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THE EFFECTS OF A FREE TRADE  
AGREEMENT BETWEEN THE USA  
AND THE SOUTH AFRICAN  
CUSTOMS UNION (SACU)

by

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The Centre of Policy Studies (COPS) is a research centre at Monash University devoted to quantitative analysis of issues relevant to Australian economic policy.



## Abstract

This paper documents analysis of the economic effects of the proposed SACU/USA free trade agreement using a specially-built dynamic version of the GTAP world general equilibrium model. At the core of the new model is the standard GTAP Version 6.0 framework, released in April 2001. Onto this basis we add the following.

- A series of new variables representing useful aggregates of primary agricultural and agriculture-related sectoral outputs, exports and imports. These do not alter the basic theory of GTAP in any way and are merely defined for convenience.
- New variables and equations which furnish GTAP with simple dynamic behaviour. These allow us to run linked annual GTAP simulations for each year between 1997 and 2023. For each region, the new equations: (a) link net investment in each year to the change in the capital stock for that year; (b) allow employment to respond temporarily to changes in real wage rates; and (c) allow rates of return to capital to respond temporarily to changes in demands for capital. In the long run, all 3 dynamic equations reduce to simpler forms: investment moves in proportion to capital stock; and employment and rates of return converge to baseline trend levels.

Seven scenarios are modelled. The first is a baseline projection. The baseline is a sequence of annual forecasts for the global economy, constructed using external forecasts for macro variables and for rates of import protection and export subsidies. In effect, the baseline shows what might be expected to happen if there were no free trade agreement between the SACU and the USA. The remaining six scenarios embody various forms of the SACU/USA free trade agreement. The effects of the agreement in each of the alternative scenarios are expressed as deviations away from baseline values.

Our main findings are:

- Progressive cuts in protection through the ten years 2005 to 2014 lead to increased employment, increased capital and higher real wage rates in the SACU;
- The effects of the agreement vary across industries. The mechanisms, however, are fairly straightforward, depending primarily on the extent to which the protection cuts exposes sectors to additional import competition and on each sector's export orientation.
- Overall, the long run impacts on primary agricultural industries and agricultural related industries in the SACU are negative.
- From the SACU's point of view the free trade agreement is trade creating, with little evidence of increased trade diversion.

Key words: Multiregional, CGE, trade, liberalisation, dynamics.

JEL: C68 Computable General Equilibrium Models, F15 Economic Integration



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# EXECUTIVE SUMMARY

## 1. Introduction

This report documents analysis of the economic effects of the proposed SACU/USA free trade agreement using a specially-built version of the GTAP model. We model seven scenarios, each covering the period 2005 to 2023. The first scenario is the baseline projection. This shows what might be expected to happen to the global economy if there were no SACU/USA free trade agreement. Details of the remaining six scenarios are given below.

- A. *Fixed long-run employment/no exemptions.* This is our central-case free trade scenario. It involves across-the-board elimination of all forms of import protection on SACU imports into the USA and on USA imports into the SACU. Standard modelling assumptions apply, including the assumption that real wage rates adjust to ensure that the removal of protection has no long-run effect on aggregate employment.
- B. *Elastic supply of unskilled labour/no exemptions.* Same as the central case (A) except that we make allowance for the presence of surplus unskilled labour in the SACU. Specifically, we assume that employment of unskilled SACU workers can vary, even in the long run, at a fixed real wage rate.
- C. *Fixed long-run employment/less conservative.* Same as the central case (A) except that some products are exempted from the protection cuts and others are subject to cuts of less than 100 per cent.
- D. *Elastic supply of unskilled labour/less conservative.* Same labour market assumptions used in Scenario B, but with the exemptions assumed for Scenario C.
- E. *Fixed long-run employment/more conservative.* Same labour market assumptions used in Scenario A, but with exemptions. The exemptions are broader than those assumed in Scenarios C and D.
- F. *Elastic supply of unskilled labour/more conservative.* Same labour market assumptions used in Scenario B, but with the free-trade exemptions assumed for Scenario E.

## 2. Economic model

GTAP is a multi-region Computable General Equilibrium model which has been used extensively for analysis of trade-policy issues. It models each region as an economy in its own right, with region-specific prices, region-specific consumers, region-specific industries, and so on. The regions are linked via trade in goods and services and flows of investment. The version of the model used for this report has been modified by the inclusion of dynamic mechanisms that allows us to produce sequences of annual solutions.

## 3. Baseline Projection (Table 5 in the main report)

The baseline projection features:

- Robust global growth in real GDP (3.0 per cent average annual growth).
  - The region with the highest projected growth rate is China and Hong Kong (7.0 per cent).
  - The region with the lowest projected growth rate is Switzerland and the rest of the EFTA (2.3 per cent).
- Real GDP in the SACU is projected to grow at an average annual rate of 3.1 per cent.
  - Growth in unskilled employment is generally less than growth in skilled employment.

- SACU primary agricultural production is forecast to grow at an average annual rate of 2.0 per cent and agricultural-related industry at an average annual rate of 2.2 per cent.
- The SACU industry with the fastest projected growth in export sales to the USA is beverages and tobacco (7.8 per cent).
- The SACU industries with the slowest projected growth in export sales are wheat, maize and vegetables (including processed fruit and nuts) (2.3 per cent).

#### **4. Effects of the USA/SACU free trade agreement**

Table I shows the effects on selected variables of the six free-trade scenarios in the final simulation-year (2003). More detailed year-by-year results for each scenario can be found in the main report.

##### *Scenario A (Tables 1A to 4A in the main report)*

- Progressive cuts in protection through the ten years 2005 to 2014 lead to increased employment, increased capital and higher real wage rates in the SACU.
  - In 2014, relative to baseline levels, total employment has increased by 0.045 per cent, capital by 0.212 per cent, and real wage rates by 0.25 per cent.
- After 2014, employment moves back to its baseline level (Table I), while capital and real wages progressively rise relative to their baseline values.
  - In the years following the last year of protection cuts (2014) the dynamic mechanisms in the model move the economy towards a position of long-run equilibrium. In the long-run year capital and the real wage rate in SACU have each increased relative to their baseline values by around 0.3 per cent
- Cuts in protection lead to increased real GDP (Table I).
  - The deviations in real GDP reflect a weighted average of deviations in factor inputs. Accordingly, real GDP is elevated above its baseline level in each year of the simulation.
  - In the long-run year the GDP-deviation for the SACU is 0.092 per cent, while for the USA real GDP is up 0.002 per cent.
  - It can be shown that the long-run real-GDP deviations are proportional to the percentage changes in the real cost of capital in each country directly arising from the protection cuts.
- The free trade agreement leads to increased real private consumption in the SACU (Table I).
  - However, the percentage increases in consumption are smaller than the percentage increases in real GDP due, in part, to a decline in the terms of trade.
- The effects of the agreement vary across industries (Table I). The mechanisms, however, are fairly straightforward, depending primarily on the extent to which the protection cuts exposes sectors to additional import competition and on each sector's export orientation.
  - Of the SACU industries favourably affected, oilseeds is projected to gain most in the long-run. Two-way trade in oilseeds between the SACU and the USA is quite high, and the initial rate of protection on SACU oilseed imports to the USA is 17.7 per cent. Cutting this rate to zero has a strong positive impact on SACU exports to the USA, with exports to the USA up 135 per cent relative to base in the long run year.
  - The next most favourably affected SACU sector is sugar. It has an especially high USA-export propensity, and faces negligible competition from USA imports. Thus, even though the initial rate of protection against SACU sugar in the USA is quite low, removing the protection imparts a considerable benefit to the SACU industry.
  - The sugar cane industry, which is the fourth-ranked industry shown in Figure 5A, gains output because of its close relationship with the sugar industry.
  - The third most favourably affected SACU industry is other crops. The USA-export propensity for this industry is small but non-negligible, and the initial rate of protection



affecting exports to the USA is quite high (Table 2). Free trade, therefore, leads to a significant increase in output for the SACU industry based on increased exports to the USA.

- There are six industries for which the free trade agreement reduces output relative to baseline values in the long-run year (Table I).
  - Prominent among these is wheat and other meat products. Both industries have low USA-export propensities, and face quite strong competition from USA imports on their local market. When protection is removed, USA imports increase causing relatively significant contractions relative to base in the output of the SACU industries.
  - The third least favourably affected industry is other animal products. It suffers from having close connections with the other meat products industry.
  - The remaining SACU industries least favourably affected are the primary and related red-meat sectors and producers of vegetable oils and fats. Their presence in the list of least-favourably affected industries is somewhat surprising given the lack of USA/SACU trade in these products. However, the rates of protection in the SACU on USA imports of these products are initially quite high and the removal of these rates generates enough additional imports to reduce production of both SACU industries.
- The free trade agreement has relatively mild, but positive, impacts on the majority of SACU industries.
  - The majority of SACU industries are projected to experience changes in output (relative to baseline values) in the long-run year of between 0.02 per cent (other food products) and 0.38 per cent (vegetables, fruit and nuts).
  - Industries in this least-affected group typically face little exposure to trade with the USA. The main influences on the least-affected group are the changes in final domestic demand brought by the free trade agreement.
- Overall, the long run impacts on primary agricultural industries and agricultural related industries in the SACU are negative.
  - In the long run year, the free trade agreement reduces total primary agricultural output in the SACU by 0.114 per cent relative to baseline levels. Total output in agricultural related industries falls by 0.063 per cent.
- From the SACU's point of view the free trade agreement is trade creating, with little evidence of trade diversion.

### ***Scenario B (Tables 1B to 4B in the main report)***

This scenario is the same as Scenario A except that we make allowance for the presence of surplus unskilled labour in the SACU. Specifically, we assume that employment of unskilled SACU workers can vary, even in the long run, at a fixed real wage rate. For skilled SACU workers we maintain the standard long-run treatment of fixed employment and variable wage.

- Allowing for increased employment of unskilled labour magnifies the macroeconomic consequences for the SACU of the free trade agreement (compare column B with column A in Table I).
  - In Scenario B the free trade agreement increases real GDP in the long run year by 0.482 per cent relative to its baseline value, compared with an increase of 0.092 per cent in Scenario A.
- In Scenario B, the free trade agreement increases (relative to baseline levels) unskilled employment by 0.664 per cent and total employment by 0.449 per cent in the long-run year. No long-run change in employment is permitted in Scenario A.
- The industrial pattern of effects in Scenario B is similar to the industrial pattern in the reference case (Table I).

- The main differences arise from the larger increases in domestic final demand in Scenario B. In general, the additional domestic demand benefits industries that are more oriented towards domestic demand than industries that are highly export related.
- In Scenario B, production of primary agriculture and agriculture-related products expand as a result of the free trade agreement.
- The effects on the USA of the free trade agreement in Scenario B are similar to those in Scenario A.

### ***Scenario C (Tables 1C to 4C in the main report)***

This scenario is the same the central case (A) except that some products are exempted from the protection cuts and others are subject to cuts of less than 100 per cent.

- Allowing for the less-conservative exemptions in Scenario C has very little effect on the long-run deviation in real GDP for the SACU (compare column C with column B in Table I).
  - In the long-run year real GDP in the SACU increases by 0.091 per cent relative to its baseline level, compared with an increase of 0.092 per cent in Scenario A.
  - Exempting some agricultural industries from the protection cuts has little impact on the real cost of capital (and hence real GDP) in the long-run. The dominant influence is the cut in protection to non-food manufacturing, which is only slightly less in Scenario C (95 per cent) than in Scenario A (100 per cent).
- The main impact of the less-conservative exemptions is on the industrial structure of the SACU.
  - The GTAP products directly affected by the less-conservative exemptions are cereal grains nec (gro), other meat products (omt) and its main supplier other animal products (oap), dairy products (mil), raw and refined sugar (sgr) and its main supplier sugar cane (c\_b), and other manufacturing.
  - Exempting gro from cuts in protection has little impact on its production because the initial rates of protection on gro-trade in both the SACU and the USA is very low.
  - Exempting omt, however, does have significant effects on the SACU industry and its main supplier, other animal products.
  - SACU sugar production increases relative to baseline levels in Scenario A. In Scenario C, production increases by more, due to the increased quota allocation in the USA.

### ***Scenario D (Tables 1D to 4D in the main report)***

This scenario is the same as Scenario B, but with the free-trade exemptions included in Scenario C.

- The relationship of Scenario D to Scenario B is similar to that of Scenario C to Scenario A.
  - The real GDP effect in Scenario D is slightly smaller than the real GDP effect in Scenario B, reflecting the smaller overall cut in protection.
  - The main differences between the two scenarios are revealed in the changes to SACU's industrial structure. Notably, in Scenario D the increase (relative to base) in production of sugar and sugar cane is larger than in Scenario B, and the effects on the production of other meat products and its live-animal supplier are smaller than the large adverse impacts in Scenario B.

### ***Scenario E (Tables 1E to 4E in the main report)***

This scenario is the same as Scenario A, with cuts in protection of 100 per cent for all goods except for exemptions that are more extensive than in Scenarios C and D.

- Because the list of free-trade exemptions in this scenario is longer than the list in Scenario C, the effects on real GDP in Scenario E are smaller than the effects on real GDP in Scenario C (compare column E with column C in Table I).
  - Indeed, for most of the macroeconomic variables the effects in Scenario E are smaller than in Scenario C.
- At the industry level, the largest difference between Scenario E and Scenario C is for the production of wheat.
  - In Scenario C SACU wheat production in the final year falls by almost six per cent relative to its baseline level. In Scenario E, in which protection on USA wheat imports into the SACU is exempt from the free trade agreement, the effects on SACU wheat production are negligible.

***Scenario F (Tables 1F to 4F in the main report)***

This scenario is the same as Scenario B, but with the free-trade exemptions listed for Scenario E. The relationship of Scenario F to Scenario D is analogous to that of Scenario E to Scenario C.

