu}}{1+\tau}P_0$$
$$\Delta R = R_1 - R_0 = P_0\frac{1}{1+\tau}\left[\tau^{sacu}(M^{*} - M^{sa*} - M^{EU*}) - \tau M_0\right]$$

The change in *Consumer Surplus* will also depend on the SACU CET

$$CS = (P_0 - P^{sacu})M_0 + (P_0 - P^{sacu})\frac{(M^{*} - M_0)}{2} = P_0\frac{(M^{*} + M_0)}{2}\frac{(\tau - \tau^{sacu})}{(1+\tau)}$$

$CS \leq 0$ *if* $\tau^{sacu} \geq \tau$

$$WelfareEffect = \Delta R + CS = P_0\frac{1}{1+\tau}\left[\tau^{sacu}(M^{*} - M^{sa*} - M^{EU*}) - \tau M_0 + \frac{(M^{*} + M_0)(\tau - \tau^{sacu})}{2}\right]$$

Trade Diversion $= ((M^{EU*} - M^{EU}) + (M^{sa*} - M^{sa}))\,P^{sacu}$

Excise Tax (τ_E) *and VAT*(τ_V)

$E_0 = (M_0 * \tau_E)(1 + \tau_V)$

$E^{*} = (M^{*} * \tau_E^{sacu})(1 + \tau_V)$

$\Delta E = E^{*} - E_0$

10.2.3.1.2 Case 2

if P^{sa} *or* $P^{EU} < P^{sacu}$,

or P^{sa} *and* $P^{EU} > P^{sacu}$ and $M^{sa*} + M^{EU*} > M^{*}$

Then we have to find a new equilibrium at a lower price than P^{sacu} that is the sum of the two supply curves EU and SA.

The new supply curve resulting from aggregating both depends on the intercepts and slopes:

If $P_0 \frac{\gamma^{EU}-1}{(1+\tau_i)\gamma^{EU}} > P_0 \frac{\gamma^{sa}-1}{(1+\tau_i)\gamma^{sa}}$

Then the function is:

$$P^{sa} = P_0 \frac{\gamma^{sa}-1}{(1+\tau_i)\gamma^{sa}} + P_0 \frac{1}{(1+\tau_i)\gamma^{sa} M_0^{sa}} M \quad \text{if } M^* < \gamma^{sa} M_0^{sa} \left[\frac{\gamma^{EU}-1}{\gamma^{EU}} - \frac{\gamma^{sa}-1}{\gamma^{sa}} \right]$$

$$= \Delta + \left[\frac{1}{(1+\tau_i)\gamma^{sa} M_0^{sa}} + \frac{1}{(1+\tau_i)\gamma^{EU} M_0^{EU}} \right] \text{ if } M^* > \gamma^{sa} M_0^{sa} \left[\frac{\gamma^{EU}-1}{\gamma^{EU}} - \frac{\gamma^{sa}-1}{\gamma^{sa}} \right]$$

Where Δ is an intercept to be calculated between the two intercepts.

If $P_0 \frac{\gamma^{EU}-1}{(1+\tau_i)\gamma^{EU}} < P_0 \frac{\gamma^{sa}-1}{(1+\tau_i)\gamma^{sa}}$

Then the function is:

$$P^{EU} = P_0 \frac{\gamma^{EU}-1}{(1+\tau_i)\gamma^{EU}} + P_0 \frac{1}{(1+\tau_i)\gamma^{EU} M_0^{EU}} M \quad \text{if } M^* < \gamma^{EU} M_0^{EU} \left[\frac{\gamma^{sa}-1}{\gamma^{sa}} - \frac{\gamma^{EU}-1}{\gamma^{EU}} \right]$$

$$= \Delta + \left[\frac{1}{(1+\tau_i)\gamma^{sa} M_0^{sa}} + \frac{1}{(1+\tau_i)\gamma^{EU} M_0^{EU}} \right] \text{ if } M^* > \gamma^{EU} M_0^{EU} \left[\frac{\gamma^{sa}-1}{\gamma^{sa}} - \frac{\gamma^{EU}-1}{\gamma^{EU}} \right]$$

Where Δ is an intercept to be calculated between the two intercepts.

The equilibrium between this function and the demand function will determine P and M^*

By replacing the new price P in both supplies SA and the EU we will find out the quantities that each supply M^{sa*} and M^{EU*}. Both regions supply all the market.

Consumption effects $P_*(M^*-M_0)$ can be positive or negative

Revenue $R_1=0$

$$\Delta R = R_1 - R_0 = -M_0 \frac{\tau}{1+\tau} P_0$$

Trade Diversion $= P_*(M_0 - M^{sa} - M^{EU})$ *if* $M^* > M_0$

$= P_*(M^* - M^{sa} - M^{EU})$ *if* $M^* < M_0$

Trade Creation = 0

$$CS = (P_0 - P\ )M_0 + (P_0 - P\ )\frac{(M^* - M_0)}{2} = (P_0 - P\ )\frac{(M^* + M_0)}{2} \quad if\ M^* > M_0\ CS > 0$$

$$CS = (P_0 - P\ )M^* + (P_0 - P\ )\frac{(M_0 - M^*)}{2} = (P_0 - P\ )\frac{(M^* + M_0)}{2} \quad if\ M^* < M_0\ CS < 0$$

$$WelfareEffect = \Delta R + CS = -M_0 \frac{\tau}{1+\tau} P_0 + (P_0 - P)\frac{(M^* + M_0)}{2}$$

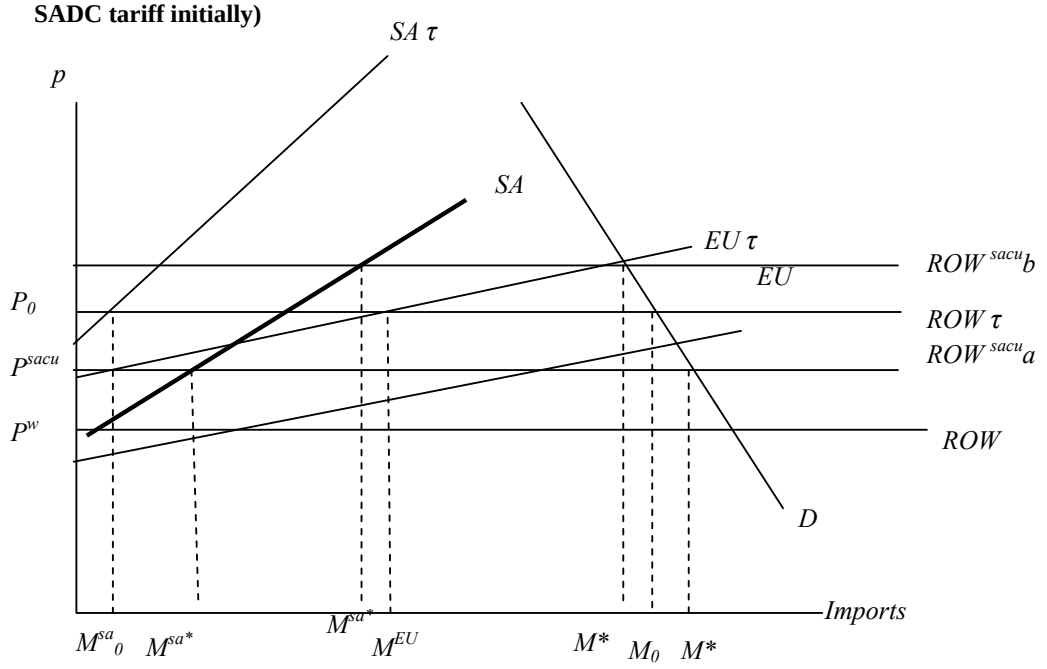
Excise Tax (τ_E) *and VAT*(τ_V)

$E_0 = (M_0 * \tau_E)(1 + \tau_V)$

$E^* = (M^* * \tau_E^{sacu})(1 + \tau_V)$

$\Delta E = E^* - E_0$

10.2.3.1 SACU (with TDCA) scenario, with finite elasticity of supply for EU, (where MNF tariff = SADC tariff initially)



10.2.3.2 EU has infinite elasticity of supply

10.2.3.2.1 Case 1 If the EU has some market share in t = 0

In this case, if the EU supplied part of the market share, we assume that shared the supplied curve with the ROW. Therefore, this case is equivalent to the MFN case scenario below, since the EU is as efficient as the ROW and can supply as much the demand can absorb at the same price. Thus, imports from SA continue the same and all the trade consumption effects are supplied by the EU.

The new levels of imports at $P_0/(1 + \tau)$ are (see next section):

$$P = \frac{P_0}{(1+\tau_i)} = P_0(\frac{\eta - 1}{\eta}) + \frac{P_0}{\eta M_0} M$$

$$M^* = M_0 \left[\frac{\tau(1-\eta)+1}{1+\tau} \right]$$

$$X^{sa} = M_0^{sa}$$

Thus, total imports are $P_0/(1 + \tau) * M^*$, $P_0/(1 + \tau) * M^{sa}_0$ from SA and $P_0/(1 + \tau) * (M^* - M^{sa}_0)$ from the EU.

Consumption effects are $P_0/(1 + \tau) * (M^* - M_0)$,

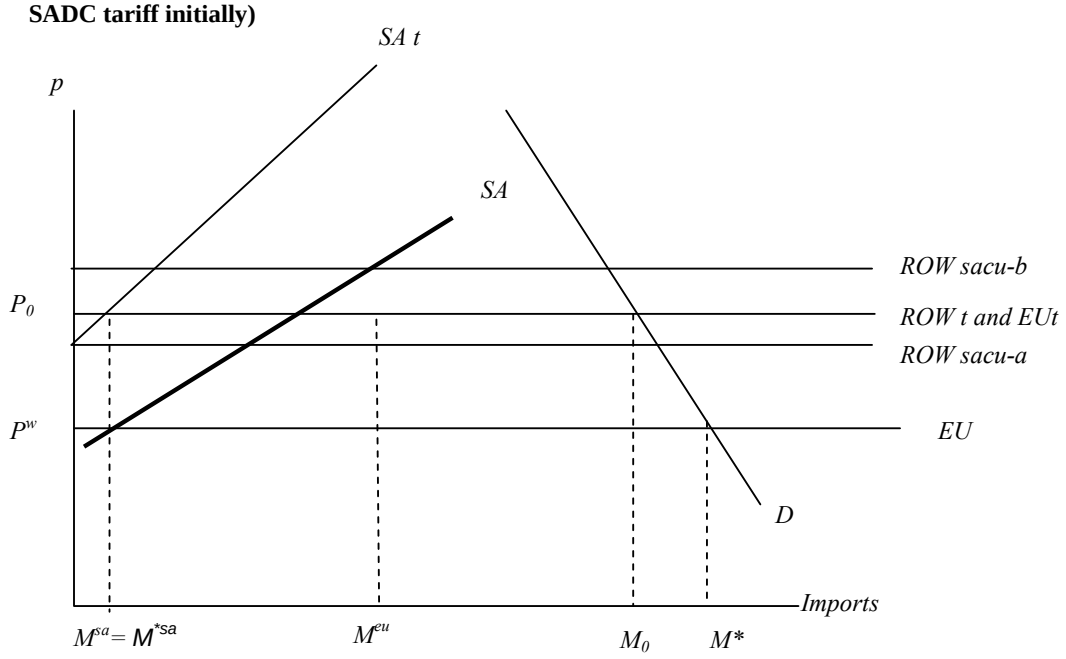
Trade diversion = 0, since the EU is as efficient as the ROW.
Trade creation = 0

Revenue, welfare effects and excise tax revenue as below.

10.2.3.2.2 Case 2 If the EU has no market share in t = 0

In the case that the EU is not supplying any quantity in the original situation implies that is impossible to identify its export supply curve and whether the preference will allow the region to enter the Mozambican market. In this case we will assume that the EU will not enter the market and therefore it is equivalent to the FTA case.

10.2.3.2 SACU (with TDCA) scenario (EU infinite elasticity of suply) (where MNF tariff = SADC tariff initially)



10.2.4 MFN liberalization scenario

In this case, we assume total MFN liberalization, all duties are eliminated and the VAT and consumption tax structure continues as the existing current structure. Clearly, there is an increase in imports, consumption effects, which correspond to pure trade creation.

The new levels of imports are the demand for imports and the SA supply of exports at $P_0/(1 + \tau)$:

$$P^* = \frac{P_0}{(1+\tau_i)} = P_0(\frac{\eta - 1}{\eta}) + \frac{P_0}{\eta M_0} M$$

$$M^* = M_0 \left[\frac{\tau(1-\eta)+1}{(1+\tau_i)} \right]$$

$$P^{sa} = P_0 \frac{1}{(1+\tau_i)} = P_0(\frac{\gamma^{sa} - 1}{\gamma^{sa}(1+\tau_i)}) + \frac{P_0}{\gamma^{sa} M_0^{sa}(1+\tau_i)} X$$

$$X^{sa} = M^{sa*} = \gamma^{sa} M_0^{sa} \left[\frac{\gamma^{sa} - \gamma^{sa} + 1}{\gamma^{sa}} \right] = M_0^{sa}$$

Clearly since the ROW has infinite elasticity and it is more efficient, it takes all the consumption effects and trade creation.

Thus the level of imports at USD is $P * M^*$, where $P = P_0/(1 + \tau)$, $P * M^{sa}{}_0$ comes from SA and $P (M^* - M^{sa}{}_0)$ comes from the ROW.

Consumption effects $= P (M^* - M_0)$

Trade Creation= Trade Diversion = 0

Revenue $R_1=0$

$$\Delta R = R_1 - R_0 = -M_0 \frac{\tau}{1+\tau} P_0$$

Consumer surplus

$$CS = P_0 \frac{\tau}{1+\tau} \frac{(M_0 + M^*)}{2} > 0$$

$$Welfare = \Delta R + CS = -M_0 \frac{\tau}{1+\tau} P_0 + P_0 \frac{\tau}{1+\tau} \frac{(M_0 + M^*)}{2} = P_0 \frac{\tau}{1+\tau} \left[\frac{(M^* - M_0)}{2} \right]$$

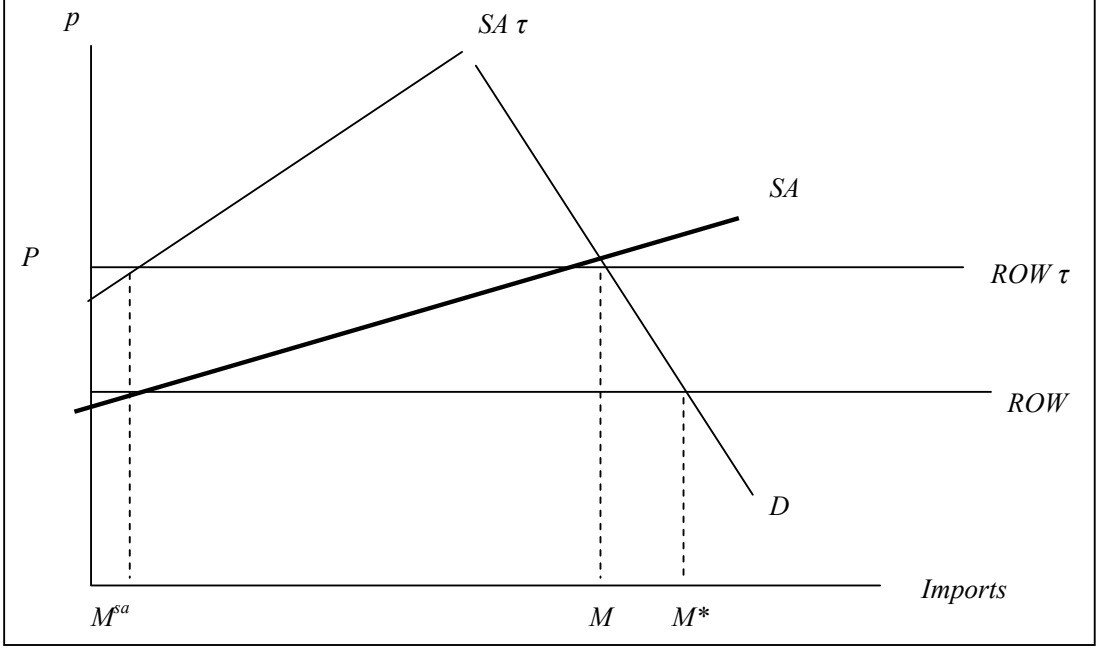
Excise Tax (τ_E) and VAT(τ_V)

$E_0 = (M_0 * \tau_E)(1 + \tau_V)$

$E^* = (M^* * \tau_E)(1 + \tau_V)$

$\Delta E = E^* - E_0$

10.2.4 MFN liberalization scenario (where MNF tariff = SADC tariff initially)



10.3 For products where MFN tariff > SADC tariff in the initial situation

In this case SA already experiences a tariff preference and therefore we need to compare the situations in T with the situation where SA is the only supplier with the original supply curve. This is:

$$P^{SA} = P_0(\frac{\gamma^{sa}-1}{\gamma^{sa}}) + \frac{P_0}{\gamma^{sa}M_0^{sa}}M$$

$$P = P_0(\frac{\eta-1}{\eta}) + \frac{P_0}{\eta M_0}M$$

$$(\frac{\gamma^{sa}-1}{\gamma^{sa}}) - (\frac{\eta-1}{\eta}) - = M(\frac{1}{\eta M_0} - \frac{1}{\gamma^{sa}M_0^{sa}})$$

$$M^{sa*} = M_0^{sa}M_0\frac{(\gamma^{sa}-\eta)}{\gamma^{sa}M_0^{sa}-\eta M_0}$$

$$P^{sa} = \frac{P_0}{\gamma^{sa}}\left[(\gamma^{sa}-1) + \frac{M_0(\gamma^{sa}-\eta)}{\gamma^{sa}M_0^{sa}-\eta M_0}\right]$$

Two SACU scenarios as before.