**Table I: Summary of Projected Deviations from Baseline in the long-run year (2023)**

	Scenario:					
	A	B	C	D	E	F
<i>Real GDP (%)</i>						
SACU	0.092	0.482	0.091	0.430	0.082	0.349
USA	0.003	0.003	0.002	0.002	0.002	0.002
<i>Employment (%)</i>						
SACU	0.001	0.449	0.001	0.390	0.001	0.308
USA	0.000	0.000	0.000	0.000	0.000	0.000
<i>Real private consumption (%)</i>						
SACU	0.051	0.431	0.052	0.382	0.043	0.303
USA	0.004	0.004	0.004	0.004	0.003	0.003
<i>Terms of trade (%)</i>						
SACU	-0.095	-0.139	-0.059	-0.097	-0.045	-0.076
USA	0.017	0.017	0.015	0.015	0.012	0.012
<i>Output of selected industries (%)</i>						
Wheat (SACU)	-5.953	-5.696	-5.832	-5.610	0.070	0.255
Oilseeds (SACU)	3.027	3.342	3.123	3.395	2.768	2.982
Sugar cane (SACU)	1.346	1.629	3.381	3.622	0.076	0.266
Other crops (SACU)	1.484	1.796	1.561	1.831	1.308	1.521
Cattle, sheep (SACU)	-0.541	-0.263	-0.221	0.021	0.044	0.235
Other animals (SACU)	-0.976	-0.699	0.208	0.451	0.066	0.258
Cattle, sheep meat (SACU)	-0.509	-0.228	-0.402	-0.158	0.046	0.239
Other meat products (SACU)	-6.469	-6.188	0.128	0.385	0.079	0.281
Vegetable oils and fats (SACU)	-0.152	0.133	-0.188	0.058	-0.342	-0.148
Raw and refined sugar (SACU)	1.552	1.838	3.895	4.139	0.084	0.276
Other manufacturing (SACU)	0.253	0.693	0.158	0.539	0.151	0.451
Services (SACU)	0.078	0.478	0.081	0.429	0.079	0.353
<i>Primary agriculture</i>	-0.114	0.166	0.235	0.478	0.249	0.440
<i>Agriculture related</i>	-0.063	0.226	0.336	0.587	0.023	0.220
<i>All other industries</i>	0.127	0.526	0.103	0.450	0.099	0.372
Wheat (USA)	0.226	0.227	0.233	0.234	-0.019	-0.019
Oilseeds (USA)	-0.001	-0.001	0.002	0.002	0.009	0.009
Sugar cane (USA)	-0.075	-0.077	-0.265	-0.267	-0.006	-0.008
Other crops (USA)	-0.039	-0.039	-0.033	-0.033	-0.022	-0.022
Cattle, sheep (USA)	0.082	0.082	0.042	0.042	-0.006	-0.006
Other animals (USA)	0.070	0.070	-0.015	-0.015	-0.014	-0.014
Cattle, sheep meat (USA)	0.086	0.086	0.054	0.054	-0.004	-0.004
Other meat products (USA)	0.181	0.181	-0.008	-0.007	-0.006	-0.006
Vegetable oils and fats (USA)	0.088	0.088	0.084	0.084	0.085	0.085
Raw and refined sugar (USA)	-0.075	-0.078	-0.268	-0.270	-0.006	-0.008
Other manufacturing (SACU)	0.006	0.006	0.008	0.008	0.008	0.008
Services (SACU)	0.001	0.001	0.001	0.001	0.001	0.001
<i>Primary agriculture</i>	0.019	0.019	0.007	0.007	-0.009	-0.009
<i>Agriculture related</i>	0.022	0.022	0.004	0.004	-0.001	-0.001
<i>All other industries</i>	0.002	0.002	0.002	0.002	0.002	0.002

## 1. Introduction

This report documents analysis of the economic effects of the proposed SACU/USA free trade agreement using a specially-built dynamic version of the GTAP world general equilibrium model. The work has been undertaken by the Centre of Policy Studies (CoPS) for the South African National Department of Agriculture (NDA).

Seven scenarios are modelled. The first is a baseline projection. The baseline is a sequence of annual forecasts for the global economy, constructed using external forecasts for macro variables and for rates of import protection and export subsidies. In effect, the baseline shows what might be expected to happen if there was no SACU/USA free trade agreement. The remaining six scenarios, which are described below, embody various forms of the agreement.

- G. *Fixed long-run employment/no exemptions.* This is our central-case free trade scenario. It involves across-the-board elimination of all forms of import protection on SACU imports into the USA and on USA imports into the SACU. The cuts are implemented gradually over a ten-year period, 2005 to 2014. Standard modelling assumptions apply, including the assumption that real wage rates adjust to keep employment fixed in the long-run. This means that in each region the free trade agreement has no long-run effect on aggregate employment. Any long-run changes in the labour market are revealed as changes in real wage rates rather than as changes in employment.
- H. *Elastic supply of unskilled labour/no exemptions.* Same as the central case (A) except that we make allowance for the presence of surplus unskilled labour in the SACU. Specifically, we assume that employment of unskilled SACU workers can vary, even in the long run, at a fixed real wage rate. For skilled SACU workers we maintain the standard long-run treatment of fixed employment and variable wage. With this alternative treatment of SACU's labour market the free trade agreement may lead to long-run gains in employment, a possibility ruled out in Scenario A.
- I. *Fixed long-run employment/less conservative.* Same as the central case (A) except that some products are exempted from the protection cuts and others are subject to cuts of less than 100 per cent. Specifically, all SACU rates against USA imports are cut by 100 per cent except those applying to cereals, poultry, dairy products and non-agricultural manufactured products. Protection afforded poultry and dairy does not change. Protection on cereal grain imports is cut in equal portions annually from 2011 to 2016. Protection on non-agricultural manufactured products is cut by 95 per cent. On the other side, all USA rates against SACU imports are cut by 100 per cent, except those applying to red meat products, dairy products, sugar and non-agricultural manufactured products. Protection on red meat and dairy products does not change. For sugar, an increasing quota is phased in for sugar entering the USA duty free: 41,100 tonnes (the current rate) in 2005, increasing in equal quantities per year up to 82,200 tonnes in 2014. Protection on SACU non-agricultural manufactured products is cut by 95 per cent.
- J. *Elastic supply of unskilled labour/less conservative.* Same labour market assumptions used in Scenario B, but with the free-trade exemptions listed for Scenario C.
- K. *Fixed long-run employment/more conservative.* Same labour market assumptions used in Scenario A, with cuts in protection of 100 per cent for all goods except the following. For USA imports into the SACU, rates on wheat and cereal grains nec, on red and poultry meat, on dairy products, and on highly processed food products such as pasta and canned food are unchanged. The rate of protection on non-agricultural manufacturing is cut by 90 per cent. For SACU imports into the USA, rates on red meat products, on dairy products, on sugar, on vegetables, fruit and nuts, on highly processed foods, and on beverages and tobacco products are unchanged. The rate on non-agricultural manufacturing is cut by 90 per cent.

- L. *Elastic supply of unskilled labour/more conservative.* Same labour market assumptions used in Scenario B, but with the free-trade exemptions listed for Scenario E.

The rest of this document is organised as follows. The version of GTAP model used in this study is explained in Section 2. Details of the baseline are given in Section 3. Having produced the baseline, we next generate revised forecasts, including shocks through time to represent the alternative scenarios described above. The effects of these shocks are reported in Section 4 as deviations between the values of variables in the revised forecasts and their values in the baseline. In the final section, using a new technology developed at CoPS, we show how much of the changes due to the Agreement are due to SACU's liberalisation, and how much is due to USA's liberalisation.

## 2. The GTAP model

This section has three parts. An overview of the static core of the GTAP model is given in Section 2.1. Section 2.2 summarises the model's database.<sup>1</sup> Finally, in Section 2.3 we describe the modifications that transform the static model into a dynamic one, allowing us to report simulation results on a year-to-year basis.

### 2.1 The static core

GTAP is a multi-region CGE model designed for comparative-static analysis of trade policy issues. The version of the model taken as a starting point for this study is as documented in Hertel (1996). Our version distinguishes the 10 regions shown in Table 1, and the 19 single-product sectors shown in Table 2. In addition to the 19 sectors there are three other agents in each region: a capital creator, a household and the government.

GTAP determines regional supplies and demands of goods and services through optimising behaviour of agents in competitive markets. Optimising behaviour also determines sector demands for primary factors, i.e., labour, capital, land and natural resources. In each region there are two types of labour (skilled and unskilled) and a single, homogenous capital good. In standard long-run comparative static applications of the model, total supplies of labour, land and natural resources are fixed for each region, while capital can cross regional borders to equalise percentage changes in rates of return.

The modelling of each regional economy in GTAP is based on ORANI, a single region model of Australia (Dixon, e al. 1982). However, unlike ORANI, GTAP models inter-regional linkages arising from the flows of tradable goods and services and of capital. In doing so it ensures that each region's total exports equal total imports of these goods by other regions.

The basic theoretical assumptions made in GTAP are as follows.

#### *Markets*

Demand equals supply in all markets. Each market is assumed to be competitive, implying equality between the price received by the producer and the producer's marginal cost. Regional governments intervene in their own markets by imposing taxes and subsidies on commodities and primary factors, thus driving wedges between prices paid by purchasers and prices received by producers.

In markets for traded commodities, buyers differentiate between domestically produced products and imported products with the same name.<sup>2</sup> Product differentiation is also allowed

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<sup>1</sup> The database notionally reflects the year 1997. It is updated via model simulation to the year 2004, which is the starting point for our deviations simulations.

<sup>2</sup> Allowing for the possibility that imported products may not be perfectly substitutable for the corresponding domestic product is an idea first put forward in Armington (1969).

between imports by region of origin. This allows for two-way trade across regions in each tradable product.

#### *Input demands for production of commodities*

Two broad categories of inputs to production are recognised: intermediate inputs and primary factors. In every region, each sector is assumed to choose the mix of inputs to minimise total cost for a given level of output. Sectors are constrained in their choice of inputs by a three-level nested production technology. At the first level, intermediate-input bundles and primary-factor bundles are used in fixed proportions. At the second level, intermediate input bundles are formed as combinations of imported bundles and domestic goods with the same name, and primary-factor bundles are formed as combinations of labour, capital and land. In both cases the aggregator function has a Constant Elasticity of Substitution (CES) form. At the third level, imported bundles are formed as CES combinations of imported goods with the same name from each region.

#### *Household demands*

Each region has a single representative household. Aggregate household expenditure is determined as a constant share of total regional income (household consumption plus government expenditure plus national savings). The household buys bundles of commodities to maximise utility subject to its expenditure constraint.<sup>3</sup> The bundles are CES combinations of domestic goods and import bundles, with the import bundles being CES aggregations of imports from each region.

#### *Demands for inputs to capital creation and the determination of investment*

The cost-minimising capital creator in each region combines inputs to assemble units of capital, subject to a nested production technology similar to that facing each sector for current production. The only difference is that the capital creator does not use primary factors. The use of primary factors in capital creation is recognised indirectly through inputs of commodities to capital construction.

Investment in each region is financed from a global pool of savings. Each region contributes a fixed proportion of its income to the savings pool. In standard GTAP, there are two alternative ways that this pool is allocated to investment in each region. The first makes investment in each region a fixed proportion of the overall size of the pool. Thus if the pool increases by 10 per cent, investment in each region increases by 10 per cent. The second relates investment allocation to relative rates of return. Regions that experience increases in their rate of return relative to the global average will receive increased shares of the investment budget, whereas regions experiencing reductions in their rate of return relative to the global average will receive reduced shares

#### *Government demands for commodities*

The share of aggregate government expenditure in each region's income is held fixed. Government expenditure is allocated across commodities by a Cobb-Douglas distribution. The allocation of total expenditure on each good to domestically produced and imported versions is based on the same nesting scheme used to allocate total household expenditure on each good.

## **2.2 Database**

The GTAP data base comprises: input/output data for each region; bilateral trade data derived from United Nations trade statistics; and support and protection data derived from a

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<sup>3</sup> GTAP represents consumer demands using the Constant Difference Elasticity implicit expenditure function.

number of sources. The simulations reported in this study are based on version 5 of the database, as described in McDougall and Dimaranan (2001). The database contains estimates of production costs, final demand values, bilateral trade values and various tax levels for 1997.

The levels of import protection on SACU imports from the USA and on USA imports from SACU are summarised in Table 3. This table shows for both regions, trade-weighted averages of bilateral *ad valorem* import tariffs (and tariff equivalents of bilateral non-tariff barriers) levied on imports.<sup>4</sup> Data for 1997 come directly from the GTAP database. Next to the 1997 data are estimates for 2004 taken from our baseline projection (see Section 3). According to our baseline, in 2004 rates of protection of over 20 per cent are imposed by SACU on USA imports of wheat, meats, dairy products, and raw and refined sugar. In the USA, rates of over 20 per cent apply to SACU imports of other crops and milk products.

The US dollar value of SACU imports in the USA and of USA imports in SACU are summarised in Table 4. In both cases imports are dominated by imports of manufactured products and services. Within agriculture, SACU imports into the USA are strongly oriented towards vegetable, fruit and nuts, raw and refined sugar, other food products and beverages and tobacco. Wheat, other cereal grains, meat products, other food products and beverages and tobacco dominate USA imports into the SACU.

### **2.3 Modifications to GTAP for this study**

The model used in this study was based on the standard GTAP Version 6.0 model, released April 2001. Onto this basis we added:

- a series of new variables representing useful aggregates of primary agricultural and agriculture-related sectoral outputs, exports and imports. These did not alter the basic theory of GTAP in any way and were merely defined for convenience.
- new variables and equations that furnish GTAP with simple dynamic behaviour.<sup>5</sup> These allowed us to run linked annual GTAP simulations for each year between 1997 and 2023. For each region, the new equations:
  - linked net investment in each year to the change in the capital stock for that year.
  - allowed employment to respond temporarily to changes in real wage rates.
  - allowed rates of return to capital to respond temporarily to changes in demands for capital.

In the long run, all 3 dynamic equations reduce to simpler forms: investment moves in proportion to capital stock; and employment and rates of return converge to baseline trend levels. Additionally, all three dynamic equations were over-ridden by exogenous information in our baseline scenario. They affect only the adjustment paths to the new long-run equilibrium in our deviation scenarios.

## **3. Baseline Projection**

This section has two parts. In Section 3.1, we describe the key inputs to our baseline. Model-generated forecasts for industry outputs in SACU and the USA, and for trade between the two regions are discussed in Section 3.2.

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<sup>4</sup> The GTAP data do not include protection data for services.

<sup>5</sup> The dynamics added to the GTAP model for this study are similar in style to those detailed in Ianchovichina and McDougall (2000)



### ***3.1 Assumptions Used in the Baseline Projection***

In generating the baseline projection, we use forecasts for key supply-side macroeconomic variables and assumptions for changes in import protection and export taxes based on data provided by Terrie Walmsley, a researcher associated with the GTAP project. These forecasts are recent revisions of those documented in Walmsley *et al.* (2000). They are mainly based on the World Bank's Global Economic Perspectives Data Base.

#### *Macroeconomic Inputs (Table 5)*

Table 5 shows our assumptions for macroeconomic variables in terms of average annual growth rates over the period 1997 to 2023. We assume that the volumes of agricultural land and natural resources do not change in the baseline and in each of the deviation scenarios. The region with the highest projected growth rate for real GDP is ChinaHK (7.0 per cent average annual growth). The region with the lowest projected growth rate is EFTA (2.3 per cent). Real GDP in the SACU is projected to grow at an average annual rate of 3.1 per cent, which is a little above the projected global rate of growth of 3.0 per cent. Growth in unskilled employment is generally slower than growth in skilled employment. All regions are projected to become more capital intensive over the forecast period, with growth rates in capital significantly exceeding growth in employment. Population is projected to grow in all regions except the EU, where an average annual fall of 0.1 per cent is forecast. SACU's population is forecast to grow at an average annual rate of 1.1 per cent, significantly less than population growth of 2.3 per cent in RestSSAfrica.

#### *Assumptions for Import Protection and Export Subsidies*

In the baseline we assume that rates of import protection and export subsidies in each region fall in line with announced plans. Rates of import protection in the USA and SACU remain at their 2004 values (see Table 3) through to 2023.

### ***3.2 Baseline Projections for Industry Output and SACU/USA trade***

#### *Industry Output (Table 6)*

Table 6 gives baseline projections for industry output in the SACU and the USA. These are expressed as average annual growth rates between 1997 and 2023. A striking feature of these projections is their evenness, with the gap between the slowest and fastest growing industries being significantly less than in recent history. This reflects, in the main, two factors. The first is that our assumptions for macro variables imply fairly uniform rates of growth across the major expenditure aggregates (consumption, investment and net exports) in each region. The second is that we have made no attempt to factor into our baseline industry-specific changes in technology and commodity-specific changes in consumer tastes. Changes in technology and tastes account for most of the major historical changes to the industrial structures of countries.

At the bottom of Table 6 are projected growth rates for aggregated industry groups. In the SACU primary agriculture is projected to grow at an average annual rate of 2.0 per cent and agricultural related industries at an average annual rate of 2.2 per cent. Both rates are below the corresponding rates in the USA.

#### *Volume of bilateral trade between SACU and USA (Table 7)*

Table 7 gives baseline projections for the volume of SACU/USA bilateral trade by commodity. These are expressed as average annual growth rates between 1997 and 2023. The total volume of SACU exports to the USA is projected to grow at an average annual rate of 2.1 per cent. This is well below the projected growth rate for USA exports to the SACU. The disparity in growth rates is less for primary and related agricultural products, with growth in SACU agricultural exports to the USA projected to be just over one percentage point below that

of growth in USA agricultural exports to the SACU. The SACU industry with the fastest projected growth in export sales to the USA is beverages and tobacco products (7.8 per cent average annual growth per annum), followed by raw and refined sugar (7.5 per cent). At the other end of the scale is wheat, other cereal grains (mainly Maize) and vegetables, fruit and nuts, each with projected average annual growth rates of 2.3 per cent.<sup>6</sup>

#### **4. The effects of the USA/SACU free trade agreement**

Aspects of the experiment design for the free trade scenarios are discussed in Section 4.1. Simulation results for each of the six alternative scenarios are examined in Section 4.2.

##### **4.1 Experiment design**

The free-trade simulations involve complete or partial removal of *ad valorem* rates of import protection on SACU imports into the USA and on USA imports into the SACU. The following assumptions are made.

###### *Labour markets*

For the full employment simulations (Scenarios A, C and E) we assume that in each region deviations in the average real wage rate (i.e., the average nominal wage rate deflated by the CPI) from its baseline level increases in proportion to the deviation in total employment from its baseline level. The coefficient of proportionality is chosen so that the aggregate employment effects of a shock to the economy are largely eliminated after five years. In other words, after about five years, the benefits (costs) of a favourable (unfavourable) shock are realised almost entirely as an increase (fall) in the national real wage rate, rather than as an increase (decline) in employment. This labour market assumption reflects the idea that in the long-run national employment is determined by demographic factors, which are largely unaffected by changes in trade policies. It is also consistent with conventional macro-economic modelling in which the long-run rate of unemployment is treated as a constant.

In Scenarios B, D and F we make allowance for long-run changes in unskilled employment in the SACU. For these scenarios we assume that the real wage rate paid to unskilled workers in the SACU does not deviate from its baseline levels. Because the unskilled real wage rate is fixed, employment of unskilled workers in the SACU can deviate from baseline levels in the short and long run.

###### *Taxes and government budget balances*

We assume that the shocks associated with the free trade agreement make no difference to the paths of commodity taxes other than trade taxes in the USA and SACU. We also assume no deviation in the paths of government budget balances, through implicit adjustments in direct tax rates or in transfer payments.

###### *Private consumption, government consumption, saving and investment.*

Private and public consumption expenditures and nominal savings in each region are assumed to move with regional income. We assume that in each region, investment will deviate from its baseline value in line with the deviation in capital.

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<sup>6</sup> Exports of sugar cane are also forecast to grow at an average annual rate of 2.3 per cent, but this is from a zero base (see Table 4).

### *Rates of return on capital*

In deviation simulations our dynamic version of GTAP allows for short-run divergences in rates of return on regional capital stocks from their levels in the baseline. Such divergences cause divergences in capital and hence in investment. The divergences in capital stocks gradually erode the divergences in rates of return, so that in the long-run rates of return in each region return to their baseline levels.

### *Production technologies*

GTAP contains many types of technical change variables. In the deviation simulation we assume that all technology variables have the same values as in the baseline simulation.

## **4.2. Impacts of the free-trade scenarios**

The main effects of the SACU/USA free trade agreement are given in a series of tables. These show, for the period 2005 to 2023, deviations of a range of SACU and USA variables from their values in the baseline projection. For each scenario there are four tables:

Table 1: Macroeconomic variables (percentage deviations from baseline values);

Table 2: Industry output (percentage deviations from baseline values);

Table 3: Trade volumes by commodity (percentage deviations from baseline values); and

Table 4: Regional contributions to the long-run percentage deviations in SACU exports.

The first table shows year-to-year percentage deviations in a range of macroeconomic variables, including the real components of demand, real GDP and employment. The second table contains year-to-year deviations in the output of each industry in the SACU and the USA. The third table give year-to-year percentage deviations in bilateral trade volumes, by commodity between the SACU and the USA. The final table shows contributions by region-of-destination to the final (2023) percentage deviations from base in SACU exports.

### *4.2.1. Scenario A: Fixed long-run employment/No exemptions*

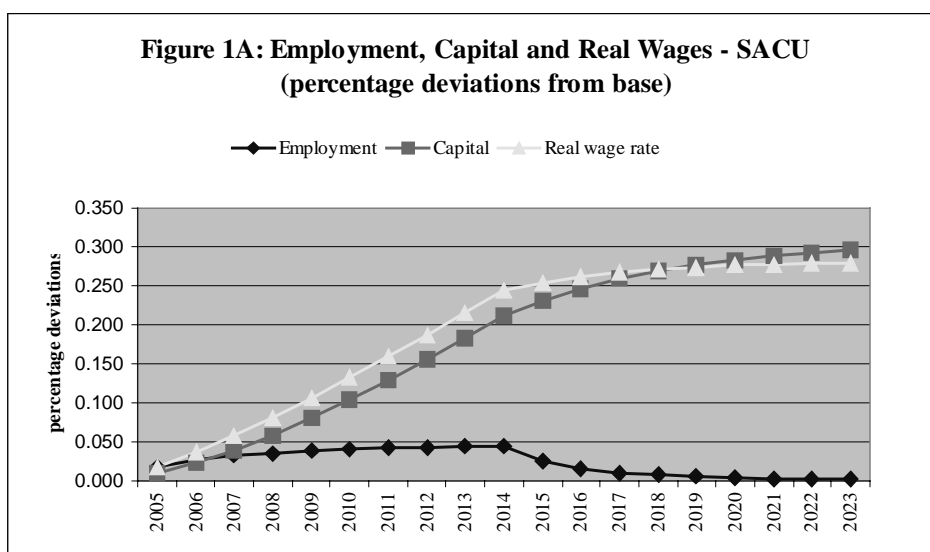
Our explanation is given in a series of numbered points. Italicised headings to the numbered points outline the main structure of the explanation. The explanation focuses mainly on outcomes for the SACU, with a brief discussion of the effects on the USA economy given in the final point.

- I. *The initial (2005) cuts in protection lead to increased employment.* Table 1A shows that in 2005 the initial cuts in protection cause employment in the SACU to increase, relative to its baseline value, by 0.018 per cent. This reflects, in the main, the impacts of the cuts in SACU's own import protection. These put a wedge between the price of expenditure (the price of consumption for example) and the price received by producers (the price of GDP at factor cost<sup>7</sup>). With the real wage rate from the employee's point of view (i.e., the nominal wage rate deflated by the price of consumption) assumed to be sticky in the short run, the nominal wage diverges only slowly from the price of consumption. Hence, initially, the nominal wage falls relative to the price of output, leading to a reduction in the real cost of labour and to increased employment.

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<sup>7</sup> The price of GDP at factor cost is a weighted average of the prices of primary factors (land, unskilled labour, skilled labour, capital and natural resources). The price of GDP at market prices, which is also reported in Table 1A, is a weighted average of the prices of primary factors plus the unit cost of indirect taxes net of subsidies. All else unchanged, cuts in protection lower the unit cost of indirect taxes, leading to a fall in the price of GDP at market prices relative to the price of GDP at factor cost.

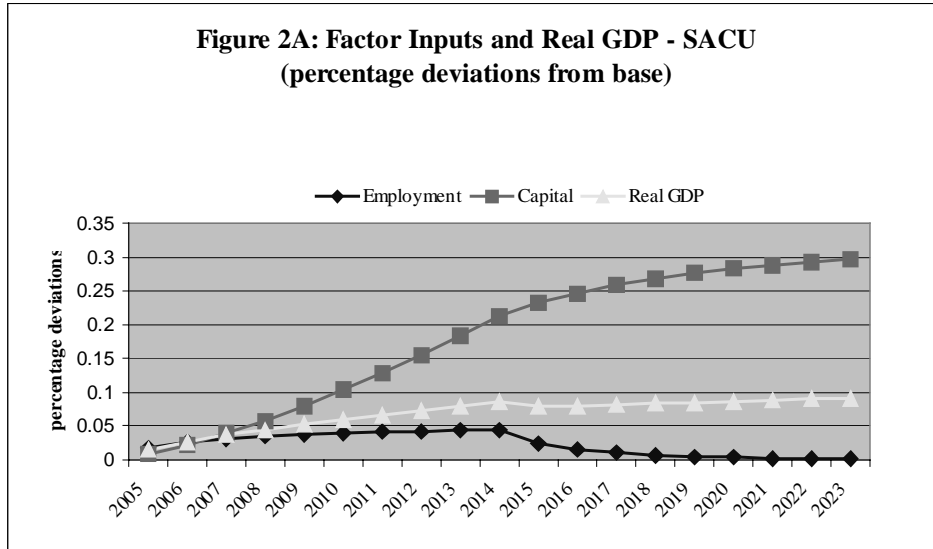
II. *Between 2005 and 2014, successive cuts in protection lead to increases in capital and real wage rates with fairly stable deviations in employment (see Figure 1A). According to the labour-market specification in our dynamic version of GTAP, if employment is above its baseline level, employees will demand an increase in their real wage rate. This strengthens producers' incentive to substitute capital for labour, leading to an increase in the capital/labour ratio. It follows that the progressive cuts in protection between 2005 and 2014, which put upward pressure on employment, lead to successive increases in the real wage rate and capital. Over this period the employment deviations are fairly steady because the upward pressure arising from the protection cuts is just outweighed by the real wage adjustment. In 2014, relative to baseline levels, total employment has increased by 0.045 per cent, capital by 0.212 per cent, and real wage rates by 0.25 per cent.*



III. *After 2014, employment moves back to its baseline level, while capital and real wages progressively increase relative to their base levels. In the years following the last year of protection cuts the dynamic mechanisms in the model move the economy towards a position of long-run equilibrium. In the long-run, the deviations in employment and in the rate of return on capital (the nominal rental on capital relative to the price of investment) have been eliminated. With the rate of return on capital fixed the real cost of capital becomes the dominant influence on factor inputs. The real cost of capital is the nominal unit-cost of capital deflated by the price of output (the price of GDP at factor cost). With the rate of return constrained, the nominal capital rental is effectively indexed to the price of investment. As shown in Table 1A, the cuts in protection cause the price of investment, like the price of consumption, to fall relative to the price of output. Most of this fall is due to the cut in protection on non-food manufacturing – the only input to investment currently afforded protection. The fall in the price of investment relative to the price of output reduces the real cost of capital, causing capital to expand (Figure 1A). In the final year of the simulation (2023), the economy has almost fully adjusted to a new long-run equilibrium, with the employment deviation almost eliminated. At this point, capital and the real wage rate have each increased relative to their baseline values by around 0.3 per cent.*

IV. *Cuts in protection lead to increased real GDP (see Figure 2A). The deviations in real GDP reflect a weighted average of deviations in factor inputs. Accordingly, real GDP is elevated above its baseline level in each year of the simulation. In the long-run year the deviation is 0.092 per cent (see Table 1A). It can be shown that this deviation is*

proportional to the percentage change in the real cost of capital directly due to the cut in SACU protection (see Box 1).



**Box 1: Note on the size of the long-run GDP effect – Scenario A**

The equation below provides a generally good approximation to the true long-run change in real GDP arising from a cut in import protection. By “true long-run change” we mean the conventional long-run comparative static solution, in which, following an exogenous shock, the real wage rate and capital have adjusted to force national employment and the rate of return on capital back to their baseline levels.

The approximation is based on the following observations (see Adams, 2003):

1. that in the long-run the percentage change in a weighted average of factor inputs (labour and capital) arising from a cut in protection is inversely proportional to the percentage change in real cost of capital; and
2. that in the long-run the percentage reduction in real cost of capital resulting from a protection cut is approximately the value of the protection removed as a percentage of GDP adjusted for changes in the terms of trade.