10.3.1 SACU (without TDCA) scenario

The price with the rest of the world after applying the SACU CET. Clearly, the new price is:

$$P^{sacu} = P_0\frac{(1+\tau^{sacu})}{(1+\tau)}$$

Again, we need to consider excise taxes and we have two regimes:

$(1+\tau_i) = (1+\tau_{iP})*(1+\tau_{iEP})$

$(1+\tau^{sacu}) = (1+\tau^{sacu}_{iP})*(1+\tau^{sacu}_{iEP})$

10.3.1.1 Case 1

if $P^{sa} > P^{sacu}$ *where* $P^{sacu} = P_0(1+\tau^{sacu})/(1+\tau_i)$

The new level of total imports M* is determined by the new SACU CET price:

$$P = P_0(\frac{\eta-1}{\eta}) + \frac{P_0}{\eta M_0}M$$

$$P^{sacu} = P_0\frac{(1+\tau^{sacu})}{(1+\tau)} = P_0(\frac{\eta-1}{\eta}) + \frac{P_0}{\eta M_0}M$$

$$M^* = \eta M_0\left[\frac{(1+\tau_{sacu})}{(1+\tau)} - \frac{(\eta-1)}{\eta}\right] = \frac{M_0}{(1+\tau)}\left[\tau(1-\eta) + \tau^{sacu}\eta + 1\right]$$

The new level of imports in USD is therefore $P^{sacu} * M^*$

This implies consumption effects $P^{sacu} * (M^* - M_0)$, which in this case can be positive or negative.

At the new P^{sacu} imports from SA are:

$$P^{sa} = P_0 \frac{(1+\tau^{sacu})}{(1+\tau_i)} = P_0 \frac{\gamma^{sa}-1}{\gamma^{sa}} + P_0 \frac{1}{\gamma^{sa} M_0^{sa}} X$$

$$X^{sa*} = M^{sa*} = M_0^{sa} \left[\frac{\gamma^{sa}(\tau^{sacu} - \tau_i) + \tau_i - 1}{(1+\tau_i)} \right]$$

Revenue will depend on the SACU CET

$$R_1 = (M^* - M^{sa*}) \frac{\tau^{sacu}}{1+\tau} P_0$$

$$\Delta R = R_1 - R_0 = P_0 \frac{1}{1+\tau} \left[\tau^{sacu} (M^* - M^{sa*}) - \tau M_0 \right]$$

The change in *Consumer Surplus* will also depend on the SACU CET

$$CS = (P_0 - P^{sacu}) M_0 + (P_0 - P^{sacu}) \frac{(M^* - M_0)}{2} = P_0 \frac{(M^* + M_0)}{2} \frac{(\tau - \tau^{sacu})}{(1+\tau)}$$

$CS \leq 0$ *if* $\tau^{sacu} \geq \tau$

$$WelfareEffect = \Delta R + CS = P_0 \frac{1}{1+\tau} \left[\tau^{sacu} (M^* - M^{sa*}) - \tau M_0 + \frac{(M^* + M_0)(\tau - \tau^{sacu})}{2} \right]$$

In this case, trade creation and diversion will depend on the new SACU-CET rate:

$M^{sa*} - M^{sa}_0 > 0$ *Trade diversion* $= |M^{sa*} - M^{sa}_0|$

$M^{sa*} - M^{sa}_0 < 0$ *Trade creation* $= |M^{sa*} - M^{sa}_0|$

Excise Tax (τ_E) *and VAT*(τ_V)

$E_0 = (M_0 * \tau_E)(1 + \tau_V)$

$E^* = (M^* * \tau_E^{sacu})(1 + \tau_V)$

$\Delta E = E^* - E_0$

10.3.1.2 Case 2

if $P^{sa} \leq P^{sacu}$ *where* $P^{sacu} = P_0 (1 + \tau^{sacu})/(1+\tau_i)$

In this case, SA becomes the only supplier of the market diverting most trade from the ROW depending on the degree of efficiency of SA in relative terms to the ROW. This case is equivalent to regime 2 in the case of a FTA.

The new level of imports is:

$$M^{sa*} = M_0^{sa} M_0 \frac{(\gamma^{sa} - \eta)}{\gamma^{sa} M_0^{sa} - \eta M_0}$$

$$P^{sa} = \frac{P_0}{\gamma^{sa}} \left[(\gamma^{sa} - 1) + \frac{M_0 (\gamma^{sa} - \eta)}{\gamma^{sa} M_0^{sa} - \eta M_0} \right]$$

The levels of imports in USD is $P^{sa}\, M^{sa*}$ and now there can only be negative consumption effects $P^{sa}\, (M^{sa*} - M_0)$ *(unless SA was the most efficient supplier in t=0 and then nothing changes)*

Trade Diversion $TD = (M^{sa*} - M^{sa}_0) * P^{sa}$

$= 0$ *if SA* the most efficient in *t=0*.

Trade creation = 0

Revenue

$R_1 = 0$

$$\Delta R = R_1 - R_0 = -M_0 \frac{\tau}{1+\tau} P_0$$

Consumer surplus

$$CS = (P_0 - P^{sa}) M^{sa*} + (P_0 - P^{sa}) \frac{(M_0 - M^{sa*})}{2} = (P_0 - P^{sa}) \frac{(M^{sa*} + M_0)}{2} < 0$$

$CS \leq 0$ *if* $P^{sa} \geq P_0$

Welfare Effect $= \Delta R + CS$

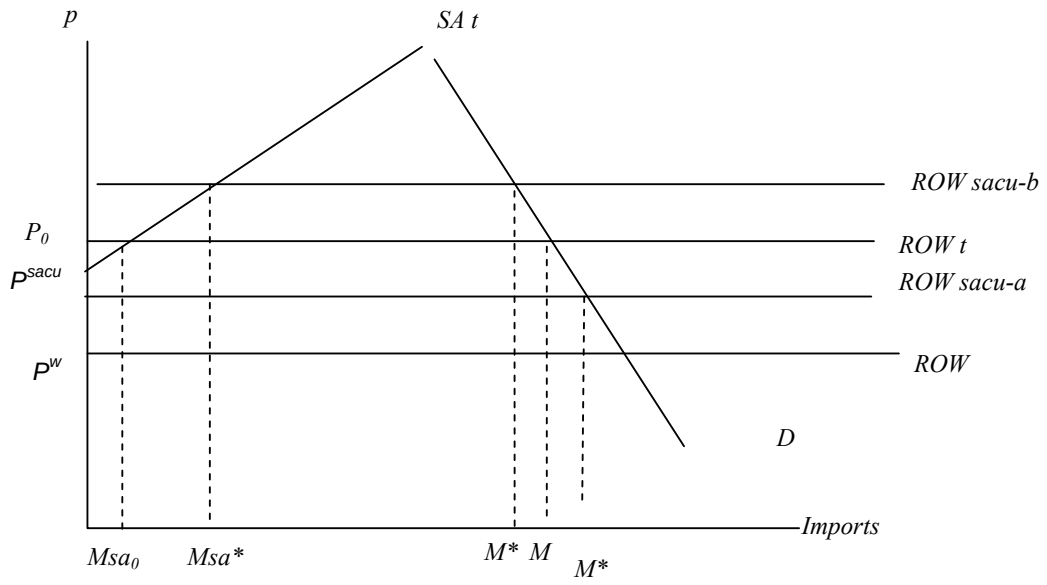
Excise Tax (τ_E) *and VAT*(τ_V)

$E_0 = (M_0 * \tau_E))\ (1 + \tau_V)$

$E^* = (M^* * \tau_E^{sacu}))\ (1 + \tau_V)$

$\Delta E = E^* - E_0$

10.3.1 SACU (without TDCA) scenario (where MNF tariff > SADC tariff initially)



10.3.2 SACU (with TDCA) scenario

As before, we include the change in excise taxes, so we have:

$(1+\tau_i) = (1+\tau_{iP})*(1+\tau_{iEP})$

$(1 + \tau^{sacu}) = (1 + \tau^{sacu}_{iP}) * (1 + \tau^{sacu}_{iEP})$

10.3.2.1 EU positive but not infinite elasticity of supply

In this case we have that liberalization only occurs with the EU. As seen in the diagram, the EU supply curve shifts to the right. In this case, we need to look also at the price of equilibrium when the supply curves of the EU and SA are aggregated.

$$P^{EU} = P_0 \frac{\gamma^{EU} - 1}{(1+\tau_i)\gamma^{EU}} + P_0 \frac{1}{(1+\tau_i)\gamma^{EU} M_0^{EU}} M$$

$$M^{EU*} = \frac{M_0^{EU} M_0 \left[(\gamma^{EU} - 1)\eta - (\eta - 1)\gamma^{EU}(1+\tau_i)\right]}{\gamma^{EU} M_0^{EU}(1+\tau_i) - \eta M_0}$$

$$p^{EU} = \frac{P_0}{\eta}\left[(\eta - 1) + \frac{M_0^{EU}\left[(\gamma^{EU} - 1)\eta - (\eta - 1)\gamma^{EU}(1+\tau_i)\right]}{\gamma^{EU} M_0^{EU}(1+\tau_i) - \eta M_0}\right]$$

Two different regimes can be distinguished depending which one is the most efficient supplier.

10.3.2.1.1 Case 1

if P^{sa} *and* $P^{EU} > P^{sacu}$ *where* $P^{sacu} = P_0 (1 + \tau^{sacu})/(1+\tau_i)$
and $M^{sa*} + M^{EU*} < M^*$

This is the same case than Regime 1 in the previous section. However, in this case trade diversion occurs from both SA and the EU. The ROW sets the price:

$$P^{sacu} = P_0 \frac{(1+\tau^{sacu})}{(1+\tau)}$$

$$M^* = \frac{M_0}{(1+\tau)}\left[\eta(\tau^{sacu} - \tau) + \tau + 1\right]$$

The new level of imports in USD is therefore $P^{sacu} * M^*$, this implies consumption effects $P^{sacu} * (M^* - M_0)$ that in this case can be positive or negative

At the new P^{sacu} imports from SA and EU are:

$$X^{sa} = M^{sa*} = M_0^{sa} \frac{(\gamma^{sa}(\tau^{sacu} - \tau_i) + \tau_i + 1)}{(1+\tau_i)}$$

$$X^{EU} = M^{EU*} = M_0^{EU}(\gamma^{EU}\tau^{sacu} + 1)$$

Thus, $P^{sacu} * M^{sa*}$ is imported from SA and $P^{sacu} * (M^{EU*} - M^{sa*})$ from the EU, and $P^{sacu} * (M^* - M^{EU*} - M^{sa*})$.

Revenue will depend on the SACU CET

$$R_1 = (M^* - M^{EU^*} - M^{sa^*}) \frac{\tau^{sacu}}{1+\tau} P_0$$

$$\Delta R = R_1 - R_0 = P_0 \frac{1}{1+\tau} \left[\tau^{sacu} (M^* - M^{EU^*} - M^{sa^*}) - \tau M_0 \right]$$

The change in *Consumer Surplus* will also depend on the SACU CET

$$CS = (P_0 - P^{sacu}) M_0 + (P_0 - P^{sacu}) \frac{(M^* - M_0)}{2} = P_0 \frac{(M^* + M_0)}{2} \frac{(\tau - \tau^{sacu})}{(1+\tau)}$$

$CS \leq 0$ *if* $\tau^{sacu} \geq \tau$

$$WelfareEffect = \Delta R + CS = P_0 \frac{1}{1+\tau} \left[\tau^{sacu} (M^* - M^{EU^*} - M^{sa^*}) - \tau M_0 + \frac{(M^* + M_0)(\tau - \tau^{sacu})}{2} \right]$$

Trade creation here is possible if the EU is more efficient than SA:

Trade creation = $(M^{sa^*} - M^{sa}_0)\, P^{sacu}$

Trade diversion = $(M^{EU^*} - M^{EU}_0)\, P^{sacu}$

Excise Tax (τ_E) *and VAT* (τ_V)

$E_0 = (M_0 * \tau_E)(1 + \tau_V)$

$E^* = (M^* * \tau_E^{sacu})(1 + \tau_V)$

$\Delta E = E^* - E_0$

10.3.2.1.2 Case 2

if P^{sa} *or* $P^{EU} < P^{sacu}$,

or P^{sa} *and* $P^{EU} > P^{sacu}$ and $M^{sa^*} + M^{EU^*} > M^*$

Then we have to find a new equilibrium at a lower price than P^{sacu} that is the sum of the two supply curves EU and SA.

The new supply curve resulting from aggregating both depends on the intercepts and slopes:

If $P_0 \frac{\gamma^{EU} - 1}{(1+\tau_i)\gamma^{EU}} > P_0 \frac{\gamma^{sa} - 1}{\gamma^{sa}}$

Then the function is:

$$P^{sa} = P_0 \frac{\gamma^{sa} - 1}{\gamma^{sa}} + P_0 \frac{1}{\gamma^{sa} M_0^{sa}} M \quad \text{if } M^* < \gamma^{sa} M_0^{sa} \left[\frac{\gamma^{EU} - 1}{\gamma^{EU}(1+\tau_i)} - \frac{\gamma^{sa} - 1}{\gamma^{sa}} \right]$$

$$= \Delta + \left[\frac{1}{\gamma^{sa} M_0^{sa}} + \frac{1}{(1+\tau_i)\gamma^{EU} M_0^{EU}} \right] \text{ if } M^* > \gamma^{sa} M_0^{sa} \left[\frac{\gamma^{EU} - 1}{\gamma^{EU}(1+\tau_i)} - \frac{\gamma^{sa} - 1}{\gamma^{sa}} \right]$$

Where Δ is an intercept to be calculated between the two intercepts.

$$\text{If } P_0 \frac{\gamma^{EU} - 1}{(1+\tau_i)\gamma^{EU}} < P_0 \frac{\gamma^{sa} - 1}{\gamma^{sa}}$$

Then the function is:

$$P^{EU} = P_0 \frac{\gamma^{EU} - 1}{(1+\tau_i)\gamma^{EU}} + P_0 \frac{1}{(1+\tau_i)\gamma^{EU} M_0^{EU}} M \text{ if } M^* < (1+\tau_i)\gamma^{EU} M_0^{EU} \left[\frac{\gamma^{sa} - 1}{\gamma^{sa}} - \frac{\gamma^{EU} - 1}{\gamma^{EU}(1+\tau_i)} \right]$$

$$= \Delta + \left[\frac{1}{\gamma^{sa} M_0^{sa}} + \frac{1}{(1+\tau_i)\gamma^{EU} M_0^{EU}} \right] \text{ if } M^* < (1+\tau_i)\gamma^{EU} M_0^{EU} \left[\frac{\gamma^{sa} - 1}{\gamma^{sa}} - \frac{\gamma^{EU} - 1}{\gamma^{EU}(1+\tau_i)} \right]$$

Where Δ is an intercept to be calculated between the two intercepts.

The equilibrium between this function and the demand function will determine P and M^*

By replacing the new price P in both supplies SA and the EU we will find out the quantities that each supply M^{sa*} and M^{EU*}. Both regions supply all the market.

Consumption effects $P_*(M^*-M_0)$ can be positive or negative

Revenue $R_1=0$

$$\Delta R = R_1 - R_0 = -M_0 \frac{\tau}{1+\tau} P_0$$

Trade creation = $(M^{sa*} - M^{sa}{}_0)\, P^{sacu}$
Trade diversion =$(M^{EU*} - M^{EU}{}_0)\, P^{sacu}$

$$CS = (P_0 - P\ )M_0 + (P_0 - P\ )\frac{(M^* - M_0)}{2} = (P_0 - P\ )\frac{(M^* + M_0)}{2} \quad \textit{if } M^* > M_0 \; CS > 0$$

$$CS = (P_0 - P\ )M^* + (P_0 - P\ )\frac{(M_0 - M^*)}{2} = (P_0 - P\ )\frac{(M^* + M_0)}{2}\ \ if\ M^* < M_0\ CS < 0$$

$$WelfareEffect = \Delta R + CS = -M_0 \frac{\tau}{1+\tau} P_0 + (P_0 - P)\frac{(M^* + M_0)}{2}$$

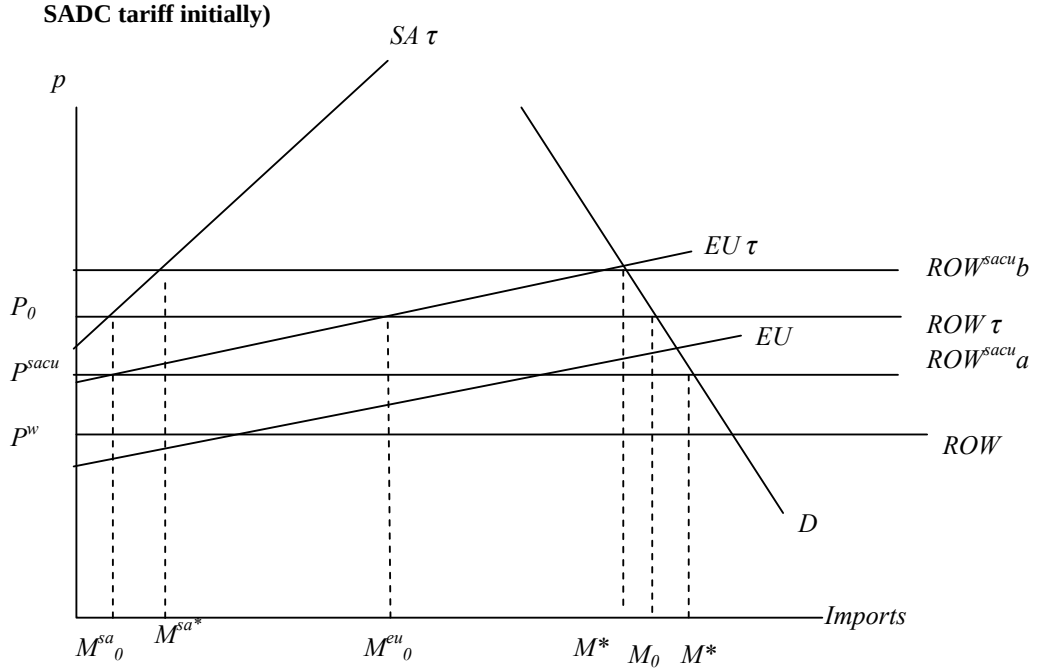
Excise Tax (τ_E) and VAT(τ_V)

$E_0 = (M_0 * \tau_E)(1 + \tau_V)$

$E^* = (M^* * \tau_E^{sacu})(1 + \tau_V)$

$\Delta E = E^* - E_0$

10.3.2.1 SACU (with TDCA) scenario, finite elasticity of supply for EU (where MNF tariff > SADC tariff initially)



10.3.2.2 EU has infinite elasticity of supply

10.3.2.2.1 Case 1 If the EU has some market share in t = 0

In this case, if the EU supplied part of the market share, we assume that shared the supplied curve with the ROW. Therefore, this case is equivalent to the MFN case scenario below, since the EU is as efficient as the ROW and can supply as much the demand can absorb at the same price.