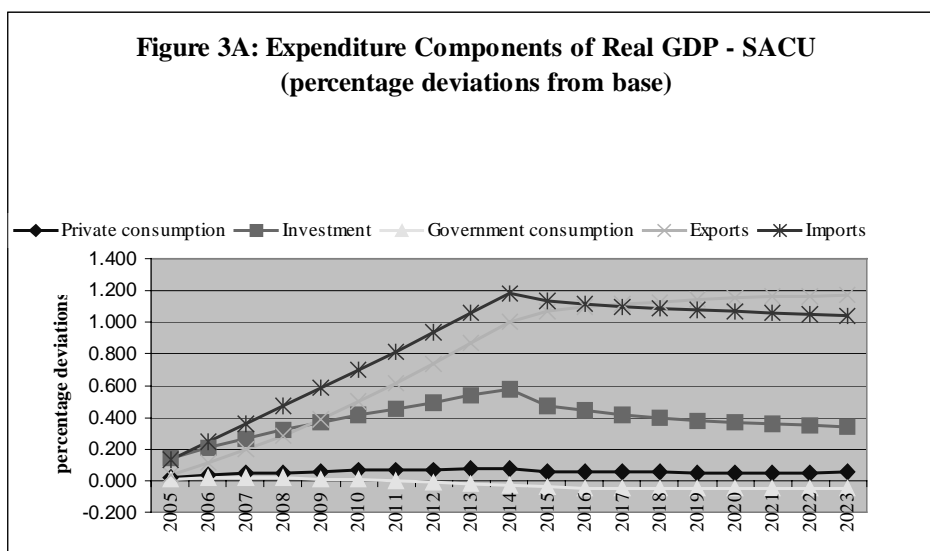
Combining these ideas yields, after some formal mathematical manipulation, the following approximation for the long-run percentage deviation in real GDP (gdp),

$$gdp = \left\{ \frac{S_K \times \sigma_{KL}}{1 - S_K} \right\} \times (-t + S_{trade} \times tot) \quad (1),$$

where:  $S_K$  is the share of the cost of capital in GDP,  $\sigma_{KL}$  is the capital to labour substitution elasticity,  $t$  is the value of the tariff change as a percentage of GDP,  $S_{trade}$  is the share of exports in GDP, and  $tot$  is the percentage deviation in the terms of trade. Calibrating using baseline data for 2023 yields values for the coefficient in curly brackets of 0.61 (SACU) and 0.96 (USA). The value of the tariff change as a percentage of GDP in 2023 is

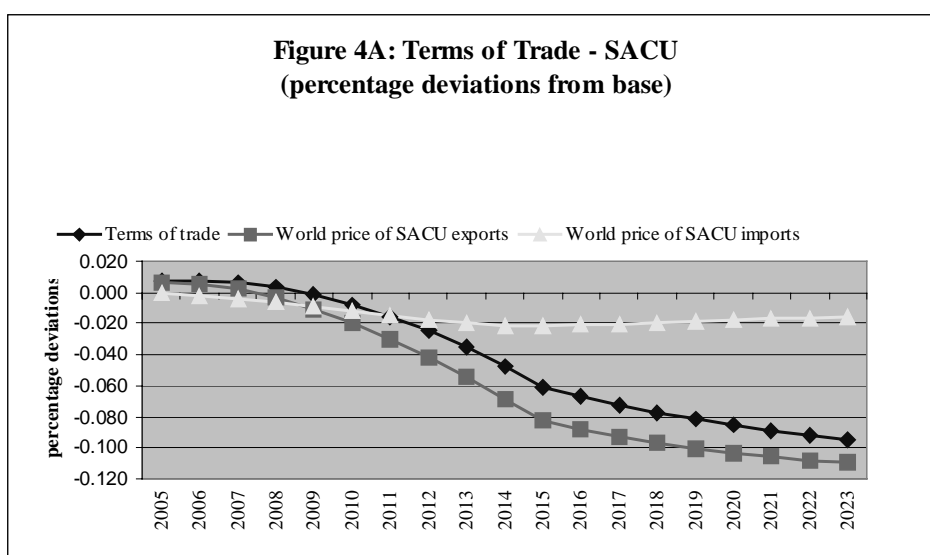
-0.17 (SACU) and -0.002 (USA). In both cases the terms of trade effect is negligible. Applying these values in (1) yields approximations to the long-run percentage deviation in real GDP of 0.104 per cent (SACU) and 0.002 per cent (USA). These compare to the “true” projected values of 0.092 per cent and 0.003 per cent.

- V. *Real private consumption rises (Figure 3A), but by less than real GDP.* Figure 3A shows that the free trade agreement increases real private consumption in the SACU. However, the percentage increases in consumption are smaller than the percentage increases in real GDP. In GTAP *nominal* private consumption moves with *nominal* Net Gross Product (NGP). Nominal NGP is nominal GDP less depreciation. In a simulation where capital increases the cost of depreciation also rises causing nominal NGP to fall relative to nominal GDP. This is the main reason why real private consumption falls relative to real GDP. Another influence is the terms of trade decline (see point X). A reduction in the terms of trade generally increases the price of consumption (which includes the price of imports but not the price of exports) relative to the prices of NGP and GDP (which include the price of exports but not the price of imports). It therefore reduces real consumption per Rand of real NGP.



- VI. *Real investment increases (Figure 3A) to accommodate the increase in capital.* With capital progressively rising above base (Figure 2A), investment must remain above its baseline levels. In 2023, the investment deviation is 0.339 per cent (Table 1A).
- VII. *Real government consumption initially increases then falls relative to baseline levels (Figure 3A).* Like private consumption, nominal government consumption moves with nominal NGP. However, the deviations in real government consumption are weaker than the deviations in real private consumption, and become negative after 2010. This contrast between deviations in real government and real private consumption is due to contrasting impacts on the respective prices. In each year, the agreement causes the price of government consumption to rise relative to the price of private consumption. This is because, relative to private consumption, public consumption is more oriented towards the purchase of services that are labour intensive. It follows that in a simulation where the real wage rate rises relative to its baseline level that the price of public consumption will tend to increase relative to the price of private consumption.

- VIII. *Through the first half of the simulation period real gross national expenditure (GNE)<sup>8</sup> rises relative to real GDP, causing the balance between export and import volumes to deteriorate (Figure 3A). This is reversed in the second half of the period. Throughout the simulation period real private and public consumption (C and G) fall relative to real GDP (Y), while real investment (I) increases. The increase in investment relative to GDP in the first half of the period, though, is a little stronger than the increase in the second half, causing real GNE (C+I+G) to increase relative to real GDP in the first half, but to decrease in the second half. Movements in the balance between export and import volumes (X-M) mirror the movement in real GNE relative to real GDP. Thus in the first half of the period the volume of net trade deteriorates compared to its baseline level, while in the second half it improves.*
- IX. *Imports and exports rise (Figure 3A). The changes in the volume of trade noted above are very mild. Generally, in each year the deviation in export volume more or less matches the deviation in import volume. The cuts in protection lead directly to increases in imports. Matching increases in exports are brought about by a combination of cuts in USA protection against SACU imports and real exchange rate devaluation. Changes in the real exchange rate bring about the necessary changes in X-M that reconcile movements in Y with movements in C+I+G. Devaluation of the real exchange is indicated by a reduction in the domestic cost of production (the GDP deflator at factor cost) relative to the average cost of production elsewhere. Real devaluation means improved competitiveness for local producers, and hence increased exports and reduced imports. Overall, as a result of the bilateral cuts in protection and changes in the real exchange rate in 2023, relative to baseline levels, the volume of SACU imports rises 1.044 per cent and the volume of exports rises 1.169 per cent.*



- X. *Falls relative to base in the terms of trade eventually accompany the cuts in protection (Figure 4A). In the first few years of the simulation SACU's terms of trade improve relative to baseline levels. Thereafter the terms of trade steadily deteriorate. Figure 4A shows that the deviations in the terms of trade closely match the deviations in the world price of SACU exports. The world price of SACU imports changes little from baseline values. In this simulation, the deviations in export price are the net outcome of two*

<sup>8</sup> The percentage change in real GNE is the weighted average of percentage changes in real private consumption, real public consumption and real investment.

offsetting influences. Cuts in USA protection increase the demand for SACU exports and hence put upward pressure on the world price of SACU exports. Offsetting this is real exchange rate devaluation which tends to lower the price of SACU products on world markets. In the early years of the simulation the impacts of USA protection cuts just outweigh the impacts of real devaluation. Gradually, though, the influence of the USA cuts dissipates and the real devaluations become the dominant influence on SACU's terms of trade.

Deterioration in the terms of trade has a generally negative impact on real GDP and real consumption. All else unchanged, it increases the price of expenditure relative to output (see point V). This reduces the amount of real consumption per Rand of real income. It also increases the real cost of labour when, in the short-run, real wages are fixed and the real cost of capital when, in the long-run, capital's rate of return is fixed. Ultimately both of these effects reduce real GDP, offsetting to some extent the positive impacts of the protection cuts (see points I to IV).

- XI. *For some SACU industries cuts in protection significantly raise output relative to base in the long run.* Table 2A shows projections of the percentage change in industry output in the SACU and the USA due to the free trade agreement. The effects of the agreement vary across industries. The mechanisms, however, are fairly straightforward, depending primarily on the extent to which the protections cuts exposes sectors to additional import competition and on each sector's export orientation. Data on levels of import competition and export orientation, along with information on sales patterns generally are given in Table 8.

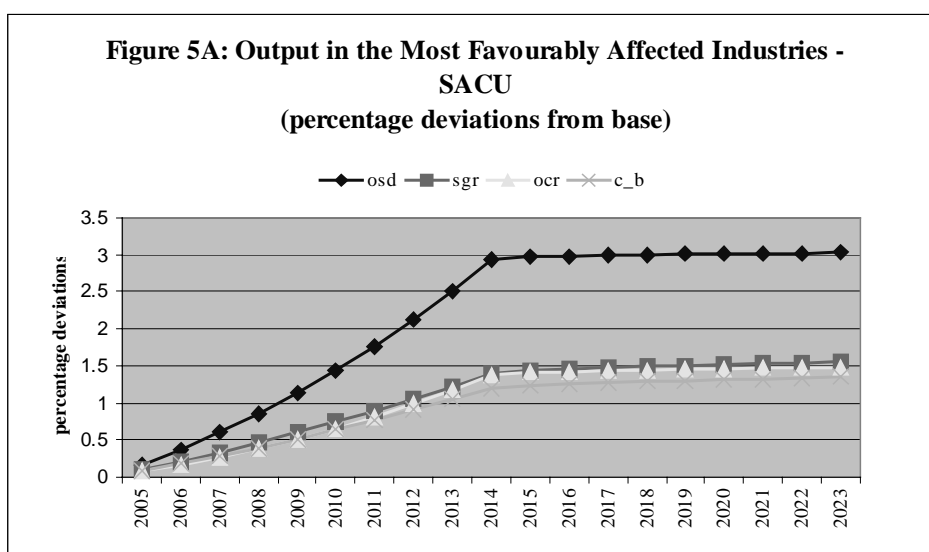


Figure 5A shows deviations in output for the (four) most favourably affected SACU industries.<sup>9</sup> Of these, oilseeds is projected to gain most in the long-run. Two-way trade in oilseeds between the SACU and the USA is quite high. Table 8 shows that 3.2 per cent of SACU oilseed production is exported to the USA, while USA imports comprise 5.7 per cent of the local oilseed market. The only other SACU produced product with a higher USA-export propensity is sugar (9.4 per cent). The initial rate of protection on SACU oilseed imports to the USA is 17.7 per cent. The rate of protection on USA oilseed imports to the SACU is 6.0 per cent. Cutting these protection rates increases

<sup>9</sup> Shown in this table are industries for which output in the long-run rises by more than one per cent relative to baseline levels.

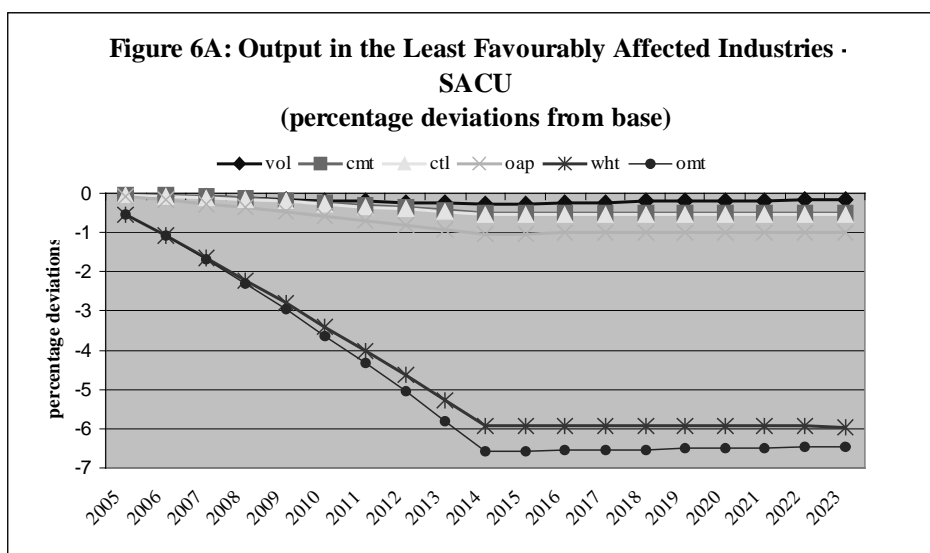


USA imports into the SACU, but increases SACU exports to the USA by much more. The net outcome for the SACU industry is positive, with exports to the USA up 135 per cent relative to base in the long run year (first panel of Table 3A), while imports from the USA rise 23.2 per cent relative to base (second panel of Table 3A).

The next most favourably affected SACU sector is sugar. It has an especially high USA-export propensity (Table 8), and faces negligible competition from USA imports (Table 8). Thus, even though the initial rate of protection against SACU sugar in the USA is quite low, removing the protection imparts a considerable benefit to the SACU industry, with exports to the USA increasing by 8.6 per cent relative to base in the long run year (Table 3A). The SACU sugar cane industry, which is the fourth-ranked industry shown in Figure 5A, gains output because of its close relationship with the sugar industry.

The third most favourably affected industry is other crops. The USA-export propensity for this industry is small but non-negligible (Table 8), and the initial rate of protection affecting exports to the USA is quite high (Table 2). Moreover SACU does not import other crops from the USA. Free trade, therefore, leads to a significant increase in output for the SACU industry based on increased exports to the USA (Table 3A).

- XII. *For some other SACU industries SACU/USA free trade lowers output relative to base in the long run.* There are six industries for which the free trade agreement reduces output relative to baseline values in the long-run year. These are shown in Figure 6A. Prominent among these is wheat and other meat products. Both industries have low USA-export propensities (Table 8), and face quite strong competition from USA imports on their local market. USA products comprise 16.5 per cent (wheat) and 9.5 per cent (other meat products) of total local sales (Table 8). These relatively high rates of import penetration, combined with initially high rates of protection in the SACU (Table 2) mean that when the protection is removed the surge in USA imports causes relatively significant contractions relative to base in the output of the local industries.



The third least favourably affected industry is other animal products. It suffers from having close connections with the other meat products industry.

The remaining industries shown in Table 6A are the primary and related red-meat sectors (ctl and cmt) and vegetable oils and fats (vol). Their presence in the list of least-favourably affected industries is somewhat surprising given the lack of USA/SACU trade in these products (Table 8). However, the rates of protection in the SACU on USA

imports of cmt and vol is initially quite high and the removal of these rates generates enough additional imports (see the second panel of Table 3A) to reduce production of both SACU industries. The cml industry suffers in line with its main customer (cmt).

- XIII. *The free trade agreement has relatively mild, but positive, impacts on the majority of SACU industries.* Table 2A shows that the majority of industries are projected to experience changes in output (relative to baseline values) in the long-run year of between 0.02 per cent (other food products) and 0.38 per cent (vegetables, fruit and nuts). Industries in this least-affected group typically face little exposure to trade with the USA. Thus, even though, initially, there may be high bilateral rates of protection on the products produced by these industries (e.g., the rates applying to dairy products in both the SACU and the USA), removing this protection has relatively little direct impact. Another common feature of the least-affected industries is that they have weak input/output connections with industries that are most-affected.

The main influences on the least-affected group are the changes in final domestic demand brought by the free trade agreement. As discussed above, the agreement causes real private consumption and real investment in the SACU to expand relative to baseline levels and real government consumption to fall (see Table 1A). It follows, therefore, that industries with strong connections to household and investment demand, such as vegetables, fruit and nuts, and beverages and tobacco (see Table 8), will experience output increases relative to the government-oriented industry, services.

- XIV. *Overall, the long run impacts on primary agricultural industries and agricultural related industries in the SACU are negative.* Table 2A shows that in the long run the free trade agreement reduces total primary agricultural output in the SACU by 0.114 per cent relative to baseline levels. Total output in agricultural related industries falls by 0.063 per cent.
- XV. *From the SACU's point of view the free trade agreement is trade creating, with little evidence of trade diversion.* Table 4A reports contributions by region-of-destination to the final deviations in SACU export volumes. In the long-run export volumes expand relative to their baseline levels for all commodities. Nearly all of these expansions come from increased exports (export creation), with little or no evidence of export diversion.
- XVI. *The effects of the free trade agreement on the USA economy are generally positive.* In percentage deviation terms the effects of the free trade agreement on the USA economy are much smaller than the effects on the SACU economy. For example, in the long-run year the agreement increases real GDP in the USA by 0.003 per cent relative to its baseline level, while real GDP in the SACU rises 0.092 per cent compared to its baseline level (Table 1A). In dollar terms, though, the increases are similar, at around \$275 million in the long-run year.

At the industry level, the pattern of long-run output changes in the USA roughly mirrors that in the SACU. The USA industry that gains the most in terms of percentage change (relative to base) in output is wheat, which is the industry that suffers the largest percentage decline (relative to base) in the SACU. The USA industries that gain the least in percentage terms are the sugar and cane industries. These industries are projected to experience the second and third largest percentage increases in output (relative to base) in the SACU. USA production of oilseeds is projected to fall relative to baseline levels, but the percentage decline is smaller than that faced by other USA industries because the share of USA-exports in total SACU oilseed production is much higher than the share of SACU-exports in total USA oilseed production.

Overall, in the long-run the free trade agreement increases total output of primary agriculture in the USA by 0.019 per cent. Total output in agricultural related industries increases by 0.022 per cent.

#### 4.2.2.Scenario B: Elastic supply of unskilled labour/No exemptions

This scenario is the same as Scenario A except that we make allowance for the presence of surplus unskilled labour in the SACU. Specifically, we assume that employment of unskilled SACU workers can vary, even in the long run, at a fixed real wage rate. For skilled SACU workers we maintain the standard long-run treatment of fixed employment and variable wage. With this alternative treatment of SACU's labour market the free trade agreement may lead to long-run gains in employment, a possibility ruled out in Scenario A.

The main effects of this scenario are given in Tables 1B to 4B. Our explanation concentrates on highlighting the main differences between this scenario and Scenario A.

- I. *Allowing for increased employment of unskilled labour magnifies the macroeconomic consequences for the SACU of the free trade agreement.* Comparing Table 1B with Table 1A shows that the effects of the free trade agreement on real GDP and the real components of domestic expenditure are much larger when we allow for increased employment of unskilled labour. In Scenario B the free trade agreement increases real GDP in the long run year by 0.482 per cent relative to its baseline value (see Box 2). This compares with an increase of 0.092 per cent in Scenario A. Similar comparisons between Scenario B and Scenario A apply to the deviations in the main components of final demand.
- II. *In Scenario B, the free trade agreement increases (relative to baseline levels) unskilled employment by 0.664 per cent and total employment by 0.449 per cent in the long-run year.* No long-run change in employment is permitted in Scenario A. The long-run deviation in the economy-wide real wage rate in Scenario B is similar to that in Scenario A. The only difference is that in Scenario B all of the real wage rate increase accrues to skilled labour, while in Scenario A the real wage increase accrues equally to skilled and unskilled workers.

#### **Box 2: Note on the size of the long-run GDP effect – Scenario B**

In Box 1 we showed that the long-run deviation in real GDP resulting from a cut in protection is proportional to the size of the protection cut as a percentage of GDP adjusted for changes in the terms of trade. This rule applies regardless of whether, in the long-run, employment is fixed (Scenario A) or is partly fixed (Scenario B). The only difference is in the value of the coefficient of proportionality. If unskilled employment is allowed to vary, then the coefficient must be modified to take account of the additional variable factor, unskilled labour. Specifically, for the SACU in Scenario B,

$$gdp = \left\{ \frac{(S_K + S_U) \times \sigma_{KL}}{1 - S_K - S_U} \right\} \times (-t + S_{trade} \times tot) \quad (2),$$

where  $S_U$  is the share of the cost of unskilled labour in GDP, and the rest of the notation is as before. Calibrating using baseline data for 2023 yields, for the SACU, a value of 3.02 for the modified coefficient in curly brackets. Applying this value to the value of  $t$  noted in Box 1 yields an estimate of the long-run percentage deviation in real GDP for the SACU of 0.513 per cent. The "true" Scenario-B increase is 0.482 per cent.

- III. *In Scenario B imports and exports expand by more than in the central case.* In Scenarios A and B the long-run year the deviation from base in total exports roughly matches the long-run deviation from base in total imports. In Scenario B, however, additional economic activity causes demand for imports to increase by more than in Scenario A. Accordingly, in Scenario B total exports expand by more than in Scenario A.

- IV. *The industrial pattern of effects in Scenario B is similar to the industrial pattern in the reference case.* This can be seen by comparing Table 2B with Table 2A. The main differences arise from the larger increases in domestic final demand in Scenario B. In general, the additional domestic demand benefits industries that are more oriented towards domestic demand than industries that are highly export related (see Table 8).
- V. *In Scenario B, production of primary agriculture and agriculture-related products expand as a result of the free trade agreement.* This is in contrast to the central case where, in total, agricultural production is adversely affected by the agreement.
- VI. *The effects on the USA of the free trade agreement in Scenario B are similar to those in Scenario A.*

#### 4.2.3.Scenario C: Fixed long-run employment/less conservative

This scenario is the same the central case (A) except that some products are exempted from the protection cuts and others are subject to cuts of less than 100 per cent. Specifically, all SACU rates against USA imports are cut by 100 per cent except those applying to cereals, poultry, dairy products and non-agricultural manufactured products. Protection afforded poultry and dairy does not change. Protection on cereal grain imports is cut in equal portions annually from 2011 to 2016. Protection on non-agricultural manufactured products is cut by 95 per cent. On the other side, all USA rates against SACU imports are cut by 100 per cent, except those applying to red meat products, dairy products, sugar and non-agricultural manufactured products. Protection on red meat and dairy products does not change. For sugar, an increasing quota is phased in for sugar entering the USA duty free: 41,100 tonnes (the current rate) in 2005, increasing in equal quantities per year up to 82,200 tones in 2014. Protection on SACU non-agricultural manufactured products is cut by 95 per cent.

The main effects of this scenario are given in Tables 1C to 4C. Our explanation concentrates on highlighting the main differences between this scenario and Scenario A.

- I. *Allowing for the less-conservative exemptions in Scenario C has very little effect on the long-run deviation in real GDP for the SACU.* Table 1C shows that in the long-run year real GDP in the SACU increases by 0.091 per cent relative to its baseline level. This compares with an increase of 0.092 per cent in Scenario A. As noted in Box 1, in the long-run the deviation in real GDP reflects the deviation in the real cost of capital. Exempting some agricultural industries from the protection cuts has little impact on the real cost of capital in the long-run. The dominant influence is the cut in protection to non-food manufacturing (see point IV in Section 4.2.1), which is only slightly less in Scenario C (95 per cent) than in Scenario A (100 per cent).
- II. *The main impact of the less-conservative exemptions is on the industrial structure of the SACU.* The GTAP products directly affected by the less-conservative exemptions are cereal grains nec (gro), other meat products (omt) and its main supplier other animal products (oap), dairy products (mil), raw and refined sugar (sgr) and its main supplier sugar cane (c\_b), and other manufacturing. Exempting gro from cuts in protection has little impact on its production (compare Table 2C with Table 2A). This is because the initial rates of protection on gro-trade in both the SACU and the USA is very low (see Table 2). Exempting omt, however, does have significant effects on the SACU industry and its main supplier, other animal products. In Scenario A, output of omt declines relative to base by over six per cent in the long-run year. In Scenario B, the production of omt is hardly affected. There is very little two-way trade between the SACU and the USA in dairy products. Exempting these products, therefore, has little impact on dairy production. SACU sugar production increases relative to baseline levels in Scenario A. In Scenario C, production increases by more, due to the increased quota allocation in the USA. Slightly smaller cuts in protection on other manufacturing trade between the USA and the SACU leads to less production from the SACU industry.

#### *4.2.4 Scenario D: Elastic supply of unskilled labour/less conservative.*

This scenario is the same as Scenario B, but with the free-trade exemptions listed for Scenario C. The main effects of this scenario are given in Tables 1D to 4D.

The relationship of Scenario D to Scenario B is similar to that of Scenario C to Scenario A. The real GDP effect in Scenario D is slightly smaller than the real GDP effect in Scenario B, reflecting the smaller overall cut in protection. The main differences between the two scenarios are revealed in the changes to SACU's industrial structure (see Point II in Section 4.2.3). Notably, in Scenario D (see Table 2D) the increase (relative to base) in production of sugar and sugar cane is larger than in Scenario B (see Table 2B), and the effects on the production of other meat products and its live-animal supplier are smaller than the large adverse impacts in Scenario B.

#### *4.2.5 Scenario E: Fixed long-run employment/more conservative.*

This scenario is the same as Scenario A, with cuts in protection of 100 per cent for all goods except the following. For USA imports into the SACU, rates on wheat and cereal grains nec, on red and poultry meat, on dairy products, and on highly processed food products such as pasta and canned food are unchanged. The rate of protection on non-agricultural manufacturing is cut by 90 per cent. For SACU imports into the USA, rates on red meat products, on dairy products, on sugar, on vegetables, fruit and nuts, on highly processed foods, and on beverages and tobacco products are unchanged. The rate on non-agricultural manufacturing is cut by 90 per cent.

The main effects of this scenario are given in Tables 1E to 4E. The list of free-trade exemptions in this scenario is longer than the list in Scenario C. Accordingly, the effects on real GDP in Scenario E (see Table 1E) are smaller than the effects on real GDP in Scenario C (see Table 1C). Indeed, for most of the macroeconomic variables the effects in Scenario E are smaller than in Scenario C.

At the industry level, the largest difference between Scenario E (see Table 2E) and Scenario C (see Table 2C) is for the production of wheat. In Scenario C SACU wheat production in the final year falls by almost six per cent relative to its baseline level. In Scenario E, in which protection on USA wheat imports into the SACU is exempt from the free trade agreement, the effects on SACU wheat production are negligible. By contrast, SACU producers of vegetables, fruit and nuts and of beverages and tobacco are less well off in Scenario E relative to Scenario C, reflecting the exemption of these products from rate cuts in the USA.

#### *4.2.6 Scenario F: Elastic supply of unskilled labour/more conservative.*

This scenario is the same as Scenario B, but with the free-trade exemptions listed for Scenario E. The main effects of this scenario are given in Tables 1F to 4F. The relationship of Scenario F to Scenario D is analogous to that of Scenario E to Scenario C.

## **5. Decomposition of Deviations**

The final (2023) column of Tables 1A to 3F shows the long-run cumulative deviation due to tariff reductions. In most cases, the 2023 deviation values are very similar to those for 2017 and 2020. That is, by 2017 the short-run, or transitory, effects of the tariff reductions have worn off, leaving a fairly constant long-run effect.

This long run effect can be approximated using a single-period, comparative-static (ie, non-dynamic) model. The comparative-static model uses the same database as in year 2023 of the base run simulation. Dynamic equations are replaced by corresponding steady-state assumptions. Although it yields no information about time-paths of adjustment, the comparative-static model allows us to split up the effect of a group of tariff changes into the contributions due

to tariff changes for individual regions and commodities (see Harrison, Horridge and Pearson, 2000). For example, we can find how much of the effect of the USA-SACU trade agreement is due to liberalization by USA, and how much is due to SACU liberalization. Within the SACU liberalization we can identify the effects due to tariff changes on particular commodities. This exogenous decomposition allows us to see which elements of the trade package are particularly advantageous (or costly) to particular sectors, and so could be useful to negotiators seeking to trade off concessions.

Results from the comparative-static model would be the same as results from year 2023 of the dynamic simulations if the base scenario of the dynamic simulations had settled down, by 2023, to a balanced growth state with no change in relative prices. In fact the dynamic base scenario incorporates a continuing differential in national growth rates with associated trends in trade shares and relative prices. Nevertheless dynamic and static results agree quite closely, as shown in Table 9, which compares results for real GDP expenditure-side aggregates for each of cases A to F. For each case, the column head '2023' shows results from the dynamic model, while the column headed 'LR' shows results from the comparative-static model.

Because the 2023 results are so similar to those from the long-run comparative-static simulations, we assume that the division of total effects between the different shocks making up a package will also be similar. That is, if in a comparative-static simulation a subset of shocks account for half of the total effect on, say, SACU GDP, we assume that the same subset accounts also for 10% of the change in SACU GDP in the dynamic simulation.

The 54 Tables 1XA to 3ZF show various decompositions of the long-run comparative-static results, split according to individual or groups of tariff shocks. Each table is labelled by a three-character key (such as 1XA) which should be interpreted as follows:

First character indicates how the shocks (or columns) are divided up:

- 1: breaks down effects according to 8 groups: of tariffs: SACU liberalization and USA liberalization; and within each of these two, into the effects of reducing tariffs on agricultural products, on agriculture-related products, and on the rest.
- 2: breaks down the effect of SACU tariff cuts only according to 13 commodity categories.
- 3: breaks down the effect of USA tariff cuts only according to 13 commodity categories.

Second character indicates which variables (rows) are being reported:

- X: Effects on SACU and USA macro variables
- Y: Effects on SACU sectoral outputs
- Z: Effects on USA sectoral outputs

Third character shows which simulation is being reported:

- A: Fixed labour supply/Complete bilateral liberalization
- B: Elastic supply of unskilled SACU labour/Complete bilateral liberalization
- C: Fixed labour supply/Less conservative tariff cuts
- D: Elastic supply of unskilled SACU labour/Less conservative tariff cuts
- E: Fixed labour supply/More conservative tariff cuts
- F: Elastic supply of unskilled SACU labour/More conservative tariff cuts

Turning to Table 1XA, which reports results from Case A above, the first column shows the total effect of all tariff cuts on SACU and USA variables. Columns 2 and 3, which sum to Column 1, show the effect due to SACU's tariff cuts (Column 2) and the USA tariff cuts

(Column 3). We can see that most of the SACU macro results are dominated by the effect of SACU's liberalization. Columns 4 to 6 (which sum to Column 2) break down the effect of the SACU liberalization into the parts due to SACU reducing tariffs on three broad commodity categories: agriculture, agriculture-related, and other imports. Of these, Column 6 (the 'other' category) dominates. Similarly, Columns 7 to 9 (which sum to Column 3) break down the effect of the USA liberalization into the parts due to USA reducing tariffs on the same three broad commodity categories: Again, the final 'other' column dominates.

The lower half of Table 1XA, shows results for USA macros. Unsurprisingly, most of these results are very small in percent change terms. Interestingly, for USA as for SACU most of the macro effects arise from SACU liberalization, especially on non-agricultural products.