The new levels of imports are the demand for imports and the SA supply of exports at $P_0/(1 + \tau)$:

$$P = \frac{P_0}{(1+\tau_i)} = P_0(\frac{\eta - 1}{\eta}) + \frac{P_0}{\eta M_0} M$$

$$M^* = M_0\left[\frac{\tau(1-\eta)+1}{1+\tau}\right]$$

$$P^{sa} = P_0 \frac{1}{(1+\tau_i)} = P_0(\frac{\gamma^{sa} - 1}{\gamma^{sa}}) + \frac{P_0}{\gamma^{sa} M_0^{sa}} X$$

$$X^{sa} = M^{sa*} = M_0^{sa}\left[\frac{\tau(1-\gamma^{sa})+1}{(1+\tau)}\right]$$

Thus the level of imports at USD is $P^w * M^*$, where $P^w = P_0/(1 + \tau)$, $P^w * M^{sa*}$ comes from SA and $P^w (M^* - M^{sa*})$ comes from the ROW.

Consumption effects = $P^w(M^*-M_0)$

Trade creation = $P^w(M^{sa*}- M^{sa}_0)$

Revenue $R_1=0$

$$\Delta R = R_1 - R_0 = -M_0 \frac{\tau}{1+\tau} P_0$$

Consumer surplus

$$CS = P_0 \frac{\tau}{1+\tau} \frac{(M_0 + M^*)}{2} > 0$$

$$Welfare = \Delta R + CS = -M_0 \frac{\tau}{1+\tau} P_0 + P_0 \frac{\tau}{1+\tau} \frac{(M_0 + M^*)}{2} = P_0 \frac{\tau}{1+\tau} \left[\frac{(M^* - M_0)}{2} \right]$$

Excise Tax (τ_E) and VAT(τ_V)

$E_0 = (M_0 * \tau_E)(1 + \tau_V)$

$E^* = (M^* * \tau_E^{sacu})(1 + \tau_V)$

$\Delta E = E^* - E_0$

10.3.2.2.2 Case 2 If the EU has no market share in t = 0

In the case that the EU is not supplying any quantity in the original situation implies that is impossible to identify its export supply curve and whether the preference will allow the region to enter the Mozambican market. In this case we will assume that the EU will not enter the market and therefore it is equivalent to the FTA case.

10.3.3 MFN liberalization scenario

In this case, we assume total MFN liberalization, all duties are eliminated and the VAT and consumption tax structure continues as the existing current structure. Clearly, there is an increase in imports, consumption effects, which correspond to pure trade creation.

The new levels of imports are the demand for imports and the SA supply of exports at $P_0/(1 + \tau)$:

$$P = \frac{P_0}{(1+\tau_i)} = P_0 \left(\frac{\eta - 1}{\eta}\right) + \frac{P_0}{\eta M_0} M$$

$$M^* = M_0 \left[\frac{\tau(1-\eta)+1}{1+\tau} \right]$$

$$P^{sa} = P_0 \frac{1}{(1+\tau_i)} = P_0 \left(\frac{\gamma^{sa} - 1}{\gamma^{sa}}\right) + \frac{P_0}{\gamma^{sa} M_0^{sa}} X$$

$$X^{sa} = M^{sa*} = M_0^{sa} \left[\frac{\tau(1-\gamma^{sa})+1}{(1+\tau)} \right]$$

Thus the level of imports at USD is $P^w * M^*$, where $P^w = P_0/(1 + \tau)$, $P^w * M^{sa*}$ comes from SA and $P^w (M^* - M^{sa*})$ comes from the ROW.

Consumption effects $= P^w(M^* - M_0)$

Trade creation $= P^w(M^{sa*} - M^{sa}_0)$

Revenue $R_1 = 0$

$$\Delta R = R_1 - R_0 = -M_0 \frac{\tau}{1+\tau} P_0$$

Consumer surplus

$$CS = P_0 \frac{\tau}{1+\tau} \frac{(M_0 + M^*)}{2} > 0$$

$$Welfare = \Delta R + CS = -M_0 \frac{\tau}{1+\tau} P_0 + P_0 \frac{\tau}{1+\tau} \frac{(M_0 + M^*)}{2} = P_0 \frac{\tau}{1+\tau} \left[\frac{(M^* - M_0)}{2} \right]$$

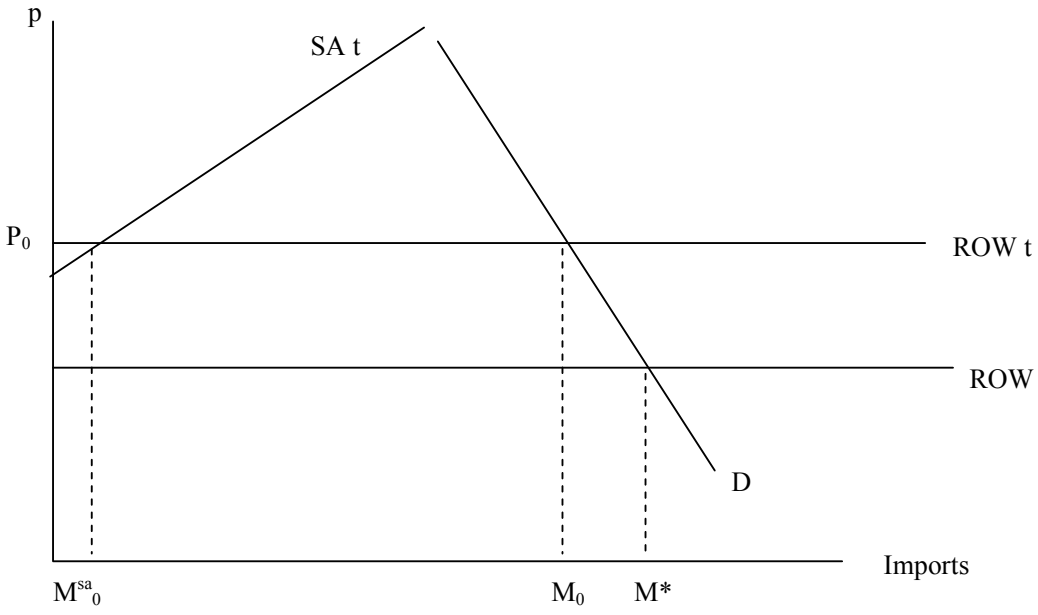
Excise Tax (τ_E) *and VAT*(τ_V)

$E_0 = (M_0 * \tau_E)(1 + \tau_V)$

$E^* = (M^* * \tau_E)(1 + \tau_V)$

$\Delta E = E^* - E_0$

10.3.3 MFN liberalization scenario (where MNF tariff > SADC tariff initially)



11. Results appendix

Contents

11.1 Harmonized System Classification (2 digits)

Section I	**Live animals; animal products**
01	live animals
02	meat and edible meat offal
03	fish and crustaceans, molluscs and other aquatic invertebrates
04	dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere specified or included
05	products of animal origin not elsewhere specified or included
Section II	**Vegetable products**
06	live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage
07	edible vegetables and certain roots and tubers
08	edible fruit and nuts; peel of citrus fruits or melons
09	coffee, tea, mate and spices
10	cereals
11	products of the milling industry; malt; starches; inulin; wheat gluten
12	oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medical plants; straw and fodder
13	lacs; gums, resins and other vegetable saps and extracts
14	vegetable plaiting materials; vegetable products not elsewhere specified or included
Section III	**Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes**
15	animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes
Section IV	**Prepared foodstuffs; beverages, spirits and vinegar; tobacco and manufactured tobacco substitutes**
16	preparations of meat, fish or crustaceans, molluscs or other aquatic invertebrates
17	sugars and sugar confectionery
18	cocoa and cocoa preparations
19	preparations of cereals, flour, starch or milk; pastrycooks' products
20	preparations of vegetables, fruit, nuts or other parts of plants
21	miscellaneous edible preparations
22	beverages, spirits and vinegar
23	residues and waste from the food industries; prepared animal fodder
24	tobacco and manufactured tobacco substitutes
Section V	**Mineral products**
25	salt; sulphur; earths and stone; plastering material, lime and cement
26	ores, slag and ash
27	mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes
Section VI	**Products of the chemical or allied industries**
28	inorganic chemicals: organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes
29	organic chemicals
30	pharmaceutical products

31	fertilizers
32	tanning or dyeing extracts; tannins and their derivatives; dyes, pigments and other colouring matter; paints and varnishes; putty and other mastics; inks
33	essential oils and resinoids; perfumery, cosmetic or toilet preparations
34	soaps, organic surface-active agents, washing preparations, lubricating preparations, artificial waxes, prepared waxes, shoe polish, scouring powder and the like, candles and similar products, modelling pastes, dental wax and plaster-based
35	albuminous substances; modified starches; glues; enzymes
36	explosives; pyrotechnic products; matches; pyrophoric alloys; combustible materials
37	photographic or cinematographic products
38	miscellaneous chemical products
Section VII	**Plastics and articles thereof; rubber and articles thereof**
39	plastics and plastic products
40	rubber and articles thereof
Section VIII	**Raw hides and skins, leather, furskins and articles thereof; saddlery and harness; travel goods, handbags and similar containers; articles of animal gut (other than silkworm gut)**
41	hides and skins (other than furskins) and leather
42	articles of leather; saddlery and harness; travel goods, handbags and similar containers; articles of animal gut (other than silk-worm gut)
43	furskins and artificial fur; articles thereof
Section IX	**Wood and articles of wood; wood charcoal; cork and articles of cork; manufactures of straw, of esparto or of other plaiting materials; basketware and wickerwork**
44	wood and articles of wood; wood charcoal
45	cork and articles of cork
46	wickerwork and basketwork
Section X	**Pulp of wood or of other fibrous cellulosic material; waste and scrap of paper or paperboard; paper and paperboard and articles thereof**
47	pulp of wood or of other fibrous cellulosic material; waste and scrap of paper or paperboard
48	paper and paperboard; articles of paper pulp, paper or paperboard
49	books, newspapers, pictures and other products of the printing industry; manuscripts, typescripts and plans
Section XI	**Textiles and textile articles**
50	silk
51	wool, fine and coarse animal hair; yarn and fabrics of horsehair
52	cotton
53	other vegetable textile fibres; paper yarn and woven fabrics of paper yarn
54	man-made filaments
55	man-made staple fibres
56	wadding, felt and nonwovens; special yarns; twine, cordage, rope and cable and articles thereof
57	carpets and other textile floor coverings
58	special woven fabrics; tufted textile products; lace; tapestries; trimmings; embroidery
59	impregnated, coated, covered or laminated textile fabrics; articles for technical use, of textile materials
60	knitted or crocheted fabrics
61	articles of apparel and clothing accessories, knitted or crocheted
62	articles of apparel and clothing accessories, not knitted or crocheted
63	other made up textile articles; sets; worn clothing and worn textile articles; rags
Section XII	**Footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops and parts thereof; prepared feathers and articles made therewith; artificial flowers; articles of human hair**
64	footwear, gaiters and the like; parts of such articles
65	headgear and parts thereof
66	umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops and parts thereof
67	prepared feathers and down and articles made of feathers or of down; artificial flowers; articles of human hair
Section XIII	**Articles of stone, plaster, cement, asbestos, mica or similar materials; ceramic products; glass and glassware**
68	articles of stone, plaster, cement, asbestos, mica or similar materials
69	ceramic products
70	glass and glassware
Section XIV	**Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal and articles thereof; imitation jewellery; coins**
71	natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles

	thereof; imitation jewellery; coin
Section XV	**Base metals and articles of base metal**
72	iron and steel
73	articles of iron or steel
74	copper and articles thereof
75	nickel and articles thereof
76	aluminium and articles thereof
78	lead and articles thereof
79	zinc and articles thereof
80	tin and articles thereof
81	other base metals; cermets; articles thereof
82	tools, implements, cutlery, spoons and forks, of base metal; parts thereof of base metal
83	miscellaneous articles of base metal
Section XVI	**Machinery and mechanical appliances; electrical equipment; parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles**
84	nuclear reactors, boilers, machinery and mechanical appliances; parts thereof
85	electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles
Section XVII	**Vehicles, aircraft, vessels and associated transport equipment**
86	railway or tramway locomotives, rolling-stock and parts thereof; railway or tramway track fixtures and fittings and parts thereof; mechanical, including electro-mechanical, traffic signalling equipment of all kinds
87	vehicles other than railway or tramway rolling-stock, and parts and accessories thereof
88	aircraft, spacecraft, and parts thereof
89	ships, boats and floating structures
Section XVIII	**Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; clocks and watches; musical instruments; parts and accessories thereof**
90	optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; parts and accessories thereof
91	clocks and watches and parts thereof
Section XIX	**Arms and ammunition; parts and accessories thereof**
92	musical instruments; parts and accessories for such articles
93	arms and ammunition; parts and accessories thereof
Section XX	**Miscellaneous manufactured articles**
94	furniture; medical and surgical furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; lamps and lighting fittings, not elsewhere specified; illuminated signs, illuminated name-plates and the like; pre
95	toys, games and sports requisites; parts and accessories thereof
96	miscellaneous manufactured articles
Section XXI	**Works of art, collectors' pieces and antiques**
97	works of art, collectors' pieces and antiques
98	Other
99	other products

11.2 FTA scenario results, aggregated to 2 digits

HS2	Q^M *SADC[a] t=0*	Q^M *ROW[b] t=0*	*Total* Q^M *t=0*	Q^M *SADC[a] t=T*	Q^M *ROW[b] t=T*	*Total* Q^M *t=T*	*Avg Price SADC[a] t=T*	*Avg Price ROW[a] t=T*	Q^M **P SADC[a] t=T*	Q^M **P ROW[b] t=T*	*Total* Q^M**P t=T*	*Δ* Q^M **P*	*Δ Tariff Rev.*	*Δ Excise Rev.*	*Δ VAT Rev.*	*Total Impact Rev.*	*Δ Cons. Surplus*	*Net Welfare effect*
1	2.72	0.00	2.73	2.73	0.00	2.73	0.94	0.87	2.72	0.00	2.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	2.25	4.50	6.75	2.67	4.43	7.10	0.92	0.77	2.53	4.25	6.78	0.03	-0.84	0.00	-0.14	-0.98	0.31	-0.67
3	24.53	0.15	24.68	24.56	0.15	24.71	0.92	0.77	24.54	0.14	24.68	0.00	-0.07	0.00	-0.01	-0.08	0.03	-0.05
4	7.58	2.03	9.61	8.00	1.81	9.81	0.95	0.83	7.83	1.79	9.61	0.01	-0.69	0.00	-0.12	-0.80	0.19	-0.62
5	0.01	0.00	0.01	0.01	0.00	0.01	0.95	0.86	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.05	0.00	0.05	0.05	0.00	0.05	0.96	0.87	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.91	0.98	1.89	0.98	0.97	1.95	0.92	0.78	0.89	0.95	1.84	-0.05	-0.20	0.00	-0.04	-0.24	0.10	-0.14
8	0.71	0.07	0.78	0.80	0.03	0.83	0.92	0.77	0.72	0.03	0.75	-0.04	-0.19	0.00	-0.04	-0.23	0.08	-0.15
9	0.75	0.35	1.10	0.87	0.29	1.16	0.94	0.79	0.82	0.28	1.09	-0.01	-0.22	0.00	-0.04	-0.26	0.07	-0.19
10	8.41	136.13	144.54	8.63	135.91	144.54	0.97	0.92	8.63	135.91	144.54	0.00	-0.23	0.00	-0.03	-0.26	0.00	-0.25
11	5.80	2.09	7.89	5.93	2.07	8.00	0.97	0.88	5.84	2.06	7.90	0.00	-0.25	0.00	-0.01	-0.26	0.10	-0.16
12	2.97	0.16	3.13	3.04	0.16	3.20	1.00	0.95	2.86	0.16	3.02	-0.11	-0.30	0.00	-0.07	-0.36	0.18	-0.19
13	0.05	0.03	0.07	0.05	0.03	0.07	1.00	0.98	0.05	0.03	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.01	0.00	0.01	0.01	0.00	0.01	1.00	0.98	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	9.93	23.63	33.56	10.51	23.67	34.18	0.97	0.87	10.37	23.22	33.59	0.03	-1.37	0.00	-0.23	-1.59	0.58	-1.02
16	0.69	2.53	3.22	0.82	2.55	3.37	0.94	0.78	0.79	2.44	3.23	0.01	-0.32	0.00	-0.05	-0.37	0.14	-0.23
17	19.32	2.47	21.80	25.41	1.71	27.13	0.94	0.81	19.62	1.65	21.26	-0.53	-14.40	0.00	-0.03	-14.43	5.25	-9.18
18	0.26	0.40	0.66	0.31	0.38	0.69	0.96	0.82	0.30	0.36	0.66	0.00	-0.09	0.00	-0.02	-0.11	0.03	-0.08
19	1.78	2.90	4.67	1.94	2.87	4.81	0.94	0.81	1.89	2.79	4.68	0.01	-0.34	0.00	-0.06	-0.39	0.13	-0.27
20	3.34	1.13	4.47	3.92	0.78	4.70	0.95	0.80	3.73	0.75	4.48	0.01	-0.91	0.00	-0.15	-1.06	0.21	-0.85
21	3.58	1.33	4.91	3.98	1.07	5.05	0.96	0.82	3.85	1.06	4.91	0.00	-0.62	0.00	-0.10	-0.72	0.14	-0.59
22	3.64	3.87	7.52	4.16	3.74	7.89	0.95	0.80	3.96	3.59	7.55	0.03	-0.97	-0.30	-0.21	-1.48	0.34	-1.14
23	5.37	1.00	6.37	5.66	0.81	6.47	0.96	0.88	5.53	0.80	6.33	-0.05	-0.48	-0.01	-0.09	-0.58	0.14	-0.44
24	6.07	0.09	6.16	6.28	0.02	6.30	0.95	0.84	6.15	0.02	6.17	0.01	-0.37	-0.24	-0.10	-0.71	0.13	-0.58
25	9.34	15.27	24.61	10.20	14.99	25.20	0.99	0.95	9.68	14.99	24.68	0.07	-1.47	0.00	-0.24	-1.71	0.50	-1.20
26	0.01	0.00	0.01	0.01	0.00	0.01	1.00	0.98	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	302.63	5.58	308.21	311.33	1.37	312.70	0.99	0.94	308.54	1.37	309.91	1.70	-11.74	0.00	-1.63	-13.37	2.75	-10.62
28	4.15	1.83	5.98	4.16	1.83	5.98	1.00	0.98	4.15	1.83	5.98	0.00	-0.01	0.00	0.00	-0.01	0.00	-0.01
29	6.07	1.13	7.20	6.07	1.13	7.20	1.00	0.98	6.07	1.13	7.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	3.73	34.05	37.79	3.73	34.05	37.79	1.00	1.00	3.73	34.05	37.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	16.05	4.14	20.19	16.05	4.14	20.19	1.00	0.98	16.05	4.14	20.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	4.66	3.24	7.90	5.08	3.02	8.10	0.99	0.91	4.98	2.97	7.95	0.05	-0.64	0.00	-0.10	-0.74	0.14	-0.60