Table 1YA uses the same column breakdown as the preceding Table 1XA, but the rows now show the effects on SACU industry outputs. The final row shows these sectoral results aggregated into agricultural and non-agricultural groups. Looking along the Primary Agriculture row, we see that the overall output fall (-0.1052) derives mainly from the SACU liberalization (-0.3860), and of the SACU tariff cuts those on imports of Agric-Related imports cause most damage (-0.3858). On the other hand USA reductions on Primary Agricultural imports make a healthy contribution (0.2769) to SACU Primary Agriculture output.

Table 1ZA resembles Table 1YA, but shows effects on USA sectoral outputs. In the USA, the agriculture and related sectors gain more than the rest of the economy; their gain is due mainly to the tariff reduction by SACU on Agric-Related imports (0.0235).

Table 2XA gives a still more detailed breakdown of the effects of the SACU liberalization (column 2 of Table 1XA) on SACU and USA macro variables. It shows the individual effects of SACU reduction of tariffs on agriculture and related commodities. Commodities yielding insignificant tariff revenue appear in the 'rest' category. Again we see that for both countries, the main SACU effects come from reducing SACU tariffs on Manufactures. Amongst agricultural goods, the reduced SACU tariffs on meat products and on wheat are most influential on SACU macros variables.

Tables 2YA and 2ZA repeat the same column breakdown (effect of individual SACU tariff cuts) but the rows show sectoral outputs in SACU (2YA) and USA (2ZA). Table 2YA shows a strong diagonal tendency: for example, in the omt row, most of the damage done to omt output by SACU tariff cuts (-6.4586) arises from SACU's reduction of tariffs on omt imports (-6.6106). Similarly in Table 2ZA most of the benefit to USA wht output from SACU tariff cuts (0.2231) arises from SACU's reduction of tariffs on wht imports (0.2486).

Finally, Tables 3XA, 3YA and 3ZA give an analogous breakdown of the individual effects of USA tariff reductions. Most of these numbers are very small indeed, reflecting initial low USA tariffs on agricultural imports, and the relatively small size of imports from South African compared to the size of the USA or SACU economies. In the upper half of Table 3XA we see that, amongst USA tariff reductions on agriculture-related goods, freer access to other crops (ocr) and beverages and tobacco (b\_t) have the most effect on SACU GDP.

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**Table 1: Regional Aggregation of GTAP Used for this Report**

Identifier	Countries in Region
1. SACU	South Africa, Botswana and Namibia
2. USA	United States
3. CanadaMex	Canada and Mexico
4. EU	members of the European Union
5. EFTA	Switzerland and rest of the EFTA
6. SthAmerica	countries of South and Central America
7. JapKorTwnSng	Japan, South Korea, Taiwan and Singapore
8. ChinaHK	China (mainland) and Hong Kong
9. RestSSAfrica	Sub-Saharan African countries other than SACU
10. ROW	<i>Rest of the World</i> (North Africa, rest of Asia, India, Australia and New Zealand)

**Table 2: Sectoral Aggregation of GTAP Used for this Report**

Identifier	Sectors in Region
wht	Wheat
gro	Cereal grains nec, including rice
v_f	Vegetables, fruit and nuts
osd	Oil seeds
c_b	Sugar cane
ocr	Other crops, including plant fibres
ctl	Cattle, sheep, goats, horses
oap	Other animal products, including wool
rmk	Raw milk
otherPrimary	Forestry, fishing and mining
cmt	Meat: cattle, sheep, goats, horses
omt	Other meat products
vol	Vegetable oils and fats
mil	Dairy products
sgr	Raw and refined sugar
ofd	Other food products
b_t	Beverages and tobacco products
othManufact	Other manufacturing
services	Services

**Table 3: Percentage Bilateral Ad Valorem Rates of Protection against Imports, 1997 and 2004**

Product		SACU to USA		USA to SACU	
		1997	2004	1997	2004
wht	Wheat	2.6	2.6	46.5	20.0
gro	Cereal grains nec	0.6	0.3	36.8	0.0
v_f	Vegetables, fruit and nuts	4.7	4.7	25.6	6.0
osd	Oil seeds	17.7	17.7	38.2	6.0
c_b	Sugar cane	0.7	0.7	0.8	0.4
ocr	Other crops	21.5	21.5	9.3	6.0
ctl	Cattle, sheep, goats, horses	1.1	0.6	0.0	0.0
oap	Other animal products	0.7	0.7	7.6	0.1
rmk	Raw milk	0.0	0.0	0.8	0.0
otherPrimary	Forestry, fishing and mining	0.2	0.1	0.1	0.1
cmt	Meat: cattle, sheep, goats, horses	5.3	4.0	72.0	45.0
omt	Other meat products	3.6	3.6	47.2	30.0
vol	Vegetable oils and fats	4.3	1.7	43.3	14.8
mil	Dairy products	42.5	42.5	76.1	35.0
sgr	Raw and refined sugar	53.4	1.7	86.5	50.0
ofd	Other food products	11.4	1.7	18.3	6.3
b_t	Beverages and tobacco products	3.0	3.0	98.4	3.0
othManufact	Other manufacturing	2.5	2.0	5.7	4.2
services	Services	0.0	0.0	0.0	0.0

**Table 4: Value (\$US m) of Bilateral Trade at World Prices, 1997 and 2004**

Product		SACU to USA		USA to SACU	
		1997	2004	1997	2004
wht	Wheat	0.1	0.1	29.8	64.4
gro	Cereal grains nec	0.3	0.3	15.4	37.3
v_f	Vegetables, fruit and nuts	21.9	25.0	4.1	9.7
osd	Oil seeds	3.3	3.6	2.7	5.4
c_b	Sugar cane	0.0	0.0	0.0	0.0
ocr	Other crops	9.7	10.6	7.8	10.9
ctl	Cattle, sheep, goats, horses	0.7	0.7	2.4	5.2
oap	Other animal products	4.9	5.2	2.4	4.9
rmk	Raw milk	0.2	0.2	0.0	0.0
otherPrimary	Forestry, fishing and mining	127.5	150.2	20.5	23.0
cmt	Meat: cattle, sheep, goats, horses	3.2	3.4	2.8	7.9
omt	Other meat products	1.1	1.2	42.4	85.8
vol	Vegetable oils and fats	0.7	1.1	11.7	18.5
mil	Dairy products	1.2	1.3	3.2	4.1
sgr	Raw and refined sugar	28.7	79.2	0.1	0.1
ofd	Other food products	85.2	116.9	76.7	99.4
b_t	Beverages and tobacco products	10.0	22.8	8.6	87.8
othManufact	Other manufacturing	2383.4	2657.6	2710.0	2936.4
services	Services	990.9	1100.2	1119.4	1223.1
Total		3672.9	4179.7	4060.0	4623.7

**Table 5: Baseline Assumptions for Supply-side Macroeconomic Variables, average annual percentage rates of growth, 1997 to 2023**

Region	Land	Unskilled labour	Skilled labour	Capital	Natural resources	Real GDP	Investment	Population
SACU	0.0	1.4	2.1	3.2	0.0	3.1	4.5	1.1
USA	0.0	1.4	0.9	3.0	0.0	2.8	2.4	0.7
CanadaMex	0.0	2.3	2.6	4.1	0.0	3.3	4.7	1.2
EU	0.0	0.5	0.4	2.9	0.0	2.6	3.3	-0.1
EFTA	0.0	1.0	0.6	2.9	0.0	2.3	3.1	0.1
SthAmerica	0.0	1.1	4.2	3.5	0.0	3.3	3.4	1.2
JapKorTwnSng	0.0	0.4	0.6	3.0	0.0	2.5	2.0	0.1
ChinaHK	0.0	0.7	3.4	7.5	0.0	6.1	7.0	0.7
RestSSAfrica	0.0	2.3	3.1	3.1	0.0	3.4	3.9	2.3
ROW	0.0	1.6	3.6	3.7	0.0	3.8	3.9	1.2

**Table 6: Baseline Assumptions for Industry Output in SACU and USA average annual percentage rates of growth, 1997 to 2023**

	Industry	SACU	USA
wht	Wheat	1.7	2.8
gro	Cereal grains nec	1.8	2.4
v_f	Vegetables, fruit and nuts	1.5	2.5
osd	Oil seeds	1.2	3.3
c_b	Sugar cane	3.0	1.3
ocr	Other crops	2.1	3.0
ctl	Cattle, sheep, goats, horses	2.3	2.2
oap	Other animal products	2.2	2.7
rmk	Raw milk	2.0	2.0
otherPrimary	Forestry, fishing and mining	3.0	2.9
cmt	Meat: cattle, sheep, goats, horses	2.3	2.0
omt	Other meat products	2.3	2.2
vol	Vegetable oils and fats	2.0	2.6
mil	Dairy products	1.7	2.0
sgr	Raw and refined sugar	3.2	1.2
ofd	Other food products	2.1	2.0
b_t	Beverages and tobacco products	2.2	3.0
othManufact	Other manufacturing	3.0	2.8
services	Services	3.2	2.8
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	Primary agriculture	2.0	2.6
	Agricultural related	2.2	2.4
	Primary and related agriculture	2.1	2.5
	All other industries	3.2	2.8
	All industries	3.1	2.8

**Table 7: Baseline Assumptions for Trade Volumes between SACU and USA  
average annual percentage rates of growth, 1997 to 2023**

	Product	SACU to USA	USA to SACU
wht	Wheat	2.3	5.6
gro	Cereal grains nec	2.3	6.6
v_f	Vegetables, fruit and nuts	2.3	7.1
osd	Oil seeds	2.7	5.7
c_b	Sugar cane	1.4	6.9
ocr	Other crops	2.8	4.1
ctl	Cattle, sheep, goats, horses	2.4	6.2
oap	Other animal products	3.1	6.4
rmk	Raw milk	4.0	5.6
otherPrimary	Forestry, fishing and mining	3.1	3.4
cmt	Meat: cattle, sheep, goats, horses	2.4	6.8
omt	Other meat products	2.9	5.2
vol	Vegetable oils and fats	5.0	3.8
mil	Dairy products	3.3	3.6
sgr	Raw and refined sugar	7.5	2.5
ofd	Other food products	4.1	3.3
b_t	Beverages and tobacco products	7.8	12.1
othManufact	Other manufacturing	1.8	3.9
services	Services	1.8	3.6
-----			
	Primary agriculture	2.6	4.8
	Agricultural related	5.4	5.7
	Primary and related agriculture	4.9	6.2
	All other industries	1.9	4.9
	All industries	2.1	5.9



**Table 8 (continued) : Commodity Sales Characteristics in 2004**

		Percentage shares in total sales of sales to:						Percentage shares in local market of imports from:			
		Industries	Household	Investment	Gov.	Export-SACU	Export-other	Total	SACU	Other regions	All regions
<b>USA</b>											
wht	Wheat	53.3	0.2	0.0	0.1	0.6	45.9	100.0	0.0	6.5	6.5
gro	Cereal grains nec	83.8	0.9	0.0	0.0	0.1	15.1	100.0	0.0	1.6	1.6
v_f	Vegetables, fruit and nuts	35.4	45.0	0.0	1.2	0.0	18.4	100.0	0.1	16.2	16.2
osd	Oil seeds	57.8	0.2	0.0	0.1	0.0	41.8	100.0	0.0	3.8	3.8
c_b	Sugar cane	99.4	0.5	0.0	0.0	0.0	0.0	100.0	0.0	0.3	0.3
ocr	Other crops	58.9	18.4	0.0	1.6	0.0	21.0	100.0	0.0	26.5	26.5
ctl	Cattle, sheep, goats, horses	97.7	0.0	0.0	0.0	0.0	2.2	100.0	0.0	2.2	2.2
oap	Other animal products	71.6	16.4	0.0	0.8	0.0	11.2	100.0	0.0	4.8	4.8
rmk	Raw milk	99.6	0.4	0.0	0.0	0.0	0.0	100.0	0.0	0.1	0.1
otherPrimary	Forestry, fishing and mining	90.9	2.0	0.1	0.0	0.0	7.0	100.0	0.1	36.7	36.7
omt	Meat: cattle, sheep, goats, horses	43.2	47.7	0.0	2.5	0.0	6.6	100.0	0.0	3.3	3.3
omt	Other meat products	31.5	57.8	0.0	1.3	0.2	9.3	100.0	0.0	2.4	2.4
vol	Vegetable oils and fats	70.2	2.4	0.0	0.0	0.1	27.2	100.0	0.0	15.1	15.1
mil	Dairy products	43.6	49.0	0.0	5.7	0.0	1.7	100.0	0.0	2.5	2.5
sgr	Raw and refined sugar	71.2	24.7	0.0	1.8	0.0	2.3	100.0	1.2	27.1	27.1
ofd	Other food products	34.7	55.8	0.0	1.8	0.0	7.6	100.0	0.1	7.5	7.5
b_t	Beverages and tobacco products	22.8	65.0	0.0	0.2	0.1	12.0	100.0	0.0	5.4	5.4
othManufact	Other manufacturing	50.8	16.8	11.7	3.9	0.1	16.7	100.0	0.1	21.4	21.4
services	Services	36.2	43.2	8.4	10.1	0.0	2.1	100.0	0.0	1.6	1.6

**Table 9: Comparison of Dynamic (2023) and Long-Run Comparative-Static (LR) Results**

	Case A		Case B		Case C	
	2023	LR	2023	LR	2023	LR
Real private consumption	0.051	0.044	0.431	0.441	0.052	0.050
Real investment	0.339	0.314	0.793	0.708	0.344	0.318
Real government consumption	-0.046	-0.044	0.351	0.372	-0.018	-0.016
Export volume	1.169	1.191	1.430	1.547	1.000	1.022
Import volume	1.044	1.025	1.360	1.321	0.926	0.908
Real GDP	0.092	0.096	0.482	0.514	0.091	0.098

	Case D		Case E		Case F	
	2023	LR	2023	LR	2023	LR
Real private consumption	0.382	0.402	0.043	0.044	0.303	0.327
Real investment	0.742	0.667	0.312	0.288	0.625	0.568
Real government consumption	0.326	0.353	-0.006	-0.004	0.266	0.292
Export volume	1.222	1.337	0.805	0.833	0.981	1.085
Import volume	1.202	1.170	0.753	0.738	0.971	0.948
Real GDP	0.430	0.469	0.082	0.092	0.349	0.389