HS2	Q^M $SADC^a$ t=0	Q^M ROW^b t=0	Total Q^M t=0	Q^M $SADC^a$ t=T	Q^M ROW^b t=T	Total Q^M t=T	Avg Price $SADC^a$ t=T	Avg Price ROW^a t=T	Q^M *P $SADC^a$ t=T	Q^M *P ROW^b t=T	Total Q^M*P t=T	Δ Q^M *P	Δ Tariff Rev.	Δ Excise Rev.	Δ VAT Rev.	Total Impact Rev.	Δ Cons. Surplus	Net Welfare effect
33	10.39	2.83	13.22	11.30	2.14	13.44	0.97	0.85	11.23	2.07	13.30	0.08	-1.15	-0.07	-0.19	-1.41	0.14	-1.27
34	9.77	3.32	13.09	10.71	2.69	13.40	0.98	0.86	10.55	2.65	13.20	0.11	-1.27	0.00	-0.20	-1.47	0.19	-1.27
35	0.94	0.26	1.20	1.03	0.21	1.24	0.99	0.89	1.01	0.20	1.21	0.01	-0.13	0.00	-0.02	-0.16	0.03	-0.13
36	0.42	0.37	0.79	0.46	0.38	0.84	0.96	0.83	0.45	0.36	0.81	0.02	-0.08	0.00	-0.01	-0.08	0.03	-0.06
37	0.97	0.22	1.18	1.03	0.19	1.22	0.96	0.83	1.00	0.19	1.20	0.01	-0.09	0.00	-0.01	-0.10	0.02	-0.08
38	16.66	6.12	22.78	16.71	6.08	22.79	0.99	0.93	16.70	6.08	22.78	0.00	-0.05	0.00	-0.01	-0.06	0.01	-0.05
39	24.95	11.16	36.12	27.55	10.14	37.69	0.99	0.91	26.58	10.02	36.60	0.48	-3.98	0.00	-0.59	-4.57	1.04	-3.53
40	11.01	42.09	53.10	12.71	41.39	54.09	0.98	0.90	12.31	41.12	53.43	0.33	-2.65	0.00	-0.39	-3.05	0.64	-2.41
41	0.02	0.04	0.05	0.02	0.04	0.05	0.98	0.92	0.02	0.04	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	0.30	1.63	1.94	0.36	1.73	2.09	0.96	0.81	0.35	1.66	2.01	0.07	-0.15	0.00	-0.01	-0.16	0.08	-0.08
43	0.00	0.00	0.00	0.00	0.00	0.00	0.95	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44	8.34	3.83	12.17	8.73	3.62	12.35	0.98	0.91	8.61	3.61	12.22	0.05	-0.55	0.00	-0.09	-0.63	0.13	-0.50
45	0.01	0.05	0.06	0.01	0.05	0.06	0.99	0.92	0.01	0.05	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46	0.02	0.02	0.04	0.02	0.02	0.04	0.96	0.80	0.02	0.02	0.04	0.00	-0.01	0.00	0.00	-0.01	0.00	-0.01
47	0.00	0.00	0.00	0.01	0.00	0.01	0.98	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48	32.37	6.68	39.05	34.24	5.68	39.93	0.98	0.89	33.62	5.65	39.27	0.22	-2.70	0.00	-0.42	-3.12	0.64	-2.48
49	22.66	12.61	35.28	23.63	12.18	35.82	0.97	0.91	23.21	12.18	35.40	0.12	-1.53	0.00	-0.24	-1.77	0.40	-1.37
50	0.00	0.01	0.01	0.00	0.01	0.01	0.96	0.80	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51	0.07	0.09	0.16	0.08	0.09	0.17	0.95	0.83	0.07	0.09	0.16	0.00	-0.02	0.00	0.00	-0.03	0.01	-0.01
52	10.86	4.08	14.94	12.30	4.15	16.44	0.95	0.82	11.17	3.98	15.15	0.22	-2.91	0.00	-0.46	-3.37	1.23	-2.14
53	0.02	0.22	0.24	0.03	0.23	0.26	0.98	0.91	0.02	0.22	0.24	0.00	-0.01	0.00	0.00	-0.02	0.01	-0.01
54	1.28	2.85	4.13	1.29	2.96	4.25	0.97	0.86	1.29	2.88	4.16	0.04	-0.11	0.00	-0.01	-0.13	0.08	-0.04
55	0.56	1.10	1.66	0.59	1.14	1.73	0.97	0.85	0.57	1.11	1.68	0.02	-0.08	0.00	-0.01	-0.09	0.05	-0.04
56	0.62	2.05	2.66	0.65	2.02	2.67	0.99	0.94	0.65	2.02	2.67	0.00	-0.04	0.00	-0.01	-0.04	0.00	-0.04
57	0.20	0.23	0.43	0.24	0.21	0.45	0.94	0.79	0.22	0.20	0.43	0.00	-0.07	0.00	-0.01	-0.08	0.02	-0.06
58	0.32	0.40	0.72	0.37	0.40	0.77	0.94	0.78	0.35	0.38	0.73	0.01	-0.10	0.00	-0.02	-0.12	0.04	-0.08
59	1.35	1.30	2.64	1.42	1.22	2.64	0.99	0.91	1.42	1.22	2.64	0.00	-0.08	0.00	-0.01	-0.10	0.00	-0.10
60	0.14	0.14	0.28	0.16	0.14	0.30	0.93	0.78	0.15	0.13	0.28	0.00	-0.04	0.00	-0.01	-0.05	0.02	-0.04
61	1.46	1.99	3.44	1.74	2.06	3.80	0.96	0.80	1.67	1.97	3.64	0.20	-0.47	0.00	-0.05	-0.51	0.15	-0.36
62	1.97	2.68	4.65	2.36	2.77	5.12	0.96	0.80	2.26	2.66	4.91	0.26	-0.63	0.00	-0.06	-0.69	0.20	-0.50
63	2.37	16.42	18.78	2.70	17.50	20.20	0.96	0.81	2.60	16.84	19.43	0.65	-1.13	0.00	-0.08	-1.21	0.74	-0.48
64	1.00	5.92	6.91	1.19	6.39	7.58	0.97	0.82	1.14	6.15	7.29	0.38	-0.49	0.00	-0.02	-0.51	0.28	-0.22
65	0.42	0.29	0.71	0.48	0.27	0.75	0.97	0.85	0.46	0.26	0.73	0.02	-0.08	0.00	-0.01	-0.09	0.02	-0.07
66	0.09	0.19	0.28	0.11	0.19	0.30	0.97	0.85	0.11	0.18	0.29	0.01	-0.03	0.00	-0.01	-0.04	0.01	-0.03
67	0.03	0.04	0.08	0.04	0.04	0.08	0.95	0.82	0.04	0.04	0.08	0.00	-0.01	0.00	0.00	-0.01	0.00	-0.01
68	3.58	0.72	4.30	3.79	0.59	4.38	0.99	0.92	3.74	0.59	4.33	0.03	-0.28	0.00	-0.04	-0.32	0.05	-0.27

HS2	Q^M $SADC^a$ *t=0*	Q^M ROW^b *t=0*	*Total* Q^M *t=0*	Q^M $SADC^a$ *t=T*	Q^M ROW^b *t=T*	*Total* Q^M *t=T*	*Avg Price* $SADC^a$ *t=T*	*Avg Price* ROW^a *t=T*	Q^M **P* $SADC^a$ *t=T*	Q^M **P* ROW^b *t=T*	*Total* Q^M**P* *t=T*	*Δ* Q^M **P*	*Δ Tariff Rev.*	*Δ Excise Rev.*	*Δ VAT Rev.*	*Total Impact Rev.*	*Δ Cons. Surplus*	*Net Welfare effect*
69	1.87	5.21	7.08	2.04	5.12	7.17	0.99	0.89	2.03	5.09	7.12	0.04	-0.23	0.00	-0.03	-0.26	0.04	-0.22
70	4.86	3.27	8.13	5.26	3.05	8.30	0.99	0.90	5.22	3.00	8.22	0.09	-0.52	0.00	-0.07	-0.59	0.08	-0.51
71	0.02	0.09	0.11	0.02	0.10	0.12	0.95	0.80	0.02	0.10	0.12	0.01	-0.01	0.00	0.00	-0.01	0.01	-0.01
72	31.27	5.99	37.26	32.98	5.18	38.16	0.99	0.93	32.49	5.18	37.67	0.41	-2.29	0.00	-0.32	-2.61	0.47	-2.14
73	34.37	17.70	52.07	36.81	16.12	52.93	0.99	0.90	36.48	16.05	52.53	0.45	-3.00	0.00	-0.43	-3.43	0.39	-3.04
74	0.88	0.19	1.06	0.92	0.15	1.07	0.99	0.92	0.92	0.15	1.07	0.01	-0.05	0.00	-0.01	-0.06	0.01	-0.06
75	0.00	0.00	0.01	0.00	0.00	0.01	0.95	0.83	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
76	3.27	2.06	5.34	3.54	1.93	5.47	0.99	0.91	3.49	1.90	5.40	0.06	-0.36	0.00	-0.05	-0.41	0.07	-0.34
78	0.04	0.02	0.05	0.04	0.02	0.05	0.99	0.93	0.04	0.02	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79	0.26	0.16	0.42	0.28	0.14	0.42	0.99	0.90	0.28	0.14	0.42	0.00	-0.02	0.00	0.00	-0.03	0.00	-0.03
80	0.02	0.00	0.03	0.02	0.00	0.03	0.99	0.91	0.02	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
81	0.01	0.02	0.03	0.01	0.02	0.03	1.00	0.96	0.01	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
82	2.70	3.19	5.89	2.93	3.04	5.97	0.99	0.90	2.91	3.02	5.93	0.04	-0.29	0.00	-0.04	-0.33	0.04	-0.29
83	4.03	2.16	6.19	4.31	1.94	6.25	0.99	0.89	4.29	1.93	6.22	0.03	-0.34	0.00	-0.05	-0.39	0.03	-0.36
84	63.25	70.33	133.58	66.58	67.95	134.54	1.00	0.94	66.40	67.81	134.21	0.63	-3.83	0.00	-0.52	-4.36	0.31	-4.04
85	68.15	98.42	166.57	73.16	95.35	168.51	0.99	0.89	72.81	95.04	167.85	1.28	-5.95	0.00	-0.75	-6.70	0.63	-6.07
86	3.98	0.25	4.24	4.13	0.23	4.36	0.99	0.94	4.07	0.23	4.30	0.07	-0.20	0.00	-0.02	-0.22	0.06	-0.17
87	108.17	62.58	170.75	117.51	56.85	174.35	0.99	0.91	116.26	56.35	172.61	1.86	-11.95	-1.76	-1.51	-15.22	1.67	-13.55
88	0.05	1.88	1.93	0.05	1.88	1.93	1.00	0.94	0.05	1.88	1.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00
89	0.24	6.03	6.27	0.27	6.02	6.29	0.98	0.89	0.26	6.02	6.28	0.01	-0.03	0.00	-0.01	-0.04	0.01	-0.04
90	51.39	16.21	67.60	58.90	15.48	74.38	0.99	0.91	55.76	15.46	71.22	3.63	-10.95	0.00	-1.25	-12.20	2.94	-9.26
91	0.14	0.20	0.34	0.16	0.20	0.36	0.96	0.82	0.15	0.19	0.34	0.01	-0.04	0.00	-0.01	-0.04	0.01	-0.03
92	0.03	0.02	0.05	0.04	0.02	0.06	0.95	0.79	0.04	0.02	0.06	0.00	-0.01	0.00	0.00	-0.01	0.00	-0.01
93	0.07	0.03	0.10	0.08	0.02	0.10	0.94	0.79	0.07	0.02	0.09	0.00	-0.02	0.00	0.00	-0.03	0.01	-0.02
94	10.94	6.28	17.22	13.01	5.26	18.27	0.96	0.81	12.41	5.06	17.47	0.25	-3.24	0.00	-0.51	-3.75	0.77	-2.97
95	0.85	0.86	1.71	0.98	0.81	1.79	0.96	0.82	0.95	0.79	1.73	0.02	-0.21	-0.01	-0.03	-0.25	0.06	-0.19
96	1.29	1.73	3.02	1.51	1.63	3.14	0.96	0.82	1.46	1.58	3.04	0.02	-0.37	0.00	-0.06	-0.43	0.10	-0.33
97	0.01	0.04	0.05	0.01	0.04	0.05	0.97	0.84	0.01	0.03	0.05	0.00	-0.01	0.00	0.00	-0.01	0.00	-0.01
Tot.	1014.66	687.97	1702.63	1081.51	661.41	1742.92	0.98	0.89	1059.37	656.66	1716.03	13.40	-101.50	-2.40	-12.19	-116.08	25.46	-90.62

11.3 SACU (no TDCA) scenario results, aggregated to 2 digits

HS2	Q^M $SADC^a$ *t=0*	Q^M ROW^b *t=0*	*Total* Q^M *t=0*	Q^M $SADC^a$ *t=T*	Q^M ROW^b *t=T*	*Total* Q^M *t=T*	*Aver. Price* $SADC^a$ *t=T*	*Aver. Price* ROW^a *t=T*	Q^M **P* $SADC^a$ *t=T*	Q^M **P* ROW^b *t=T*	*Total* Q^M**P* *t=T*	*Δ* Q^M **P*	*Δ Tariff Rev.*	*Δ Excise Rev.*	*Δ VAT Rev.*	*Total Impact Rev.*	*Δ Cons. Surplus*	*Net Welfare effect*
1	2.72	0.00	2.73	2.72	0.02	2.73	0.94	0.94	2.70	0.02	2.72	-0.01	0.00	0.00	0.00	0.00	0.01	0.01
2	2.25	4.50	6.75	2.72	4.24	6.95	0.92	0.79	2.64	4.07	6.71	-0.04	-0.89	0.00	-0.15	-1.04	0.21	-0.83
3	24.53	0.15	24.68	24.62	0.12	24.74	0.88	0.84	24.58	0.10	24.68	0.00	-0.15	0.00	-0.01	-0.15	0.06	-0.10
4	7.58	2.03	9.61	8.29	1.05	9.34	0.99	0.77	8.47	1.01	9.48	-0.13	-0.77	0.00	-0.16	-0.92	-0.19	-1.12
5	0.01	0.00	0.01	0.01	0.00	0.01	0.91	0.91	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.05	0.00	0.05	0.05	0.00	0.05	0.93	0.90	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.91	0.98	1.89	0.98	0.96	1.93	0.89	0.80	0.88	0.97	1.85	-0.04	-0.18	0.00	-0.03	-0.21	0.08	-0.13
8	0.71	0.07	0.78	0.76	0.10	0.85	0.85	0.80	0.65	0.08	0.73	-0.06	-0.19	0.00	-0.04	-0.24	0.12	-0.11
9	0.75	0.35	1.10	0.78	0.49	1.27	0.84	0.82	0.66	0.40	1.06	-0.04	-0.27	0.00	-0.05	-0.32	0.20	-0.13
10	8.41	136.13	144.54	8.70	138.25	146.95	0.96	0.95	8.77	131.99	140.77	-3.78	-6.85	0.00	-0.01	-6.87	6.10	-0.76
11	5.80	2.09	7.89	5.84	2.31	8.15	0.94	0.89	5.67	2.22	7.89	0.00	-0.32	0.00	-0.02	-0.34	0.25	-0.09
12	2.97	0.16	3.13	3.04	0.17	3.20	1.01	0.95	2.85	0.16	3.01	-0.12	-0.30	0.00	-0.07	-0.37	0.19	-0.18
13	0.05	0.03	0.07	0.05	0.03	0.07	1.02	0.98	0.05	0.03	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.01	0.00	0.01	0.01	0.00	0.01	0.98	0.98	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	9.93	23.63	33.56	10.61	23.51	34.12	0.95	0.88	10.65	22.64	33.29	-0.27	-1.89	0.00	-0.33	-2.22	0.67	-1.56
16	0.69	2.53	3.22	0.78	2.86	3.64	0.90	0.81	0.71	2.50	3.21	-0.01	-0.58	0.00	-0.10	-0.68	0.40	-0.28
17	19.32	2.47	21.80	24.14	3.78	27.93	0.90	0.85	17.78	3.11	20.89	-0.91	-14.03	0.00	-0.02	-14.05	6.19	-7.86
18	0.26	0.40	0.66	0.30	0.40	0.70	0.91	0.82	0.29	0.37	0.66	0.00	-0.10	0.00	-0.02	-0.12	0.04	-0.08
19	1.78	2.90	4.67	2.10	2.33	4.42	0.98	0.82	2.23	2.32	4.56	-0.11	-0.30	0.04	-0.06	-0.33	-0.16	-0.49
20	3.34	1.13	4.47	3.91	0.79	4.70	0.92	0.79	3.72	0.75	4.47	0.00	-0.93	0.00	-0.16	-1.08	0.22	-0.86
21	3.58	1.33	4.91	3.93	1.10	5.04	0.93	0.82	3.79	1.07	4.86	-0.05	-0.61	0.00	-0.11	-0.72	0.15	-0.57
22	3.64	3.87	7.52	3.87	5.42	9.29	0.68	0.61	2.62	3.90	6.52	-1.00	-1.04	-2.23	-0.72	-4.00	2.50	-1.50
23	5.37	1.00	6.37	5.38	1.35	6.73	0.92	0.88	4.99	1.18	6.18	-0.20	-0.57	-0.04	-0.14	-0.75	0.54	-0.21
24	6.07	0.09	6.16	5.02	0.01	5.02	0.63	0.52	4.84	0.00	4.84	-1.33	-0.37	-1.02	-0.46	-1.86	0.75	-1.11
25	9.34	15.27	24.61	9.39	17.91	27.30	0.97	0.96	8.22	16.56	24.78	0.17	-2.57	0.00	-0.41	-2.98	2.37	-0.61
26	0.01	0.00	0.01	0.01	0.00	0.01	1.00	1.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	302.63	5.58	308.21	308.01	9.76	317.78	0.98	0.95	302.04	9.50	311.54	3.32	-11.61	0.21	-1.27	-12.67	6.11	-6.56
28	4.15	1.83	5.98	4.31	1.09	5.40	1.00	0.98	4.48	1.15	5.63	-0.35	0.05	0.00	0.00	0.05	-0.29	-0.25
29	6.07	1.13	7.20	6.05	1.10	7.15	0.98	0.97	6.04	1.09	7.14	-0.06	0.00	0.03	-0.01	0.02	0.02	0.04
30	3.73	34.05	37.79	3.76	33.90	37.66	1.00	1.00	3.78	33.94	37.72	-0.06	0.04	0.00	0.00	0.04	-0.07	-0.03
31	16.05	4.14	20.19	15.88	4.75	20.63	0.99	0.99	15.71	4.64	20.35	0.17	-0.10	0.00	0.00	-0.10	0.27	0.17
32	4.66	3.24	7.90	4.72	4.13	8.84	0.95	0.92	4.30	3.76	8.06	0.16	-0.85	0.00	-0.12	-0.96	0.73	-0.24

HS2	*Q^M SADC[a] t=0*	*Q^M ROW[b] t=0*	*Total Q^M t=0*	*Q^M SADC[a] t=T*	*Q^M ROW[b] t=T*	*Total Q^M t=T*	*Aver. Price SADC[a] t=T*	*Aver. Price ROW[a] t=T*	*Q^M *P SADC[a] t=T*	*Q^M *P ROW[b] t=T*	*Total Q^M*P t=T*	*Δ Q^M *P*	*Δ Tariff Rev.*	*Δ Excise Rev.*	*Δ VAT Rev.*	*Total Impact Rev.*	*Δ Cons. Surplus*	*Net Welfare effect*
33	10.39	2.83	13.22	10.65	4.60	15.26	0.83	0.75	9.75	3.90	13.65	0.43	-1.20	-0.67	-0.24	-2.11	1.45	-0.66
34	9.77	3.32	13.09	11.11	1.45	12.56	0.97	0.85	11.37	1.44	12.81	-0.28	-1.36	0.00	-0.28	-1.64	-0.29	-1.93
35	0.94	0.26	1.20	0.91	0.51	1.42	0.91	0.91	0.80	0.43	1.23	0.03	-0.16	0.00	-0.02	-0.18	0.17	-0.01
36	0.42	0.37	0.79	0.45	0.43	0.88	0.89	0.86	0.43	0.39	0.82	0.03	-0.10	0.00	-0.01	-0.11	0.06	-0.05
37	0.97	0.22	1.18	1.01	0.26	1.27	0.90	0.87	0.97	0.23	1.21	0.02	-0.10	0.00	-0.01	-0.12	0.06	-0.06
38	16.66	6.12	22.78	16.56	6.56	23.12	0.97	0.95	16.41	6.45	22.86	0.08	-0.16	0.01	-0.01	-0.16	0.25	0.10
39	24.95	11.16	36.12	27.72	9.38	37.10	0.99	0.92	26.98	9.26	36.24	0.13	-4.00	0.00	-0.64	-4.64	0.73	-3.90
40	11.01	42.09	53.10	13.09	29.60	42.69	0.99	0.90	13.08	33.83	46.92	-6.18	1.99	0.00	-0.49	1.50	-5.37	-3.87
41	0.02	0.04	0.05	0.02	0.04	0.05	0.97	0.94	0.02	0.04	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	0.30	1.63	1.94	0.38	1.42	1.80	1.01	0.81	0.39	1.47	1.86	-0.07	-0.08	0.00	-0.02	-0.10	-0.06	-0.17
43	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44	8.34	3.83	12.17	8.67	3.81	12.48	0.99	0.91	8.51	3.71	12.22	0.05	-0.64	0.00	-0.10	-0.74	0.24	-0.49
45	0.01	0.05	0.06	0.01	0.05	0.06	0.95	0.95	0.01	0.05	0.06	0.00	0.00	0.00	0.00	-0.01	0.00	0.00
46	0.02	0.02	0.04	0.02	0.02	0.04	0.94	0.80	0.02	0.02	0.04	0.00	-0.01	0.00	0.00	-0.01	0.00	-0.01
47	0.00	0.00	0.00	0.01	0.00	0.01	0.95	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48	32.37	6.68	39.05	34.41	4.91	39.32	0.96	0.89	34.04	4.88	38.92	-0.13	-2.66	0.00	-0.47	-3.12	0.30	-2.82
49	22.66	12.61	35.28	23.07	13.46	36.52	0.95	0.92	22.20	13.26	35.45	0.18	-1.48	0.00	-0.22	-1.70	0.98	-0.72
50	0.00	0.01	0.01	0.00	0.01	0.01	0.80	0.80	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51	0.07	0.09	0.16	0.08	0.09	0.17	0.95	0.85	0.07	0.09	0.16	0.00	-0.02	0.00	0.00	-0.03	0.01	-0.02
52	10.86	4.08	14.94	12.32	4.02	16.34	0.97	0.82	11.21	3.92	15.13	0.20	-2.92	0.00	-0.45	-3.37	1.14	-2.23
53	0.02	0.22	0.24	0.03	0.25	0.27	0.95	0.94	0.02	0.22	0.24	0.00	-0.04	0.00	-0.01	-0.05	0.03	-0.01
54	1.28	2.85	4.13	1.35	2.76	4.11	0.99	0.85	1.41	2.71	4.11	-0.02	-0.14	0.00	-0.01	-0.15	-0.01	-0.16
55	0.56	1.10	1.66	0.58	1.15	1.73	0.98	0.85	0.56	1.12	1.68	0.02	-0.09	0.00	-0.01	-0.09	0.05	-0.05
56	0.62	2.05	2.66	0.70	1.51	2.21	1.06	0.92	0.75	1.70	2.45	-0.22	0.15	0.00	-0.01	0.14	-0.27	-0.13
57	0.20	0.23	0.43	0.24	0.19	0.43	0.98	0.77	0.23	0.19	0.43	0.00	-0.06	0.00	-0.01	-0.07	0.00	-0.07
58	0.32	0.40	0.72	0.37	0.38	0.76	0.94	0.80	0.35	0.38	0.73	0.01	-0.10	0.00	-0.02	-0.12	0.03	-0.09
59	1.35	1.30	2.64	1.50	0.96	2.46	1.01	0.89	1.58	1.01	2.59	-0.06	-0.05	0.00	-0.02	-0.07	-0.13	-0.20
60	0.14	0.14	0.28	0.16	0.14	0.30	0.94	0.77	0.15	0.13	0.28	0.00	-0.04	0.00	-0.01	-0.05	0.01	-0.04
61	1.46	1.99	3.44	1.92	0.79	2.71	1.05	0.76	2.03	0.88	2.91	-0.54	-0.55	0.00	-0.18	-0.73	-0.25	-0.98
62	1.97	2.68	4.65	2.59	1.13	3.71	1.06	0.77	2.73	1.24	3.98	-0.67	-0.73	0.00	-0.23	-0.96	-0.32	-1.28
63	2.37	16.42	18.78	2.82	13.05	15.87	1.01	0.80	2.85	14.17	17.02	-1.76	0.11	0.00	-0.21	-0.10	-1.30	-1.40
64	1.00	5.92	6.91	1.27	5.14	6.41	1.02	0.81	1.30	5.28	6.58	-0.33	-0.35	0.00	-0.09	-0.44	-0.19	-0.63
65	0.42	0.29	0.71	0.51	0.15	0.66	1.01	0.84	0.53	0.15	0.68	-0.03	-0.09	0.00	-0.02	-0.11	-0.03	-0.13
66	0.09	0.19	0.28	0.12	0.14	0.27	1.03	0.82	0.13	0.15	0.28	-0.01	-0.03	0.00	-0.01	-0.04	-0.01	-0.05
67	0.03	0.04	0.08	0.04	0.06	0.10	0.89	0.76	0.03	0.05	0.08	0.00	-0.01	-0.02	0.00	-0.03	0.02	-0.02

HS2	Q^M *SADC^a t=0*	Q^M *ROW^b t=0*	*Total Q^M t=0*	Q^M *SADC^a t=T*	Q^M *ROW^b t=T*	*Total Q^M t=T*	*Aver. Price SADC^a t=T*	*Aver. Price ROW^a t=T*	Q^M **P SADC^a t=T*	Q^M **P ROW^b t=T*	*Total Q^M*P t=T*	*Δ Q^M *P*	*Δ Tariff Rev.*	*Δ Excise Rev.*	*Δ VAT Rev.*	*Total Impact Rev.*	*Δ Cons. Surplus*	*Net Welfare effect*
68	3.58	0.72	4.30	3.68	0.93	4.60	0.97	0.92	3.52	0.87	4.39	0.09	-0.32	0.00	-0.04	-0.35	0.20	-0.15
69	1.87	5.21	7.08	2.15	3.91	6.05	0.98	0.90	2.26	4.09	6.35	-0.73	-0.11	0.00	-0.13	-0.24	-0.38	-0.62
70	4.86	3.27	8.13	5.22	3.37	8.59	0.96	0.90	5.16	3.15	8.31	0.18	-0.66	0.00	-0.08	-0.73	0.24	-0.49
71	0.02	0.09	0.11	0.03	0.15	0.17	0.74	0.67	0.02	0.11	0.13	0.02	-0.01	-0.04	-0.01	-0.06	0.04	-0.02
72	31.27	5.99	37.26	32.48	6.62	39.11	0.98	0.95	31.57	6.46	38.03	0.77	-2.29	0.00	-0.25	-2.54	1.00	-1.54
73	34.37	17.70	52.07	36.47	17.68	54.15	0.97	0.91	35.85	17.21	53.06	0.99	-3.37	0.00	-0.39	-3.76	1.01	-2.75
74	0.88	0.19	1.06	0.90	0.23	1.13	0.98	0.92	0.87	0.23	1.09	0.03	-0.05	0.00	0.00	-0.06	0.03	-0.02
75	0.00	0.00	0.01	0.00	0.01	0.01	0.90	0.90	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
76	3.27	2.06	5.34	3.51	2.00	5.51	0.97	0.92	3.43	1.97	5.40	0.07	-0.37	0.00	-0.05	-0.42	0.10	-0.32
78	0.04	0.02	0.05	0.04	0.02	0.06	0.93	0.93	0.04	0.02	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79	0.26	0.16	0.42	0.26	0.22	0.48	0.93	0.93	0.24	0.20	0.44	0.03	-0.03	0.00	0.00	-0.03	0.03	0.00
80	0.02	0.00	0.03	0.02	0.00	0.03	0.92	0.92	0.02	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
81	0.01	0.02	0.03	0.01	0.02	0.03	0.98	0.98	0.01	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
82	2.70	3.19	5.89	2.88	3.08	5.97	0.97	0.90	2.84	3.02	5.86	-0.04	-0.33	0.00	-0.04	-0.37	0.07	-0.29
83	4.03	2.16	6.19	4.38	1.43	5.81	1.01	0.89	4.44	1.49	5.93	-0.26	-0.30	0.00	-0.09	-0.39	-0.16	-0.54
84	63.25	70.33	133.58	63.92	88.01	151.92	0.96	0.95	61.28	83.26	144.54	10.96	-7.44	0.39	0.54	-6.51	6.68	0.17
85	68.15	98.42	166.57	70.02	111.05	181.06	0.94	0.90	67.09	105.42	172.50	5.94	-9.91	1.73	-0.24	-8.42	7.19	-1.23
86	3.98	0.25	4.24	4.11	0.32	4.43	0.97	0.97	4.03	0.31	4.34	0.10	-0.21	0.00	-0.02	-0.23	0.09	-0.14
87	108.17	62.58	170.75	118.80	32.14	150.94	0.94	0.85	106.42	29.53	135.94	-34.81	-14.23	0.47	-4.60	-18.36	14.87	-3.49
88	0.05	1.88	1.93	0.05	2.28	2.33	0.95	0.95	0.05	2.12	2.17	0.24	-0.14	0.00	0.02	-0.13	0.15	0.02
89	0.24	6.03	6.27	0.26	6.85	7.11	0.89	0.86	0.22	6.47	6.70	0.43	-0.34	-0.06	0.01	-0.39	0.38	-0.01
90	51.39	16.21	67.60	54.37	25.18	79.55	0.92	0.92	47.55	23.33	70.87	3.28	-11.80	3.10	-0.95	-9.65	7.96	-1.69
91	0.14	0.20	0.34	0.14	0.30	0.44	0.84	0.84	0.12	0.25	0.36	0.03	-0.08	0.00	-0.01	-0.08	0.07	-0.01
92	0.03	0.02	0.05	0.03	0.04	0.07	0.83	0.83	0.03	0.03	0.06	0.01	-0.01	0.00	0.00	-0.01	0.01	0.00
93	0.07	0.03	0.10	0.07	0.04	0.11	0.83	0.74	0.06	0.03	0.09	-0.01	-0.02	-0.01	-0.01	-0.04	0.02	-0.02
94	10.94	6.28	17.22	12.73	5.98	18.70	0.93	0.81	11.91	5.59	17.50	0.28	-3.38	0.00	-0.51	-3.89	1.13	-2.76
95	0.85	0.86	1.71	0.86	1.26	2.12	0.78	0.77	0.71	1.03	1.74	0.04	-0.32	-0.05	-0.06	-0.44	0.33	-0.10
96	1.29	1.73	3.02	1.46	1.75	3.20	0.91	0.83	1.36	1.66	3.02	0.00	-0.40	0.00	-0.06	-0.46	0.16	-0.30
97	0.01	0.04	0.05	0.01	0.06	0.07	0.58	0.58	0.01	0.03	0.04	-0.01	-0.01	-0.04	-0.01	-0.06	0.03	-0.03
Total	1014.66	687.97	1702.63	1064.22	685.20	1749.43	0.95	0.88	1016.18	660.18	1676.36	-26.27	-116.44	1.80	-15.22	-129.86	65.99	-63.87

11.4 SACU (with TDCA) scenario results, aggregated to 2 digits

HS2	Q^M *SADC^a t=0*	Q^M *EU t=0*	Q^M *ROW^b t=0*	*Total Q^M t=0*	Q^M *SADC^a t=T*	Q^M *EU t=T*	Q^M *ROW^b t=T*	*Total Q^M t=T*	*Avg Price SADC^a t=T*	*Avg Price EU t=T*	*Avg Price ROW^a t=T*	Q^M **P SADC^a t=T*	Q^M **P EU^b t=T*	Q^M **P ROW^b t=T*	*Total Q^M*P t=T*	*Δ Q^M *P*	*Δ Tariff Rev.*	*Δ Excise Rev.*	*Δ VAT Rev.*	*Total Impact Rev.*	*Cons surp*	*Net welf. effect*	*Change in Cons Surplus*	*Net Welfare effect*
1	2.72	0.00	0.00	2.73	2.72	0.00	0.01	2.73	0.94	0.94	0.94	2.70	0.00	0.01	2.72	-0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
2	2.25	0.55	3.96	6.75	2.53	4.00	1.25	7.79	0.91	0.79	0.79	2.31	3.26	1.12	6.68	-1.11	-1.54	0.00	-0.27	-1.81	1.00	-0.81	1.00	-0.81
3	24.53	0.03	0.12	24.68	24.62	0.04	0.09	24.74	0.87	0.87	0.83	24.58	0.03	0.07	24.68	-0.06	-0.15	0.00	-0.09	-0.24	0.06	-0.18	0.06	-0.18
4	7.58	0.79	1.24	9.61	8.23	0.72	0.50	9.45	0.96	0.80	0.75	8.34	0.68	0.49	9.51	0.06	-0.77	0.00	0.00	-0.77	-0.10	-0.87	-0.10	-0.87
5	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.91	0.91	0.91	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.05	0.00	0.00	0.05	0.05	0.00	0.00	0.05	0.93	0.93	0.90	0.05	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.91	0.17	0.81	1.89	0.96	0.51	0.50	1.96	0.86	0.85	0.78	0.84	0.47	0.51	1.83	-0.14	-0.21	0.00	-0.04	-0.26	0.13	-0.13	0.13	-0.13
8	0.71	0.04	0.03	0.78	0.75	0.07	0.04	0.86	0.83	0.83	0.78	0.63	0.05	0.04	0.72	-0.14	-0.19	0.00	-0.04	-0.24	0.13	-0.11	0.13	-0.11
9	0.75	0.29	0.06	1.10	0.75	0.43	0.13	1.31	0.83	0.82	0.80	0.60	0.34	0.10	1.05	-0.26	-0.27	0.00	-0.06	-0.33	0.24	-0.09	0.24	-0.09
10	8.41	6.76	129.37	144.54	8.70	6.72	131.53	146.95	0.96	0.96	0.95	8.77	6.67	125.33	140.77	-6.18	-6.85	0.00	-0.01	-6.87	6.10	-0.76	6.10	-0.76
11	5.80	1.80	0.29	7.89	5.79	2.12	0.32	8.24	0.92	0.91	0.88	5.57	2.06	0.26	7.90	-0.34	-0.34	0.00	-0.02	-0.36	0.32	-0.04	0.33	-0.04
12	2.97	0.14	0.02	3.13	3.04	0.16	0.01	3.20	0.99	0.99	0.94	2.84	0.15	0.01	3.01	-0.20	-0.30	0.00	-0.06	-0.36	0.19	-0.17	0.19	-0.17
13	0.05	0.01	0.02	0.07	0.05	0.02	0.01	0.07	0.99	0.99	0.95	0.05	0.02	0.01	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.98	0.98	0.98	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	9.93	1.25	22.38	33.56	10.42	9.84	14.30	34.56	0.92	0.92	0.86	10.33	8.45	14.43	33.21	-1.35	-2.62	0.00	-0.48	-3.11	1.13	-1.98	1.13	-1.98
16	0.69	1.08	1.45	3.22	0.76	2.94	0.04	3.74	0.86	0.82	0.78	0.67	2.48	0.04	3.20	-0.55	-0.69	0.00	-0.12	-0.81	0.50	-0.31	0.50	-0.31
17	19.32	0.12	2.35	21.80	24.14	0.30	3.49	27.93	0.90	0.85	0.85	17.77	0.26	2.86	20.89	-7.04	-14.03	0.00	-0.02	-14.05	6.19	-7.86	6.19	-7.86
18	0.26	0.04	0.36	0.66	0.27	0.50	0.00	0.77	0.84	0.84	0.76	0.23	0.42	0.00	0.65	-0.12	-0.16	0.00	-0.03	-0.19	0.11	-0.08	0.11	-0.08
19	1.78	0.90	2.00	4.67	1.93	2.98	0.07	4.98	0.88	0.85	0.74	1.93	2.51	0.07	4.51	-0.47	-0.71	0.04	-0.14	-0.82	0.40	-0.42	0.40	-0.42
20	3.34	0.53	0.60	4.47	3.39	1.89	0.06	5.33	0.84	0.83	0.72	2.79	1.54	0.05	4.38	-0.95	-1.05	0.00	-0.19	-1.24	0.87	-0.37	0.87	-0.38
21	3.58	0.44	0.89	4.91	3.67	1.43	0.33	5.43	0.86	0.85	0.76	3.30	1.23	0.35	4.87	-0.56	-0.68	0.00	-0.12	-0.81	0.52	-0.29	0.52	-0.29
22	3.64	3.75	0.12	7.52	3.68	6.19	0.01	9.88	0.63	0.62	0.57	2.36	3.87	0.01	6.23	-3.65	-1.62	-2.24	-0.88	-4.74	3.19	-1.55	3.19	-1.55
23	5.37	0.01	0.99	6.37	5.36	0.24	1.14	6.74	0.91	0.91	0.87	4.97	0.19	1.01	6.17	-0.58	-0.58	-0.04	-0.14	-0.76	0.55	-0.21	0.55	-0.21
24	6.07	0.02	0.07	6.16	5.02	0.01	0.00	5.03	0.63	0.63	0.52	4.84	0.01	0.00	4.84	-0.19	-0.37	-1.02	-0.46	-1.86	0.75	-1.11	0.75	-1.11
25	9.34	1.08	14.19	24.61	9.36	1.27	15.95	26.58	0.97	0.97	0.96	8.78	1.18	14.85	24.81	-1.77	-2.58	0.00	-0.40	-2.98	1.70	-1.28	1.70	-1.28
26	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01	1.00	1.00	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	302.63	0.44	5.15	308.21	307.75	4.62	5.81	318.19	0.97	0.97	0.95	301.54	4.48	5.66	311.67	-6.51	-11.65	0.20	0.62	-10.83	6.37	-4.46	6.37	-4.46
28	4.15	0.44	1.39	5.98	4.15	1.34	0.50	6.00	0.99	0.99	0.98	4.15	1.34	0.49	5.98	-0.01	-0.02	0.00	0.00	-0.03	0.01	-0.01	0.01	-0.01
29	6.07	0.87	0.26	7.20	6.04	0.90	0.24	7.18	0.98	0.97	0.97	6.02	0.89	0.24	7.15	-0.03	-0.01	0.03	-0.01	0.02	0.03	0.05	0.08	0.09
30	3.73	19.59	14.47	37.79	3.73	19.91	14.14	37.79	1.00	1.00	1.00	3.73	19.91	14.14	37.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	16.05	2.63	1.51	20.19	15.88	2.81	1.95	20.63	0.99	0.99	0.99	15.71	2.74	1.90	20.35	-0.28	-0.10	0.00	0.00	-0.10	0.27	0.17	0.19	0.08
32	4.66	1.55	1.69	7.90	4.57	3.70	0.89	9.16	0.93	0.93	0.91	4.06	3.18	0.83	8.07	-1.09	-0.99	0.00	-0.14	-1.14	0.99	-0.14	0.89	-0.25