**Table IA: Macroeconomic Variables – SACU and USA (percentage deviations from baseline values) – Fixed long-run employment/No exemptions**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>SACU</b>													
Real private consumption	0.021	0.033	0.043	0.050	0.056	0.062	0.066	0.069	0.071	0.072	0.052	0.051	0.051
Real investment	0.137	0.205	0.265	0.318	0.366	0.411	0.454	0.495	0.536	0.576	0.414	0.365	0.339
Real government consumption	0.012	0.015	0.015	0.014	0.010	0.005	-0.001	-0.008	-0.017	-0.026	-0.046	-0.046	-0.046
Export volume	0.037	0.110	0.193	0.286	0.388	0.498	0.615	0.740	0.870	1.006	1.113	1.151	1.169
Import volume	0.134	0.246	0.358	0.471	0.584	0.699	0.817	0.937	1.059	1.184	1.100	1.067	1.044
Real GDP	0.016	0.027	0.037	0.045	0.053	0.060	0.067	0.074	0.081	0.087	0.082	0.087	0.092
Employment-unskilled	0.017	0.025	0.031	0.035	0.037	0.039	0.041	0.043	0.044	0.045	0.012	0.004	0.002
Employment-skilled	0.019	0.028	0.034	0.037	0.039	0.041	0.042	0.042	0.043	0.044	0.008	0.002	0.000
Employment-total	0.018	0.026	0.032	0.035	0.038	0.040	0.041	0.043	0.044	0.045	0.010	0.004	0.001
Capital	0.009	0.022	0.039	0.058	0.080	0.104	0.129	0.156	0.183	0.212	0.259	0.284	0.296
Real wage rate-unskilled	0.017	0.036	0.058	0.081	0.106	0.132	0.159	0.187	0.215	0.244	0.267	0.276	0.280
Real wage rate-skilled	0.019	0.040	0.064	0.089	0.115	0.141	0.168	0.196	0.223	0.251	0.266	0.270	0.271
Price of private consumption	-0.001	-0.010	-0.022	-0.035	-0.051	-0.068	-0.087	-0.108	-0.130	-0.153	-0.173	-0.180	-0.184
Price of investment	-0.006	-0.019	-0.034	-0.051	-0.069	-0.089	-0.111	-0.133	-0.157	-0.181	-0.196	-0.202	-0.205
Price of GDP at market prices	0.002	-0.005	-0.014	-0.027	-0.041	-0.058	-0.077	-0.098	-0.120	-0.143	-0.170	-0.180	-0.187
Price of GDP at factor cost	0.018	0.026	0.033	0.037	0.039	0.040	0.039	0.037	0.034	0.030	0.003	-0.008	-0.015
Terms of trade	0.007	0.008	0.006	0.003	-0.001	-0.008	-0.016	-0.025	-0.035	-0.047	-0.073	-0.086	-0.095
<b>USA</b>													
Real private consumption	0.000	0.001	0.001	0.001	0.002	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004
Real investment	0.002	0.004	0.005	0.007	0.008	0.009	0.010	0.011	0.012	0.014	0.010	0.009	0.008
Real government consumption	0.000	0.001	0.001	0.001	0.002	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004
Export volume	0.002	0.005	0.007	0.010	0.013	0.017	0.020	0.023	0.027	0.031	0.033	0.034	0.035
Import volume	0.005	0.010	0.016	0.021	0.026	0.032	0.038	0.043	0.049	0.056	0.054	0.053	0.053
Real GDP	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.003
Employment-unskilled	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
Employment-skilled	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
Employment-total	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
Capital	0.000	0.000	0.001	0.001	0.002	0.002	0.003	0.003	0.004	0.005	0.006	0.006	0.007
Real wage rate-unskilled	0.000	0.001	0.001	0.001	0.002	0.002	0.003	0.003	0.004	0.005	0.005	0.005	0.006
Real wage rate-skilled	0.000	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.004	0.004	0.005	0.005
Price of private consumption	0.001	0.002	0.004	0.005	0.006	0.007	0.009	0.010	0.012	0.013	0.013	0.012	0.012
Price of investment	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.010	0.011	0.010	0.010	0.010
Price of GDP at market prices	0.001	0.003	0.004	0.005	0.007	0.008	0.010	0.012	0.013	0.015	0.014	0.014	0.014
Price of GDP at factor cost	0.001	0.003	0.004	0.006	0.007	0.009	0.011	0.012	0.014	0.016	0.016	0.015	0.015
Terms of trade	0.002	0.003	0.005	0.007	0.009	0.010	0.012	0.014	0.016	0.018	0.018	0.017	0.017



**Table 2A: Industry Output – SACU and USA (percentage deviations from baseline values) – Fixed long-run employment/No exemptions**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>SACU</b>													
wht	-0.533	-1.079	-1.640	-2.214	-2.802	-3.402	-4.015	-4.638	-5.272	-5.915	-5.919	-5.932	-5.953
gro	-0.012	-0.016	-0.019	-0.020	-0.018	-0.015	-0.011	-0.006	0.000	0.007	0.044	0.065	0.080
v_f	0.013	0.036	0.062	0.091	0.124	0.159	0.196	0.235	0.275	0.317	0.353	0.368	0.376
osd	0.166	0.369	0.602	0.854	1.132	1.436	1.766	2.125	2.513	2.932	2.990	3.014	3.027
c_b	0.078	0.176	0.281	0.393	0.513	0.638	0.770	0.906	1.048	1.193	1.269	1.313	1.346
ocr	0.073	0.163	0.267	0.383	0.512	0.655	0.813	0.986	1.176	1.384	1.434	1.464	1.484
ctl	-0.031	-0.068	-0.110	-0.156	-0.208	-0.265	-0.327	-0.396	-0.471	-0.553	-0.550	-0.545	-0.541
oap	-0.082	-0.170	-0.262	-0.359	-0.460	-0.565	-0.674	-0.786	-0.902	-1.022	-1.004	-0.989	-0.976
rmk	0.003	0.004	0.005	0.006	0.008	0.012	0.018	0.026	0.038	0.054	0.067	0.083	0.098
otherPrimary	-0.008	-0.004	0.004	0.016	0.032	0.050	0.070	0.093	0.117	0.143	0.190	0.211	0.222
cmt	-0.024	-0.054	-0.089	-0.129	-0.176	-0.228	-0.287	-0.354	-0.429	-0.513	-0.513	-0.510	-0.509
omt	-0.525	-1.085	-1.680	-2.302	-2.953	-3.629	-4.331	-5.056	-5.804	-6.572	-6.538	-6.501	-6.469
vol	-0.036	-0.066	-0.092	-0.120	-0.147	-0.173	-0.198	-0.223	-0.248	-0.273	-0.222	-0.184	-0.152
mil	-0.007	-0.016	-0.026	-0.033	-0.038	-0.041	-0.039	-0.032	-0.017	0.006	0.028	0.053	0.076
sgr	0.092	0.206	0.330	0.461	0.600	0.747	0.899	1.058	1.222	1.390	1.473	1.518	1.552
ofd	-0.006	-0.011	-0.017	-0.022	-0.026	-0.030	-0.033	-0.036	-0.038	-0.040	-0.019	0.000	0.016
b_t	0.000	0.010	0.024	0.042	0.064	0.088	0.116	0.146	0.179	0.213	0.266	0.298	0.320
othManufact	0.009	0.024	0.041	0.059	0.079	0.100	0.124	0.149	0.176	0.205	0.233	0.247	0.253
services	0.022	0.034	0.045	0.054	0.063	0.071	0.079	0.087	0.094	0.101	0.079	0.078	0.078
Primary agriculture	-0.024	-0.045	-0.064	-0.083	-0.101	-0.118	-0.134	-0.149	-0.163	-0.176	-0.147	-0.128	-0.114
Agricultural-related	-0.020	-0.037	-0.054	-0.070	-0.086	-0.101	-0.115	-0.128	-0.142	-0.155	-0.116	-0.087	-0.063
All and related agriculture	-0.022	-0.041	-0.060	-0.077	-0.094	-0.110	-0.125	-0.140	-0.154	-0.167	-0.134	-0.111	-0.094
All other industries	0.017	0.029	0.041	0.053	0.064	0.076	0.088	0.101	0.114	0.127	0.121	0.125	0.127
All industries	0.014	0.024	0.034	0.043	0.053	0.063	0.074	0.085	0.096	0.107	0.105	0.110	0.114

*Table continued on next page.*

**Table 2A (continued): Industry Output – SACU and USA (percentage deviations from baseline values) – Fixed long-run employment/No exemptions**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>USA</b>													
wht	0.020	0.040	0.061	0.083	0.104	0.127	0.149	0.173	0.196	0.221	0.223	0.225	0.226
gro	0.001	0.002	0.004	0.005	0.007	0.010	0.012	0.016	0.019	0.023	0.023	0.023	0.023
v_f	-0.002	-0.003	-0.005	-0.007	-0.009	-0.010	-0.013	-0.015	-0.017	-0.019	-0.019	-0.019	-0.019
osd	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.000	-0.001
c_b	-0.006	-0.012	-0.018	-0.024	-0.031	-0.038	-0.045	-0.052	-0.059	-0.066	-0.069	-0.072	-0.075
ocr	-0.003	-0.006	-0.009	-0.013	-0.016	-0.020	-0.024	-0.029	-0.033	-0.038	-0.038	-0.038	-0.039
ctl	0.004	0.009	0.015	0.021	0.028	0.036	0.045	0.056	0.067	0.080	0.081	0.082	0.082
oap	0.006	0.013	0.020	0.027	0.035	0.043	0.051	0.060	0.069	0.078	0.076	0.073	0.070
rmk	0.001	0.002	0.004	0.005	0.007	0.009	0.012	0.015	0.018	0.022	0.022	0.022	0.022
otherPrimary	-0.001	-0.003	-0.004	-0.006	-0.007	-0.009	-0.010	-0.012	-0.013	-0.015	-0.014	-0.013	-0.013
cmt	0.004	0.009	0.015	0.021	0.029	0.037	0.046	0.057	0.069	0.083	0.084	0.085	0.086
omt	0.014	0.028	0.044	0.061	0.079	0.098	0.117	0.138	0.160	0.182	0.182	0.181	0.181
vol	0.007	0.014	0.022	0.030	0.039	0.048	0.058	0.068	0.079	0.091	0.091	0.089	0.088
mil	0.001	0.002	0.004	0.005	0.007	0.009	0.012	0.015	0.018	0.022	0.022	0.022	0.022
sgr	-0.006	-0.012	-0.018	-0.024	-0.031	-0.038	-0.045	-0.052	-0.060	-0.067	-0.070	-0.073	-0.075
ofd	0.001	0.002	0.002	0.003	0.004	0.005	0.006	0.008	0.009	0.010	0.010	0.010	0.010
b_t	0.000	0.000	0.000	0.000	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002
othManufact	0.000	0.000	0.001	0.001	0.001	0.002	0.002	0.003	0.003	0.004	0.005	0.005	0.006
services	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Primary agriculture	0.001	0.003	0.005	0.006	0.008	0.010	0.012	0.015	0.017	0.020	0.020	0.020	0.019
Agricultural-related	0.002	0.003	0.005	0.007	0.009	0.012	0.014	0.017	0.020	0.023	0.023	0.023	0.022
All and related agriculture	0.001	0.003	0.005	0.007	0.009	0.011	0.014	0.016	0.019	0.022	0.022	0.022	0.021
All other industries	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002
All industries	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.003

**Table 3A: Trade Volumes – SACU and USA (percentage deviations from baseline values) – Fixed long-run employment/No exemptions**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>SACU to USA</b>													
wht	1.2	2.5	3.8	5.1	6.5	7.9	9.3	10.8	12.3	13.8	13.9	14.0	14.0
gro	0.1	0.2	0.4	0.6	0.7	0.9	1.1	1.3	1.5	1.7	1.8	1.8	1.9
v_f	2.0	4.1	6.2	8.3	10.5	12.8	15.1	17.5	19.9	22.4	22.5	22.6	22.6
osd	7.3	15.2	23.7	32.8	42.5	53.0	64.3	76.3	89.3	103.2	103.4	103.4	103.4
c_b	0.2	0.5	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	2.9	2.9	3.0
ocr	8.9	18.6	29.1	40.6	53.2	66.8	81.7	98.0	115.6	134.9	135.1	135.2	135.2
ctl	0.3	0.7	1.0	1.4	1.8	2.2	2.7	3.1	3.6	4.1	4.2	4.3	4.3
oap	0.4	0.8	1.2	1.6	2.1	2.6	3.0	3.5	4.0	4.6	4.7	4.8	4.8
rmk	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.5
otherPrimary	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.8	0.8
cmt	1.7	3.6	5.4	7.3	9.3	11.3	13.3	15.4	17.6	19.8	19.9	20.0	20.0
omt	1.6	3.2	4.9	6.7	8.4	10.3	12.1	14.0	15.9	17.9	18.1	18.1	18.1
vol	0.8	1.6	2.5	3.3	4.2	5.1	6.1	7.0	7.9	8.9	9.0	9.1	9.1
mil	16.8	36.5	59.6	86.5	118.1	155.0	198.1	248.5	307.5	376.4	376.9	377.0	377.1
sgr	0.8	1.5	2.3	3.2	4.0	4.9	5.7	6.6	7.5	8.4	8.5	8.6	8.6
ofd	0.7	1.5	2.3	3.2	4.0	4.9	5.7	6.6	7.5	8.5	8.6	8.6	8.7
b_t	1.8	3.8	5.7	7.8	9.9	12.0	14.2	16.5	18.8	21.1	21.4	21.4	21.5
othManufact	1.1	2.3	3.5	4.8	6.1	7.4	8.7	10.0	11.4	12.8	13.0	13.0	13.1
services	0.0	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2
Primary agriculture	3.8	7.9	12.3	17.0	22.1	27.6	33.4	39.8	46.5	53.9	54.2	54.5	54.7
Agricultural-related	1.0	2.0	3.1	4.2	5.4	6.6	7.9	9.3	10.7	12.1	12.3	12.4	12.5
All and related agriculture	1.4	2.9	4.6	6.3	8.0	9.9	11.9	14.0	16.2	18.6	18.7	18.6	18.6
All other industries	0.8	1.5	2.4	3.2	4.0	4.9	5.8	6.7	7.6	8.6	8.7	8.8	8.8
All industries	0.8	1.7	2.5	3.5	4.4	5.4	6.4	7.4	8.4	9.5	9.7	9.8	9.8