HS2	Q^M *SADC[a] t=0*	Q^M *EU t=0*	Q^M *ROW[b] t=0*	*Total* Q^M *t=0*	Q^M *SADC[a] t=T*	Q^M *EU t=T*	Q^M *ROW[b] t=T*	*Total* Q^M *t=T*	*Avg Price SADC[a] t=T*	*Avg Price EU t=T*	*Avg Price ROW[a] t=T*	Q^M **P SADC[a] t=T*	Q^M **P EU[b] t=T*	Q^M **P ROW[b] t=T*	*Total* Q^M**P t=T*	*Δ* Q^M **P*	*Δ Tariff Rev.*	*Δ Excise Rev.*	*Δ VAT Rev.*	*Total Impact Rev.*	*Cons surp*	*Net welf. effect*	*Change in Cons Surplus*	*Net Welfare effect*
33	10.39	0.71	2.12	13.22	10.57	3.33	1.60	15.49	0.80	0.76	0.72	9.62	2.56	1.48	13.65	-1.84	-1.33	-0.67	-0.27	-2.27	1.64	-0.63	1.11	-1.16
34	9.77	0.25	3.08	13.09	10.91	2.08	0.05	13.03	0.93	0.88	0.82	10.96	2.02	0.04	13.02	-0.01	-1.47	0.00	-0.26	-1.73	-0.01	-1.74	-0.10	-1.82
35	0.94	0.03	0.23	1.20	0.91	0.07	0.44	1.42	0.91	0.91	0.90	0.80	0.06	0.37	1.23	-0.19	-0.16	0.00	-0.02	-0.18	0.17	-0.01	0.15	-0.03
36	0.42	0.02	0.35	0.79	0.45	0.45	0.01	0.90	0.88	0.88	0.85	0.42	0.40	0.00	0.82	-0.08	-0.15	0.00	-0.02	-0.17	0.07	-0.09	0.11	-0.06
37	0.97	0.12	0.10	1.18	0.99	0.23	0.09	1.30	0.89	0.89	0.85	0.94	0.20	0.08	1.22	-0.08	-0.11	0.00	-0.01	-0.12	0.08	-0.04	0.10	-0.02
38	16.66	2.69	3.43	22.78	16.38	3.48	3.60	23.46	0.95	0.95	0.94	16.07	3.38	3.52	22.97	-0.49	-0.20	0.01	-0.01	-0.19	0.48	0.29	0.74	0.55
39	24.95	5.62	5.55	36.12	26.38	13.73	0.31	40.42	0.95	0.93	0.88	24.44	12.44	0.30	37.18	-3.24	-4.79	0.00	-0.64	-5.43	2.97	-2.46	3.38	-2.05
40	11.01	34.22	7.87	53.10	12.18	41.02	2.28	55.48	0.95	0.92	0.87	11.36	40.31	1.99	53.66	-1.81	-3.34	0.00	-0.46	-3.79	1.65	-2.14	1.34	-2.46
41	0.02	0.04	0.00	0.05	0.02	0.04	0.00	0.06	0.96	0.94	0.93	0.02	0.04	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	0.30	0.13	1.50	1.94	0.32	2.26	0.01	2.58	0.87	0.87	0.69	0.27	1.87	0.01	2.15	-0.43	-0.48	0.00	-0.05	-0.52	0.38	-0.15	0.37	-0.15
43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77	0.77	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44	8.34	0.47	3.36	12.17	8.38	1.30	3.31	12.99	0.95	0.95	0.88	7.93	1.19	3.22	12.34	-0.64	-0.68	0.00	-0.09	-0.77	0.61	-0.15	0.55	-0.22
45	0.01	0.05	0.00	0.06	0.01	0.05	0.00	0.06	0.95	0.95	0.95	0.01	0.05	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46	0.02	0.00	0.02	0.04	0.02	0.02	0.00	0.04	0.86	0.85	0.73	0.02	0.02	0.00	0.04	-0.01	-0.01	0.00	0.00	-0.01	0.01	0.00	0.01	-0.01
47	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.95	0.95	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
48	32.37	1.90	4.79	39.05	32.92	7.34	1.55	41.81	0.92	0.91	0.86	31.14	6.81	1.57	39.53	-2.29	-2.89	0.00	-0.41	-3.30	2.13	-1.17	3.39	0.09
49	22.66	8.62	4.00	35.28	22.66	10.73	3.66	37.04	0.93	0.93	0.90	21.46	10.38	3.65	35.50	-1.55	-1.55	0.00	-0.22	-1.77	1.40	-0.37	1.57	-0.21
50	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.80	0.80	0.80	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51	0.07	0.00	0.09	0.16	0.08	0.00	0.09	0.17	0.95	0.95	0.85	0.07	0.00	0.09	0.16	-0.01	-0.02	0.00	0.00	-0.02	0.01	-0.02	0.01	-0.01
52	10.86	0.01	4.07	14.94	12.29	0.99	3.12	16.40	0.95	0.94	0.80	11.16	0.94	3.04	15.14	-1.26	-3.10	0.00	-0.48	-3.58	1.19	-2.39	0.95	-2.63
53	0.02	0.01	0.21	0.24	0.03	0.01	0.24	0.27	0.95	0.95	0.94	0.02	0.01	0.21	0.24	-0.03	-0.04	0.00	-0.01	-0.04	0.03	-0.01	0.02	-0.03
54	1.28	0.04	2.81	4.13	1.21	0.49	2.64	4.34	0.98	0.97	0.84	1.14	0.47	2.59	4.19	-0.16	-0.16	0.00	-0.01	-0.16	0.15	-0.01	0.25	0.09
55	0.56	0.00	1.10	1.66	0.58	0.06	1.10	1.73	0.96	0.96	0.83	0.56	0.05	1.07	1.68	-0.05	-0.10	0.00	-0.01	-0.11	0.05	-0.06	0.06	-0.04
56	0.62	0.72	1.33	2.66	0.63	1.98	0.14	2.75	0.97	0.95	0.84	0.61	1.92	0.15	2.69	-0.07	-0.09	0.00	-0.01	-0.10	0.06	-0.03	0.05	-0.05
57	0.20	0.05	0.18	0.43	0.21	0.24	0.04	0.48	0.87	0.87	0.68	0.17	0.21	0.04	0.42	-0.06	-0.10	0.00	-0.02	-0.11	0.06	-0.06	0.06	-0.05
58	0.32	0.02	0.39	0.72	0.37	0.12	0.28	0.77	0.89	0.87	0.75	0.34	0.11	0.28	0.73	-0.04	-0.12	0.00	-0.02	-0.14	0.04	-0.10	0.05	-0.09
59	1.35	0.04	1.26	2.64	1.41	0.99	0.26	2.66	0.99	0.98	0.87	1.41	0.96	0.26	2.64	-0.02	-0.14	0.00	-0.02	-0.17	0.02	-0.15	0.04	-0.12
60	0.14	0.01	0.14	0.28	0.15	0.02	0.13	0.31	0.91	0.83	0.75	0.13	0.02	0.13	0.28	-0.03	-0.04	0.00	-0.01	-0.05	0.02	-0.03	0.02	-0.03
61	1.46	0.18	1.81	3.44	1.59	2.82	0.11	4.52	0.93	0.92	0.67	1.40	2.35	0.12	3.88	-0.65	-0.80	0.00	-0.06	-0.86	0.54	-0.32	0.46	-0.40
62	1.97	0.42	2.26	4.65	2.10	4.23	0.10	6.43	0.91	0.90	0.66	1.80	3.47	0.11	5.38	-1.05	-1.12	0.00	-0.06	-1.18	0.88	-0.30	0.71	-0.47
63	2.37	4.40	12.02	18.78	2.44	22.33	0.54	25.31	0.89	0.87	0.70	2.14	18.12	0.53	20.80	-4.52	-4.26	0.00	-0.38	-4.64	3.89	-0.75	3.87	-0.77
64	1.00	0.75	5.17	6.91	1.06	7.94	0.18	9.19	0.87	0.85	0.69	0.92	6.73	0.18	7.83	-1.36	-1.63	0.00	-0.12	-1.75	1.13	-0.61	1.17	-0.58
65	0.42	0.02	0.28	0.71	0.43	0.43	0.00	0.86	0.96	0.96	0.79	0.39	0.37	0.00	0.76	-0.10	-0.12	0.00	-0.01	-0.13	0.09	-0.04	0.06	-0.07
66	0.09	0.00	0.18	0.28	0.11	0.13	0.06	0.30	0.94	0.94	0.75	0.10	0.12	0.06	0.28	-0.02	-0.05	0.00	-0.01	-0.06	0.01	-0.05	0.00	-0.06
67	0.03	0.00	0.04	0.08	0.04	0.05	0.02	0.11	0.86	0.86	0.73	0.03	0.03	0.02	0.08	-0.03	-0.02	-0.02	-0.01	-0.04	0.02	-0.02	0.02	-0.02
68	3.58	0.36	0.37	4.30	3.62	0.64	0.47	4.72	0.94	0.94	0.90	3.40	0.59	0.44	4.43	-0.29	-0.32	0.00	-0.03	-0.35	0.27	-0.08	0.24	-0.11

HS2	*Q^M SADC[a] t=0*	*Q^M EU t=0*	*Q^M ROW[b] t=0*	*Total Q^M t=0*	*Q^M SADC[a] t=T*	*Q^M EU t=T*	*Q^M ROW[b] t=T*	*Total Q^M t=T*	*Avg Price SADC[a] t=T*	*Avg Price EU t=T*	*Avg Price ROW[a] t=T*	*Q^M *P SADC[a] t=T*	*Q^M *P EU[b] t=T*	*Q^M *P ROW[b] t=T*	*Total Q^M*P t=T*	*Δ Q^M *P*	*Δ Tariff Rev.*	*Δ Excise Rev.*	*Δ VAT Rev.*	*Total Impact Rev.*	*Cons surp*	*Net welf. effect*	*Change in Cons Surplus*	*Net Welfare effect*
69	1.87	2.13	3.08	7.08	1.88	5.78	0.72	8.38	0.91	0.91	0.85	1.73	5.28	0.67	7.67	-0.71	-0.69	0.00	-0.02	-0.71	0.64	-0.07	0.58	-0.13
70	4.86	0.67	2.60	8.13	4.92	4.40	0.30	9.62	0.93	0.93	0.87	4.59	3.89	0.29	8.77	-0.85	-0.86	0.00	-0.04	-0.90	0.75	-0.14	0.64	-0.25
71	0.02	0.07	0.02	0.11	0.02	0.14	0.01	0.18	0.71	0.70	0.65	0.02	0.10	0.01	0.13	-0.05	-0.02	-0.04	-0.01	-0.06	0.04	-0.02	0.04	-0.03
72	31.27	2.90	3.09	37.26	31.79	8.10	0.32	40.21	0.97	0.97	0.94	30.58	7.70	0.31	38.59	-1.62	-2.56	0.00	-0.21	-2.77	1.55	-1.22	1.49	-1.29
73	34.37	5.02	12.68	52.07	35.06	19.97	3.47	58.50	0.94	0.93	0.88	33.15	18.78	3.24	55.18	-3.33	-4.16	0.00	-0.18	-4.34	3.09	-1.25	3.32	-1.02
74	0.88	0.10	0.08	1.06	0.88	0.22	0.08	1.18	0.96	0.95	0.91	0.83	0.20	0.08	1.11	-0.06	-0.06	0.00	0.00	-0.06	0.06	0.00	0.04	-0.02
75	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.90	0.90	0.90	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
76	3.27	1.43	0.64	5.34	3.38	2.58	0.04	5.99	0.94	0.93	0.89	3.18	2.39	0.03	5.61	-0.38	-0.48	0.00	-0.03	-0.52	0.36	-0.16	0.41	-0.11
78	0.04	0.01	0.00	0.05	0.04	0.02	0.00	0.06	0.93	0.93	0.93	0.04	0.02	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
79	0.26	0.04	0.12	0.42	0.26	0.05	0.17	0.48	0.93	0.93	0.93	0.24	0.05	0.16	0.44	-0.03	-0.03	0.00	0.00	-0.03	0.03	0.00	0.03	0.00
80	0.02	0.00	0.00	0.03	0.02	0.00	0.00	0.03	0.92	0.92	0.92	0.02	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
81	0.01	0.00	0.02	0.03	0.01	0.00	0.02	0.03	0.98	0.98	0.98	0.01	0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
82	2.70	1.25	1.95	5.89	2.74	3.17	0.72	6.63	0.91	0.91	0.85	2.55	2.98	0.66	6.18	-0.44	-0.53	0.00	-0.01	-0.55	0.38	-0.16	0.46	-0.09
83	4.03	0.88	1.28	6.19	4.05	2.90	0.09	7.04	0.91	0.90	0.81	3.78	2.70	0.07	6.54	-0.49	-0.49	0.00	-0.02	-0.52	0.46	-0.06	0.43	-0.09
84	63.25	48.63	21.70	133.58	62.88	72.16	22.86	157.90	0.95	0.95	0.94	59.29	67.50	21.47	148.26	-9.64	-8.14	0.39	1.04	-6.72	8.73	2.01	8.54	1.83
85	68.15	69.53	28.90	166.57	67.55	107.41	24.14	199.10	0.91	0.91	0.87	62.25	100.11	22.13	184.49	-14.61	-12.35	1.77	1.20	-9.38	12.97	3.59	13.49	4.11
86	3.98	0.04	0.22	4.24	4.11	0.05	0.28	4.43	0.97	0.97	0.97	4.03	0.04	0.26	4.34	-0.09	-0.21	0.00	-0.02	-0.23	0.09	-0.14	0.08	-0.16
87	108.17	16.60	45.98	170.75	111.83	39.06	19.71	170.60	0.90	0.88	0.82	95.43	29.33	18.70	143.45	-27.15	-15.61	1.46	-3.83	-17.98	24.68	6.69	24.78	6.80
88	0.05	0.66	1.22	1.93	0.05	0.80	1.48	2.33	0.95	0.95	0.95	0.05	0.75	1.37	2.17	-0.16	-0.14	0.00	0.02	-0.13	0.15	0.02	0.18	0.05
89	0.24	1.39	4.64	6.27	0.25	1.58	5.29	7.12	0.88	0.88	0.86	0.22	1.50	4.98	6.70	-0.42	-0.34	-0.06	0.01	-0.39	0.38	-0.01	1.15	0.76
90	51.39	12.49	3.71	67.60	54.36	20.38	5.16	79.90	0.92	0.92	0.91	47.52	18.88	4.68	71.08	-8.82	-11.92	3.10	-0.93	-9.75	8.10	-1.66	9.45	-0.30
91	0.14	0.03	0.16	0.34	0.14	0.06	0.25	0.44	0.84	0.84	0.84	0.12	0.05	0.20	0.36	-0.08	-0.07	0.00	-0.01	-0.08	0.07	-0.01	0.07	-0.01
92	0.03	0.01	0.01	0.05	0.03	0.02	0.02	0.07	0.83	0.83	0.83	0.03	0.02	0.01	0.06	-0.02	-0.01	0.00	0.00	-0.01	0.01	0.00	0.01	0.00
93	0.07	0.03	0.00	0.10	0.07	0.04	0.00	0.11	0.79	0.76	0.70	0.05	0.03	0.00	0.08	-0.03	-0.02	-0.01	-0.01	-0.04	0.03	-0.02	0.03	-0.02
94	10.94	2.89	3.39	17.22	11.68	8.40	0.61	20.68	0.85	0.82	0.74	10.05	7.10	0.49	17.63	-3.05	-3.88	0.00	-0.58	-4.47	2.76	-1.71	2.75	-1.72
95	0.85	0.16	0.70	1.71	0.85	0.32	0.98	2.15	0.78	0.78	0.77	0.70	0.26	0.79	1.75	-0.40	-0.34	-0.05	-0.06	-0.45	0.35	-0.10	0.38	-0.07
96	1.29	0.27	1.46	3.02	1.35	1.82	0.32	3.48	0.88	0.86	0.80	1.17	1.56	0.30	3.03	-0.45	-0.56	0.00	-0.09	-0.65	0.41	-0.24	0.42	-0.23
97	0.01	0.01	0.03	0.05	0.01	0.01	0.05	0.07	0.58	0.58	0.58	0.01	0.01	0.02	0.04	-0.04	-0.01	-0.04	-0.01	-0.06	0.03	-0.03	0.03	-0.03
Total	1014.66	274.43	413.54	1702.63	1039.90	504.67	306.78	1851.40	0.92	0.91	0.86	973.30	457.85	291.40	1722.60	-128.84	-141.40	2.81	-10.65	-149.24	117.86	-31.38	121.10	-28.13

11.5 MFN scenario results, aggregated to 2 digits

HS2	*Q^M SADC[a] t=0*	*Q^M ROW[b] t=0*	*Total Q^M t=0*	*Q^M SADC[a] t=T*	*Q^M ROW[b] t=T*	*Total Q^M t=T*	*Avg Price SADC[a] t=T*	*Avg Price ROW[a] t=T*	*Q^M *P SADC[a] t=T*	*Q^M *P ROW[b] t=T*	*Total Q^M*P t=T*	*Δ QM *P*	*Δ Tariff Rev.*	*Δ Excise Rev.*	*Δ VAT Rev.*	*Total Impact Rev.*	*Δ Cons. Surplus*	*Net Welfare effect*
1	2.72	0.00	2.73	2.72	0.02	2.73	0.94	0.94	2.70	0.02	2.72	0.00	0.00	0.00	0.00	0.00	0.01	0.01
2	2.25	4.50	6.75	2.29	5.97	8.27	0.86	0.86	1.87	4.78	6.65	4.36	-1.69	0.00	-0.30	-1.99	1.46	-0.53
3	24.53	0.15	24.68	24.55	0.18	24.73	0.87	0.87	24.52	0.16	24.68	0.12	-0.08	0.00	-0.01	-0.09	0.05	-0.04
4	7.58	2.03	9.61	7.54	2.85	10.38	0.88	0.88	6.99	2.56	9.55	2.02	-0.81	0.00	-0.15	-0.95	0.77	-0.18
5	0.01	0.00	0.01	0.01	0.00	0.01	0.91	0.91	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.05	0.00	0.05	0.05	0.01	0.05	0.92	0.92	0.04	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.91	0.98	1.89	0.92	1.12	2.04	0.85	0.85	0.78	0.99	1.76	0.85	-0.32	0.00	-0.07	-0.39	0.27	-0.12
8	0.71	0.07	0.78	0.74	0.13	0.86	0.82	0.82	0.62	0.10	0.72	-0.02	-0.20	0.00	-0.05	-0.24	0.14	-0.10
9	0.75	0.35	1.10	0.75	0.56	1.31	0.82	0.82	0.60	0.45	1.05	0.30	-0.28	0.00	-0.06	-0.33	0.24	-0.09
10	8.41	136.13	144.54	8.41	139.03	147.44	0.95	0.95	8.20	131.82	140.02	131.60	-7.72	0.00	-0.05	-7.77	7.34	-0.43
11	5.80	2.09	7.89	5.77	2.49	8.26	0.91	0.91	5.53	2.37	7.89	2.13	-0.34	0.00	-0.02	-0.36	0.35	-0.01
12	2.97	0.16	3.13	2.97	0.26	3.23	0.99	0.99	2.74	0.24	2.97	0.00	-0.30	0.00	-0.08	-0.38	0.25	-0.13
13	0.05	0.03	0.07	0.05	0.03	0.08	0.98	0.98	0.04	0.03	0.07	0.03	0.00	0.00	0.00	0.00	0.00	0.00
14	0.01	0.00	0.01	0.01	0.00	0.01	0.98	0.98	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	9.93	23.63	33.56	9.77	27.42	37.19	0.90	0.90	9.03	24.23	33.26	23.49	-3.85	0.00	-0.71	-4.56	3.62	-0.95
16	0.69	2.53	3.22	0.69	3.27	3.95	0.82	0.82	0.55	2.61	3.17	2.48	-0.80	0.00	-0.15	-0.95	0.72	-0.23
17	19.32	2.47	21.80	21.30	8.96	30.26	0.86	0.86	14.09	5.67	19.75	-1.55	-14.71	0.00	-0.09	-14.80	8.93	-5.87
18	0.26	0.40	0.66	0.26	0.55	0.81	0.82	0.82	0.21	0.44	0.65	0.39	-0.16	0.00	-0.03	-0.19	0.15	-0.05
19	1.78	2.90	4.67	1.77	3.60	5.36	0.85	0.85	1.59	3.01	4.60	2.84	-0.77	0.00	-0.14	-0.91	0.70	-0.22
20	3.34	1.13	4.47	3.36	2.02	5.38	0.83	0.83	2.75	1.62	4.37	1.01	-1.06	0.00	-0.20	-1.26	0.92	-0.34
21	3.58	1.33	4.91	3.51	2.13	5.64	0.84	0.84	3.01	1.84	4.85	1.34	-0.74	0.00	-0.14	-0.88	0.73	-0.14
22	3.64	3.87	7.52	3.66	5.41	9.07	0.82	0.82	3.08	4.34	7.42	3.77	-1.69	-0.57	-0.40	-2.66	1.50	-1.16
23	5.37	1.00	6.37	5.24	1.57	6.81	0.92	0.92	4.76	1.37	6.13	0.89	-0.59	-0.01	-0.14	-0.74	0.66	-0.08
24	6.07	0.09	6.16	6.09	0.40	6.49	0.90	0.90	5.83	0.32	6.15	0.05	-0.37	-0.26	-0.11	-0.74	0.31	-0.43
25	9.34	15.27	24.61	9.38	17.96	27.34	0.96	0.96	8.19	16.60	24.79	15.41	-2.58	0.00	-0.41	-2.99	2.40	-0.59
26	0.01	0.00	0.01	0.01	0.00	0.01	1.00	1.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	302.63	5.58	308.21	304.61	19.02	323.63	0.97	0.97	295.48	18.15	313.63	9.02	-11.82	0.00	-1.02	-12.83	9.68	-3.16
28	4.15	1.83	5.98	4.11	1.97	6.08	0.99	0.99	4.07	1.95	6.02	1.90	-0.03	0.00	0.00	-0.03	0.06	0.04
29	6.07	1.13	7.20	6.05	1.18	7.24	0.99	0.99	6.04	1.18	7.21	1.16	-0.01	0.00	0.00	-0.01	0.02	0.02
30	3.73	34.05	37.79	3.73	34.05	37.79	1.00	1.00	3.73	34.05	37.79	34.05	0.00	0.00	0.00	0.00	0.00	0.00
31	16.05	4.14	20.19	15.88	4.75	20.63	0.99	0.99	15.71	4.64	20.35	4.47	-0.10	0.00	0.00	-0.10	0.27	0.17
32	4.66	3.24	7.90	4.56	4.63	9.19	0.93	0.93	4.04	4.03	8.07	3.51	-1.00	0.00	-0.14	-1.14	1.02	-0.11
33	10.39	2.83	13.22	10.40	4.95	15.35	0.85	0.85	9.53	4.25	13.78	3.38	-1.50	-0.12	-0.18	-1.80	1.43	-0.37

HS2	Q^M SADC^a t=0	Q^M ROW^b t=0	Total Q^M t=0	Q^M SADC^a t=T	Q^M ROW^b t=T	Total Q^M t=T	Avg Price SADC^a t=T	Avg Price ROW^a t=T	Q^M *P SADC^a t=T	Q^M *P ROW^b t=T	Total Q^M*P t=T	Δ QM *P	Δ Tariff Rev.	Δ Excise Rev.	Δ VAT Rev.	Total Impact Rev.	Δ Cons. Surplus	Net Welfare effect
34	9.77	3.32	13.09	9.60	5.96	15.56	0.87	0.87	8.52	5.18	13.70	4.10	-1.59	0.00	-0.17	-1.76	1.68	-0.08
35	0.94	0.26	1.20	0.91	0.51	1.42	0.91	0.91	0.80	0.44	1.23	0.32	-0.16	0.00	-0.02	-0.18	0.17	-0.01
36	0.42	0.37	0.79	0.44	0.53	0.97	0.87	0.87	0.40	0.43	0.83	0.39	-0.15	0.00	-0.02	-0.17	0.13	-0.04
37	0.97	0.22	1.18	0.98	0.34	1.32	0.88	0.88	0.92	0.30	1.22	0.24	-0.11	0.00	-0.01	-0.12	0.09	-0.03
38	16.66	6.12	22.78	16.38	7.11	23.49	0.95	0.95	16.06	6.93	22.99	6.61	-0.20	0.00	-0.01	-0.21	0.49	0.28
39	24.95	11.16	36.12	25.31	16.84	42.15	0.92	0.92	22.52	14.97	37.49	12.18	-4.89	0.00	-0.60	-5.49	4.22	-1.27
40	11.01	42.09	53.10	11.01	47.20	58.22	0.92	0.92	9.31	44.73	54.04	43.02	-3.98	0.00	-0.52	-4.50	3.69	-0.81
41	0.02	0.04	0.05	0.02	0.04	0.06	0.95	0.95	0.02	0.04	0.05	0.04	0.00	0.00	0.00	-0.01	0.00	0.00
42	0.30	1.63	1.94	0.30	2.40	2.70	0.81	0.81	0.25	1.92	2.17	1.86	-0.48	0.00	-0.04	-0.52	0.46	-0.06
43	0.00	0.00	0.00	0.00	0.00	0.00	0.89	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
44	8.34	3.83	12.17	8.36	4.67	13.03	0.93	0.93	7.89	4.47	12.36	4.00	-0.69	0.00	-0.09	-0.77	0.65	-0.13
45	0.01	0.05	0.06	0.01	0.05	0.06	0.95	0.95	0.01	0.05	0.06	0.05	0.00	0.00	0.00	-0.01	0.00	0.00
46	0.02	0.02	0.04	0.02	0.03	0.05	0.80	0.80	0.01	0.02	0.04	0.02	-0.01	0.00	0.00	-0.01	0.01	0.00
47	0.00	0.00	0.00	0.01	0.00	0.01	0.95	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48	32.37	6.68	39.05	32.49	10.25	42.74	0.90	0.90	30.33	9.41	39.73	7.24	-3.09	0.00	-0.41	-3.50	2.82	-0.68
49	22.66	12.61	35.28	22.54	14.64	37.18	0.93	0.93	21.28	14.21	35.49	12.95	-1.55	0.00	-0.23	-1.77	1.53	-0.24
50	0.00	0.01	0.01	0.00	0.01	0.01	0.80	0.80	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
51	0.07	0.09	0.16	0.08	0.11	0.19	0.90	0.90	0.07	0.09	0.16	0.08	-0.04	0.00	-0.01	-0.05	0.03	-0.02
52	10.86	4.08	14.94	12.10	5.40	17.50	0.86	0.86	10.82	4.32	15.15	3.05	-3.70	0.00	-0.59	-4.30	2.16	-2.14
53	0.02	0.22	0.24	0.03	0.27	0.29	0.94	0.94	0.02	0.22	0.24	0.21	-0.06	0.00	-0.01	-0.07	0.05	-0.02
54	1.28	2.85	4.13	1.20	3.75	4.95	0.88	0.88	1.11	3.16	4.27	3.07	-0.58	0.00	-0.08	-0.66	0.62	-0.04
55	0.56	1.10	1.66	0.56	1.42	1.98	0.88	0.88	0.53	1.18	1.71	1.15	-0.26	0.00	-0.04	-0.30	0.24	-0.06
56	0.62	2.05	2.66	0.62	2.21	2.82	0.95	0.95	0.59	2.12	2.71	2.09	-0.11	0.00	-0.01	-0.12	0.11	-0.01
57	0.20	0.23	0.43	0.20	0.31	0.51	0.82	0.82	0.16	0.25	0.41	0.21	-0.11	0.00	-0.02	-0.13	0.09	-0.04
58	0.32	0.40	0.72	0.32	0.58	0.91	0.83	0.83	0.26	0.47	0.73	0.40	-0.18	0.00	-0.03	-0.21	0.16	-0.05
59	1.35	1.30	2.64	1.34	1.51	2.85	0.94	0.94	1.27	1.41	2.68	1.34	-0.17	0.00	-0.02	-0.19	0.17	-0.02
60	0.14	0.14	0.28	0.14	0.21	0.35	0.84	0.84	0.12	0.17	0.28	0.14	-0.07	0.00	-0.01	-0.08	0.06	-0.02
61	1.46	1.99	3.44	1.46	3.68	5.14	0.82	0.82	1.18	2.95	4.12	2.66	-0.86	0.00	-0.03	-0.89	0.85	-0.04
62	1.97	2.68	4.65	1.98	4.96	6.94	0.82	0.82	1.60	3.98	5.57	3.59	-1.16	0.00	-0.04	-1.20	1.15	-0.06
63	2.37	16.42	18.78	2.28	23.69	25.97	0.83	0.83	1.86	19.10	20.96	18.68	-4.38	0.00	-0.37	-4.75	4.30	-0.46
64	1.00	5.92	6.91	1.00	9.31	10.30	0.82	0.82	0.80	7.47	8.27	7.28	-1.70	0.00	-0.06	-1.76	1.69	-0.06
65	0.42	0.29	0.71	0.42	0.49	0.91	0.86	0.86	0.37	0.41	0.77	0.35	-0.12	0.00	-0.01	-0.13	0.12	-0.02
66	0.09	0.19	0.28	0.09	0.27	0.37	0.86	0.86	0.08	0.22	0.29	0.20	-0.07	0.00	-0.01	-0.08	0.06	-0.02
67	0.03	0.04	0.08	0.03	0.06	0.10	0.85	0.85	0.03	0.05	0.08	0.05	-0.02	0.00	0.00	-0.02	0.02	-0.01
68	3.58	0.72	4.30	3.61	1.11	4.73	0.94	0.94	3.40	1.04	4.43	0.82	-0.32	0.00	-0.03	-0.36	0.28	-0.08
69	1.87	5.21	7.08	1.87	6.58	8.46	0.90	0.90	1.71	5.99	7.69	5.82	-0.69	0.00	-0.01	-0.71	0.69	-0.02
70	4.86	3.27	8.13	4.87	4.96	9.82	0.91	0.91	4.48	4.37	8.85	3.99	-0.88	0.00	-0.03	-0.90	0.86	-0.04

HS2	*Q^M SADC[a] t=0*	*Q^M ROW[b] t=0*	*Total Q^M t=0*	*Q^M SADC[a] t=T*	*Q^M ROW[b] t=T*	*Total Q^M t=T*	*Avg Price SADC[a] t=T*	*Avg Price ROW[a] t=T*	*Q^M *P SADC[a] t=T*	*Q^M *P ROW[b] t=T*	*Total Q^M*P t=T*	*Δ QM *P*	*Δ Tariff Rev.*	*Δ Excise Rev.*	*Δ VAT Rev.*	*Total Impact Rev.*	*Δ Cons. Surplus*	*Net Welfare effect*
71	0.02	0.09	0.11	0.02	0.14	0.16	0.84	0.84	0.02	0.11	0.13	0.11	-0.03	0.00	0.00	-0.03	0.03	-0.01
72	31.27	5.99	37.26	31.52	9.63	41.15	0.96	0.96	29.89	9.04	38.93	7.41	-2.57	0.00	-0.15	-2.72	2.08	-0.64
73	34.37	17.70	52.07	34.78	25.46	60.24	0.92	0.92	32.60	23.28	55.88	21.11	-4.42	0.00	-0.10	-4.53	3.99	-0.54
74	0.88	0.19	1.06	0.88	0.31	1.18	0.95	0.95	0.83	0.29	1.12	0.24	-0.06	0.00	0.00	-0.06	0.06	0.00
75	0.00	0.00	0.01	0.00	0.01	0.01	0.90	0.90	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
76	3.27	2.06	5.34	3.29	3.02	6.31	0.92	0.92	3.02	2.69	5.70	2.42	-0.57	0.00	-0.03	-0.61	0.54	-0.06
78	0.04	0.02	0.05	0.04	0.02	0.06	0.93	0.93	0.04	0.02	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00
79	0.26	0.16	0.42	0.26	0.22	0.48	0.90	0.90	0.24	0.20	0.44	0.19	-0.03	0.00	0.00	-0.03	0.03	0.00
80	0.02	0.00	0.03	0.02	0.00	0.03	0.92	0.92	0.02	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
81	0.01	0.02	0.03	0.01	0.02	0.03	0.98	0.98	0.01	0.02	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00
82	2.70	3.19	5.89	2.70	4.26	6.96	0.90	0.90	2.48	3.89	6.37	3.67	-0.54	0.00	-0.01	-0.55	0.53	-0.02
83	4.03	2.16	6.19	4.01	3.12	7.13	0.90	0.90	3.71	2.87	6.58	2.57	-0.50	0.00	-0.02	-0.52	0.51	-0.01
84	63.25	70.33	133.58	62.68	97.40	160.08	0.95	0.95	58.92	90.90	149.82	87.15	-8.31	0.00	1.22	-7.09	9.20	2.11
85	68.15	98.42	166.57	68.04	138.09	206.12	0.90	0.90	63.08	127.23	190.31	122.27	-13.39	0.00	1.71	-11.68	14.00	2.32
86	3.98	0.25	4.24	4.11	0.32	4.43	0.97	0.97	4.03	0.31	4.34	0.23	-0.21	0.00	-0.02	-0.23	0.09	-0.14
87	108.17	62.58	170.75	108.28	94.43	202.71	0.92	0.92	99.21	85.10	184.31	76.03	-16.62	-0.85	-0.73	-18.19	16.30	-1.89
88	0.05	1.88	1.93	0.05	2.28	2.33	0.95	0.95	0.05	2.12	2.17	2.12	-0.14	0.00	0.02	-0.13	0.15	0.02
89	0.24	6.03	6.27	0.25	6.82	7.07	0.92	0.92	0.22	6.48	6.70	6.45	-0.35	0.00	0.01	-0.34	0.35	0.01
90	51.39	16.21	67.60	55.62	27.92	83.54	0.92	0.92	49.72	25.78	75.50	19.88	-11.92	0.00	-0.69	-12.61	7.21	-5.40
91	0.14	0.20	0.34	0.14	0.30	0.44	0.84	0.84	0.12	0.25	0.36	0.22	-0.08	0.00	-0.01	-0.08	0.07	-0.01
92	0.03	0.02	0.05	0.03	0.04	0.07	0.83	0.83	0.03	0.03	0.06	0.03	-0.01	0.00	0.00	-0.01	0.01	0.00
93	0.07	0.03	0.10	0.07	0.04	0.11	0.81	0.81	0.06	0.03	0.09	0.02	-0.02	-0.01	-0.01	-0.03	0.02	-0.02
94	10.94	6.28	17.22	10.96	10.96	21.92	0.82	0.82	8.82	8.82	17.63	6.67	-4.22	0.00	-0.65	-4.87	3.83	-1.04
95	0.85	0.86	1.71	0.85	1.26	2.12	0.83	0.83	0.72	1.04	1.77	0.92	-0.34	-0.01	-0.05	-0.40	0.31	-0.09
96	1.29	1.73	3.02	1.29	2.35	3.65	0.84	0.84	1.07	1.95	3.03	1.73	-0.62	0.00	-0.11	-0.73	0.56	-0.17
97	0.01	0.04	0.05	0.01	0.05	0.06	0.84	0.84	0.01	0.04	0.05	0.03	-0.01	-0.01	0.00	-0.02	0.01	-0.01
Total	1014.66	687.97	1702.63	1023.61	906.42	1930.04	0.91	0.91	953.98	828.33	1782.31	758.69	-150.87	-1.83	-7.77	-160.47	133.51	-26.97

11.6 Estimated price changes

HS2	***Average Price FTA***	***%***	***HS2***	***Average Price MFN***	***%***	***HS2***	***Average Price SACU no TDCA***	***%***	***HS2***	***Average Price SACU with TDCA***	***%***
01	0.939393939	-6.06%	01	0.935401988	-6.46%	01	0.936475611	-6.35%	01	0.936475611	-6.35%
02	0.91907736	-8.09%	02	0.861996233	-13.80%	02	0.915910627	-8.41%	02	0.911603651	-8.84%
03	0.916539859	-8.35%	03	0.869822171	-13.02%	03	0.881659485	-11.83%	03	0.874168106	-12.58%
04	0.949864543	-5.01%	04	0.876354863	-12.36%	04	0.985766654	-1.42%	04	0.95520615	-4.48%
05	0.954563741	-4.54%	05	0.908885264	-9.11%	05	0.908885268	-9.11%	05	0.908885268	-9.11%
06	0.957902015	-4.21%	06	0.91884045	-8.12%	06	0.934945634	-6.51%	06	0.934945634	-6.51%
07	0.916449968	-8.36%	07	0.846865651	-15.31%	07	0.888004886	-11.20%	07	0.86355329	-13.64%
08	0.916955651	-8.30%	08	0.824239739	-17.58%	08	0.852039973	-14.80%	08	0.834006949	-16.60%
09	0.942880945	-5.71%	09	0.818378634	-18.16%	09	0.844797043	-15.52%	09	0.82659369	-17.34%
10	0.972122238	-2.79%	10	0.950757876	-4.92%	10	0.964780166	-3.52%	10	0.961584374	-3.84%
11	0.972041601	-2.80%	11	0.907106337	-9.29%	11	0.938167897	-6.18%	11	0.919285518	-8.07%
12	0.996319028	-0.37%	12	0.98608033	-1.39%	12	1.007557714	0.76%	12	0.993148314	-0.69%
13	1	0.00%	13	0.979720083	-2.03%	13	1.020297541	2.03%	13	0.988440004	-1.16%
14	1	0.00%	14	0.983293436	-1.67%	14	0.983277947	-1.67%	14	0.983277947	-1.67%
15	0.971186311	-2.88%	15	0.896352545	-10.36%	15	0.949194875	-5.08%	15	0.919893995	-8.01%
16	0.939286991	-6.07%	16	0.82478184	-17.52%	16	0.895596139	-10.44%	16	0.855011542	-14.50%
17	0.941615832	-5.84%	17	0.86167901	-13.83%	17	0.901251853	-9.87%	17	0.901219843	-9.88%
18	0.963353159	-3.66%	18	0.822395269	-17.76%	18	0.914937253	-8.51%	18	0.84199626	-15.80%
19	0.942754268	-5.72%	19	0.846419608	-15.36%	19	0.977047386	-2.30%	19	0.883031684	-11.70%
20	0.947705132	-5.23%	20	0.828565791	-17.14%	20	0.923589197	-7.64%	20	0.836243649	-16.38%
21	0.958822346	-4.12%	21	0.840027523	-16.00%	21	0.93093381	-6.91%	21	0.858582092	-14.14%
22	0.952876175	-4.71%	22	0.818789798	-18.12%	22	0.677705299	-32.23%	22	0.63063347	-36.94%
23	0.961613857	-3.84%	23	0.916247575	-8.38%	23	0.918914661	-8.11%	23	0.907135881	-9.29%
24	0.946550737	-5.34%	24	0.902868883	-9.71%	24	0.629968769	-37.00%	24	0.629815305	-37.02%
25	0.994757985	-0.52%	25	0.96254677	-3.75%	25	0.969521256	-3.05%	25	0.966519736	-3.35%
26	1	0.00%	26	1	0.00%	26	1	0.00%	26	1	0.00%
27	0.989998874	-1.00%	27	0.968254716	-3.17%	27	0.982692456	-1.73%	27	0.973924162	-2.61%
28	0.999785637	-0.02%	28	0.989367707	-1.06%	28	0.995493926	-0.45%	28	0.991296753	-0.87%

HS2	*Average Price FTA*	*%*	*HS2*	*Average Price MFN*	*%*	*HS2*	*Average Price SACU no TDCA*	*%*	*HS2*	*Average Price SACU with TDCA*	*%*
29	1	0.00%	29	0.992977225	-0.70%	29	0.979789962	-2.02%	29	0.976423125	-2.36%
30	1	0.00%	30	1	0.00%	30	1.003560846	0.36%	30	1.000048329	0.00%
31	1	0.00%	31	0.993897119	-0.61%	31	0.993896854	-0.61%	31	0.993896854	-0.61%
32	0.990959553	-0.90%	32	0.927507099	-7.25%	32	0.947033628	-5.30%	32	0.930593848	-6.94%
33	0.971148913	-2.89%	33	0.851163058	-14.88%	33	0.828594818	-17.14%	33	0.797020952	-20.30%
34	0.975975753	-2.40%	34	0.869599269	-13.04%	34	0.968046395	-3.20%	34	0.928335926	-7.17%
35	0.986203629	-1.38%	35	0.906774878	-9.32%	35	0.911070775	-8.89%	35	0.90768421	-9.23%
36	0.958937772	-4.11%	36	0.866759196	-13.32%	36	0.887386834	-11.26%	36	0.876918849	-12.31%
37	0.956486642	-4.35%	37	0.879458144	-12.05%	37	0.900638098	-9.94%	37	0.8873568	-11.26%
38	0.992674519	-0.73%	38	0.9511705	-4.88%	38	0.967005633	-3.30%	38	0.954459032	-4.55%
39	0.986329878	-1.37%	39	0.923840493	-7.62%	39	0.990174408	-0.98%	39	0.945594548	-5.44%
40	0.984520431	-1.55%	40	0.916328711	-8.37%	40	0.989526119	-1.05%	40	0.954190301	-4.58%
41	0.979813069	-2.02%	41	0.948489982	-5.15%	41	0.970514199	-2.95%	41	0.957499775	-4.25%
42	0.962528317	-3.75%	42	0.813515819	-18.65%	42	1.011066943	1.11%	42	0.86545544	-13.45%
43	0.951014509	-4.90%	43	0.887317419	-11.27%	43	0.83429407	-16.57%	43	0.765962627	-23.40%
44	0.98490592	-1.51%	44	0.934122325	-6.59%	44	0.9904984	-0.95%	44	0.951783389	-4.82%
45	0.986773185	-1.32%	45	0.945040864	-5.50%	45	0.945040875	-5.50%	45	0.945040875	-5.50%
46	0.959866091	-4.01%	46	0.800297762	-19.97%	46	0.943878168	-5.61%	46	0.864381552	-13.56%
47	0.983870968	-1.61%	47	0.949027762	-5.10%	47	0.949027762	-5.10%	47	0.949027762	-5.10%
48	0.977621492	-2.24%	48	0.903028044	-9.70%	48	0.959723595	-4.03%	48	0.92347741	-7.65%
49	0.973543521	-2.65%	49	0.928823674	-7.12%	49	0.947444953	-5.26%	49	0.930570983	-6.94%
50	0.960021849	-4.00%	50	0.800248681	-19.98%	50	0.800248675	-19.98%	50	0.800248675	-19.98%
51	0.946565934	-5.34%	51	0.900903986	-9.91%	51	0.951130939	-4.89%	51	0.951130939	-4.89%
52	0.954573398	-4.54%	52	0.862024413	-13.80%	52	0.965846682	-3.42%	52	0.949684324	-5.03%
53	0.981601535	-1.84%	53	0.935656336	-6.43%	53	0.950335125	-4.97%	53	0.950335125	-4.97%
54	0.968949461	-3.11%	54	0.884466981	-11.55%	54	0.986799345	-1.32%	54	0.976249714	-2.38%
55	0.969952146	-3.00%	55	0.875126191	-12.49%	55	0.978525573	-2.15%	55	0.957313435	-4.27%
56	0.993712418	-0.63%	56	0.950413904	-4.96%	56	1.060733072	6.07%	56	0.971161764	-2.88%
57	0.942154999	-5.78%	57	0.821301523	-17.87%	57	0.982764787	-1.72%	57	0.873005272	-12.70%
58	0.940798452	-5.92%	58	0.82660655	-17.34%	58	0.940564859	-5.94%	58	0.886602208	-11.34%
59	0.985451929	-1.45%	59	0.940171494	-5.98%	59	1.01141512	1.14%	59	0.987649523	-1.24%

HS2	*Average Price FTA*	*%*	*HS2*	*Average Price MFN*	*%*	*HS2*	*Average Price SACU no TDCA*	*%*	*HS2*	*Average Price SACU with TDCA*	*%*
60	0.933355588	-6.66%	60	0.842943008	-15.71%	60	0.941327396	-5.87%	60	0.910918479	-8.91%
61	0.956155152	-4.38%	61	0.815274563	-18.47%	61	1.054154355	5.42%	61	0.926129419	-7.39%
62	0.956475645	-4.35%	62	0.815540321	-18.45%	62	1.055619477	5.56%	62	0.913640996	-8.64%
63	0.962611666	-3.74%	63	0.826336781	-17.37%	63	1.009741842	0.97%	63	0.88653131	-11.35%
64	0.966115498	-3.39%	64	0.822717202	-17.73%	64	1.021988888	2.20%	64	0.868788651	-13.12%
65	0.973451376	-2.65%	65	0.859473617	-14.05%	65	1.014510128	1.45%	65	0.957302208	-4.27%
66	0.971500102	-2.85%	66	0.862182661	-13.78%	66	1.027946318	2.79%	66	0.939059813	-6.09%
67	0.954498063	-4.55%	67	0.85305816	-14.69%	67	0.890547856	-10.95%	67	0.856474054	-14.35%
68	0.991142467	-0.89%	68	0.94069578	-5.93%	68	0.967345045	-3.27%	68	0.944791346	-5.52%
69	0.98668388	-1.33%	69	0.90485031	-9.51%	69	0.981148344	-1.89%	69	0.90924947	-9.08%
70	0.985848924	-1.42%	70	0.910307046	-8.97%	70	0.962007571	-3.80%	70	0.929765572	-7.02%
71	0.954334452	-4.57%	71	0.843246813	-15.68%	71	0.741579076	-25.84%	71	0.712598793	-28.74%
72	0.990544526	-0.95%	72	0.961942287	-3.81%	72	0.980635161	-1.94%	72	0.967062026	-3.29%
73	0.989479594	-1.05%	73	0.915440125	-8.46%	73	0.967720624	-3.23%	73	0.939976914	-6.00%
74	0.987580486	-1.24%	74	0.945766747	-5.42%	74	0.976042958	-2.40%	74	0.960531355	-3.95%
75	0.952905647	-4.71%	75	0.8997115	-10.03%	75	0.899711484	-10.03%	75	0.899711484	-10.03%
76	0.989535832	-1.05%	76	0.923099728	-7.69%	76	0.970596592	-2.94%	76	0.940210555	-5.98%
78	0.994290813	-0.57%	78	0.934561805	-6.54%	78	0.934562003	-6.54%	78	0.934562003	-6.54%
79	0.991862298	-0.81%	79	0.904709892	-9.53%	79	0.928728846	-7.13%	79	0.928728846	-7.13%
80	0.985316666	-1.47%	80	0.923288189	-7.67%	80	0.923290116	-7.67%	80	0.923290116	-7.67%
81	0.997377622	-0.26%	81	0.982604643	-1.74%	81	0.982604642	-1.74%	81	0.982604642	-1.74%
82	0.988118101	-1.19%	82	0.898019998	-10.20%	82	0.967200082	-3.28%	82	0.914024025	-8.60%
83	0.988213058	-1.18%	83	0.895252984	-10.47%	83	1.006997505	0.70%	83	0.910973606	-8.90%
84	0.996669457	-0.33%	84	0.947711656	-5.23%	84	0.958368458	-4.16%	84	0.949933851	-5.01%
85	0.986411906	-1.36%	85	0.903001503	-9.70%	85	0.9439687	-5.60%	85	0.914141549	-8.59%
86	0.990303843	-0.97%	86	0.973189758	-2.68%	86	0.973189757	-2.68%	86	0.973189757	-2.68%
87	0.988296092	-1.17%	87	0.916762306	-8.32%	87	0.937674195	-6.23%	87	0.897915307	-10.21%
88	0.995884479	-0.41%	88	0.953184998	-4.68%	88	0.953184998	-4.68%	88	0.953184998	-4.68%
89	0.978265338	-2.17%	89	0.919324406	-8.07%	89	0.887462041	-11.25%	89	0.880901858	-11.91%
90	0.987570569	-1.24%	90	0.915878526	-8.41%	90	0.918215262	-8.18%	90	0.915955356	-8.40%
91	0.958373795	-4.16%	91	0.843544049	-15.65%	91	0.843543738	-15.65%	91	0.843543738	-15.65%

HS2	*Average Price FTA*	*%*		*HS2*	*Average Price MFN*	*%*		*HS2*	*Average Price SACU no TDCA*	*%*		*HS2*	*Average Price SACU with TDCA*	*%*
92	0.950122535	-4.99%		92	0.828440225	-17.16%		92	0.828452898	-17.15%		92	0.828452898	-17.15%
93	0.943691225	-5.63%		93	0.810778716	-18.92%		93	0.831768902	-16.82%		93	0.785661898	-21.43%
94	0.959548652	-4.05%		94	0.816152034	-18.38%		94	0.931882668	-6.81%		94	0.852560068	-14.74%
95	0.962665195	-3.73%		95	0.831140334	-16.89%		95	0.78323387	-21.68%		95	0.775135732	-22.49%
96	0.958709091	-4.13%		96	0.837544974	-16.25%		96	0.90958532	-9.04%		96	0.878847108	-12.12%
97	0.967948064	-3.21%		97	0.835342513	-16.47%		97	0.583341386	-41.67%		97	0.583341386	-41.67%

12. References

Brenton, P., F. Flatters, P. Kalenga (2005) "Rules of Origin and SADC: The Case for Change in the Mid Term Review of the Trade Protocol" *World Bank Africa Region Working Paper Series* No. 83.

Carrière C. and J. de Melo (2004) "Are Different Rules of Origin Equally Costly? Estimates from NAFTA" *CEPR Discussion Paper* No. 4437.

Centre for the Promotion of Investments (2006), MozBusiness MB704 .

Cirera, X. and C. Ardnt (2006), "Measuring the Impact of Road Rehabilitation and the Liberalization Trend on Spatial Market Efficiency in Maize Markets in Mozambique", mimeo.

Estevadeordal, A. and K. Suominen (2003), "Rules of Origin: A World Map and Trade Effects", paper prepared for the workshop "The Origin of Goods: A Conceptual and Empirical Assessment of Rules of Origin in PTAs", INRA-DELTA, Paris.

Grobbelaar, N. (2004), *Every Continent Needs an America": The Experience of South African Firms Doing Business in Mozambique*, SAIIA Business in Africa Research Project.

Kirk Robert and Matthew Stern (2005) "The New Southern African Customs Union Agreement" *The World Economy*, Vol. 28, No. 2, pp. 169-190, February 2005

Milner Chris, Oliver Morrissey and Andrew McKay (2005) "Some Simple Analytics of the Trade and Welfare Effects of Economic Partnership Agreements" *Journal of African Economies*, vol.14, n.3, pp. 327–358

Panagariya, Arvind (2000) "Preferential Trade Liberalization: The Traditional Theory and New Developments," *Journal of Economic Literature* 38, June, 287-331.

Stern, R., J. Francis and B. Schumacher (1976) *Price Elasticities in International Trade: An Annotated Bibliography*, London: Macmillan.

UNIDO, *Africa Foreign Investor Survey 2003*.

UNCTAD, World Investment Report 2005.

Van Dunem, J. (2005), "Confronting the Issue of the Elasticity of Customs Evasion in Mozambique: An Empirical Study", mimeo.

WTO, SACU Trade Policy Review 2003.