*Table continued on next page.*

**Table 3A (continued): Trade Volumes – SACU and USA (percentage deviations from baseline values) – Fixed long-run employment/No exemptions**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>USA to SACU</b>													
wht	4.5	9.2	13.8	18.6	23.4	28.3	33.3	38.3	43.4	48.6	48.4	48.1	47.9
gro	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.3	-0.3	-0.3
v_f	2.4	4.8	7.3	9.8	12.4	15.0	17.6	20.3	23.0	25.7	25.5	25.4	25.3
osd	2.2	4.4	6.6	8.9	11.2	13.6	15.9	18.4	20.8	23.3	23.3	23.2	23.2
c_b	0.3	0.5	0.8	1.0	1.3	1.5	1.8	2.1	2.3	2.6	2.6	2.7	2.7
ocr	2.5	5.1	7.7	10.3	13.0	15.8	18.7	21.6	24.5	27.6	27.5	27.5	27.5
ctl	0.0	-0.1	-0.2	-0.3	-0.4	-0.5	-0.7	-0.9	-1.0	-1.2	-1.4	-1.4	-1.4
oap	-0.2	-0.4	-0.7	-1.0	-1.3	-1.6	-1.9	-2.3	-2.6	-3.0	-3.1	-3.1	-3.1
rmk	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1
otherPrimary	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.7	0.6	0.6	0.6
cmt	17.3	37.5	61.1	88.6	120.6	157.8	200.9	250.8	308.6	375.3	374.7	374.4	374.1
omt	8.5	17.4	26.8	36.7	47.1	58.0	69.4	81.3	93.7	106.8	106.5	106.3	106.2
vol	6.1	12.5	19.2	26.4	34.0	42.0	50.5	59.5	68.9	79.0	79.0	79.0	79.0
mil	13.9	29.7	47.7	68.1	91.3	117.5	147.3	181.1	219.3	262.6	262.3	262.2	262.2
sgr	19.5	42.8	70.7	103.9	143.6	191.0	247.6	315.3	396.0	492.4	492.2	492.1	492.0
ofd	2.6	5.2	7.8	10.5	13.3	16.1	19.0	21.9	24.9	28.0	27.9	27.9	27.9
b_t	1.8	3.5	5.3	7.2	9.0	10.8	12.7	14.6	16.6	18.5	18.4	18.4	18.4
othManufact	2.3	4.7	7.1	9.5	12.0	14.6	17.1	19.7	22.4	25.2	25.1	25.0	25.0
services	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1
Primary agriculture	2.5	5.1	7.6	10.2	12.9	15.5	18.2	20.9	23.7	26.5	26.3	26.1	25.9
Agricultural-related	4.7	9.7	15.0	20.6	26.6	33.0	39.8	47.1	54.9	63.3	63.4	63.7	64.0
All and related agriculture	4.1	8.3	12.7	17.4	22.3	27.4	32.9	38.6	44.7	51.2	51.0	50.8	50.7
All other industries	1.7	3.4	5.1	6.8	8.6	10.4	12.3	14.2	16.1	18.1	18.0	18.1	18.1
All industries	1.9	3.8	5.8	7.8	9.8	11.9	14.0	16.2	18.5	20.8	20.7	20.6	20.6

**Table 4A: Regional Contributions to the Long-run Percentage Deviations in SACU exports, by commodity – Fixed long-run employment/No exemptions**

Commodity	SACU	USA	Canada Mex	EU	EFTA	Sth America	JapKor TwnSng	China HK	RestSS Africa	ROW	Total= % deviation, 2023
wht	0.00	0.42	0.01	0.08	0.01	0.01	0.03	0.01	0.76	0.96	2.29
gro	0.00	0.00	0.00	0.00	0.00	0.06	0.02	0.00	0.22	0.00	0.31
v_f	0.00	1.09	0.01	0.15	0.01	0.00	0.01	0.04	0.01	0.02	1.35
osd	0.00	13.43	-0.01	-0.07	0.00	0.00	-0.03	0.00	-0.03	-0.01	13.26
c_b	0.00	0.23	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.01	0.28
ocr	0.00	8.28	0.00	0.02	0.00	0.00	0.00	0.03	0.00	0.03	8.36
ctl	0.00	0.29	0.00	0.13	0.02	0.00	0.03	0.17	0.23	0.05	0.93
oap	0.00	0.21	0.00	0.63	0.00	0.01	0.03	0.07	0.04	0.12	1.12
rmk	0.00	0.11	0.01	0.10	0.00	0.04	0.06	0.07	0.00	0.11	0.51
otherPrimary	0.00	0.02	0.00	0.15	0.02	0.01	0.04	0.03	0.01	0.04	0.33
cmt	0.00	0.45	0.00	0.69	0.10	0.00	0.01	0.01	0.00	0.02	1.29
omt	0.00	0.83	0.01	0.29	0.20	0.01	0.08	0.20	0.11	0.06	1.79
vol	0.00	0.15	0.00	0.05	0.00	0.00	0.02	0.88	0.06	0.07	1.25
mil	0.00	47.16	0.01	0.10	0.01	0.01	0.06	0.01	0.23	0.07	47.68
sgr	0.00	1.50	0.01	0.40	0.00	0.00	0.12	0.01	0.14	0.26	2.44
ofd	0.00	1.63	0.01	0.38	0.01	0.01	0.05	0.07	0.09	0.10	2.35
b_t	0.00	1.52	0.13	0.37	0.05	0.06	0.06	0.03	0.14	0.05	2.42
othManufact	0.00	1.16	0.01	0.21	0.01	0.02	0.12	0.04	0.11	0.08	1.76
services	0.00	0.05	0.01	0.08	0.01	0.01	0.03	0.01	0.00	0.04	0.24

**Table 1B: Macroeconomic Variables – SACU and USA (percentage deviations from baseline values) – Elastic supply of unskilled labour/No exemptions**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>SACU</b>													
Real private consumption	0.044	0.079	0.116	0.153	0.190	0.228	0.267	0.306	0.345	0.385	0.399	0.418	0.431
Real investment	0.211	0.331	0.447	0.555	0.656	0.754	0.849	0.943	1.036	1.128	0.922	0.843	0.793
Real government consumption	0.036	0.063	0.091	0.120	0.149	0.178	0.208	0.238	0.268	0.299	0.315	0.337	0.351
Export volume	0.020	0.089	0.170	0.264	0.370	0.488	0.616	0.753	0.900	1.054	1.260	1.365	1.430
Import volume	0.169	0.309	0.452	0.597	0.743	0.892	1.043	1.198	1.355	1.516	1.427	1.389	1.360
Real GDP	0.037	0.069	0.104	0.140	0.178	0.217	0.258	0.301	0.344	0.389	0.427	0.460	0.482
Employment-unskilled	0.054	0.103	0.156	0.211	0.268	0.328	0.390	0.454	0.521	0.589	0.619	0.646	0.664
Employment-skilled	0.031	0.048	0.061	0.071	0.078	0.084	0.089	0.094	0.097	0.100	0.039	0.019	0.010
Employment-total	0.046	0.085	0.125	0.165	0.206	0.248	0.292	0.336	0.382	0.429	0.428	0.440	0.449
Capital	0.014	0.035	0.064	0.098	0.137	0.182	0.230	0.282	0.337	0.395	0.510	0.583	0.629
Real wage rate-unskilled	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Real wage rate-skilled	0.031	0.068	0.112	0.161	0.214	0.270	0.329	0.390	0.454	0.519	0.597	0.637	0.658
Price of private consumption	0.002	-0.006	-0.016	-0.030	-0.045	-0.064	-0.084	-0.106	-0.130	-0.155	-0.191	-0.210	-0.222
Price of investment	-0.004	-0.016	-0.030	-0.047	-0.065	-0.086	-0.108	-0.132	-0.158	-0.184	-0.212	-0.226	-0.236
Price of GDP at market prices	0.007	0.001	-0.008	-0.019	-0.034	-0.052	-0.072	-0.095	-0.120	-0.146	-0.193	-0.217	-0.234
Price of GDP at factor cost	0.022	0.032	0.040	0.045	0.047	0.047	0.044	0.040	0.035	0.028	-0.021	-0.047	-0.064
Terms of trade	0.011	0.012	0.012	0.009	0.004	-0.003	-0.013	-0.024	-0.037	-0.052	-0.096	-0.121	-0.139
<b>USA</b>													
Real private consumption	0.000	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.004	0.004	0.004	0.004
Real investment	0.002	0.004	0.005	0.006	0.008	0.009	0.010	0.011	0.012	0.014	0.010	0.009	0.008
Real government consumption	0.000	0.001	0.001	0.001	0.001	0.002	0.002	0.003	0.003	0.003	0.004	0.004	0.004
Export volume	0.002	0.005	0.008	0.011	0.015	0.018	0.022	0.025	0.029	0.033	0.035	0.036	0.036
Import volume	0.005	0.010	0.015	0.021	0.026	0.032	0.037	0.043	0.049	0.056	0.054	0.053	0.053
Real GDP	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.003
Employment-unskilled	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
Employment-skilled	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
Employment-total	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
Capital	0.000	0.000	0.001	0.001	0.002	0.002	0.003	0.003	0.004	0.005	0.006	0.006	0.007
Real wage rate-unskilled	0.000	0.001	0.001	0.001	0.002	0.002	0.003	0.003	0.004	0.004	0.005	0.005	0.006
Real wage rate-skilled	0.000	0.000	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.004	0.004	0.005	0.005
Price of private consumption	0.001	0.002	0.003	0.005	0.006	0.007	0.009	0.010	0.011	0.013	0.013	0.012	0.012
Price of investment	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.010	0.011	0.011	0.010	0.010
Price of GDP at market prices	0.001	0.003	0.004	0.005	0.007	0.008	0.010	0.012	0.013	0.015	0.015	0.014	0.014
Price of GDP at factor cost	0.001	0.003	0.004	0.006	0.007	0.009	0.011	0.012	0.014	0.016	0.016	0.015	0.016
Terms of trade	0.002	0.003	0.005	0.007	0.008	0.010	0.012	0.014	0.016	0.018	0.018	0.017	0.017

**Table 2B: Industry Output – SACU and USA (percentage deviations from baseline values) – Elastic supply of unskilled labour/No exemptions**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>SACU</b>													
wht	-0.526	-1.061	-1.608	-2.168	-2.739	-3.321	-3.914	-4.517	-5.129	-5.750	-5.710	-5.696	-5.696
gro	-0.008	-0.003	0.005	0.018	0.035	0.056	0.079	0.105	0.133	0.164	0.252	0.307	0.345
v_f	0.016	0.047	0.083	0.126	0.173	0.225	0.281	0.340	0.403	0.468	0.559	0.610	0.643
osd	0.167	0.377	0.621	0.886	1.180	1.502	1.854	2.236	2.649	3.094	3.225	3.297	3.342
c_b	0.078	0.182	0.296	0.420	0.554	0.696	0.846	1.003	1.167	1.336	1.479	1.566	1.629
ocr	0.079	0.180	0.298	0.430	0.577	0.741	0.921	1.119	1.336	1.571	1.681	1.749	1.796
ctl	-0.019	-0.041	-0.066	-0.093	-0.124	-0.159	-0.198	-0.241	-0.291	-0.346	-0.308	-0.281	-0.263
oap	-0.072	-0.146	-0.222	-0.301	-0.383	-0.467	-0.553	-0.642	-0.733	-0.827	-0.770	-0.729	-0.699
rmk	0.016	0.033	0.051	0.073	0.097	0.124	0.155	0.189	0.228	0.272	0.321	0.360	0.389
otherPrimary	-0.008	0.002	0.019	0.042	0.070	0.104	0.142	0.184	0.230	0.279	0.387	0.449	0.488
cmt	-0.011	-0.026	-0.044	-0.065	-0.090	-0.120	-0.156	-0.198	-0.246	-0.303	-0.268	-0.244	-0.228
omt	-0.512	-1.057	-1.634	-2.236	-2.865	-3.519	-4.197	-4.899	-5.621	-6.363	-6.294	-6.235	-6.188
vol	-0.028	-0.047	-0.060	-0.072	-0.081	-0.087	-0.090	-0.092	-0.092	-0.091	0.010	0.080	0.133
mil	0.007	0.015	0.025	0.039	0.058	0.081	0.109	0.145	0.189	0.242	0.304	0.354	0.393
sgr	0.089	0.209	0.340	0.483	0.635	0.798	0.968	1.147	1.333	1.525	1.680	1.772	1.838
ofd	0.004	0.011	0.019	0.031	0.044	0.060	0.077	0.096	0.117	0.139	0.196	0.238	0.269
b_t	0.005	0.025	0.052	0.087	0.128	0.175	0.227	0.284	0.345	0.409	0.528	0.601	0.652
othManufact	0.020	0.053	0.091	0.134	0.182	0.235	0.292	0.354	0.419	0.489	0.592	0.654	0.693
services	0.047	0.084	0.123	0.163	0.205	0.248	0.292	0.337	0.383	0.431	0.444	0.465	0.478
Primary agriculture	-0.016	-0.025	-0.031	-0.034	-0.033	-0.030	-0.025	-0.017	-0.006	0.006	0.082	0.131	0.166
Agricultural-related	-0.012	-0.017	-0.020	-0.019	-0.016	-0.010	-0.002	0.009	0.021	0.034	0.121	0.182	0.226
All and related agriculture	-0.014	-0.021	-0.026	-0.027	-0.025	-0.021	-0.014	-0.005	0.006	0.018	0.099	0.152	0.190
All other industries	0.037	0.071	0.108	0.148	0.190	0.234	0.281	0.330	0.380	0.432	0.472	0.505	0.526
All industries	0.033	0.064	0.098	0.135	0.175	0.217	0.261	0.307	0.355	0.405	0.448	0.483	0.506

*Table continued on next page.*

**Table 2B (continued): Industry Output – SACU and USA (percentage deviations from baseline values) – Elastic supply of unskilled labour/No exemptions**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>USA</b>													
wht	0.020	0.041	0.062	0.083	0.105	0.127	0.150	0.174	0.198	0.222	0.224	0.226	0.227
gro	0.001	0.002	0.004	0.006	0.008	0.010	0.013	0.016	0.019	0.023	0.023	0.023	0.023
v_f	-0.002	-0.003	-0.005	-0.007	-0.009	-0.011	-0.013	-0.015	-0.017	-0.019	-0.019	-0.019	-0.020
osd	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.000	-0.001
c_b	-0.006	-0.011	-0.018	-0.024	-0.031	-0.038	-0.045	-0.052	-0.060	-0.067	-0.071	-0.074	-0.077
ocr	-0.003	-0.006	-0.009	-0.012	-0.016	-0.020	-0.024	-0.028	-0.033	-0.038	-0.038	-0.038	-0.039
ctl	0.004	0.009	0.015	0.021	0.028	0.036	0.046	0.056	0.067	0.080	0.081	0.082	0.082
oap	0.006	0.013	0.020	0.027	0.035	0.043	0.052	0.060	0.069	0.078	0.076	0.073	0.070
rmk	0.001	0.002	0.004	0.005	0.007	0.009	0.012	0.015	0.018	0.022	0.022	0.022	0.022
otherPrimary	-0.001	-0.002	-0.004	-0.005	-0.006	-0.008	-0.009	-0.011	-0.012	-0.014	-0.013	-0.013	-0.013
cmt	0.004	0.009	0.015	0.021	0.029	0.037	0.046	0.057	0.069	0.083	0.084	0.085	0.086
omt	0.014	0.028	0.044	0.061	0.079	0.098	0.118	0.138	0.160	0.183	0.182	0.182	0.181
vol	0.007	0.014	0.022	0.030	0.039	0.048	0.058	0.069	0.080	0.092	0.091	0.090	0.088
mil	0.001	0.002	0.004	0.005	0.007	0.009	0.012	0.015	0.018	0.022	0.022	0.022	0.022
sgr	-0.006	-0.012	-0.018	-0.024	-0.031	-0.038	-0.045	-0.053	-0.060	-0.068	-0.071	-0.075	-0.078
ofd	0.001	0.002	0.002	0.003	0.004	0.005	0.007	0.008	0.009	0.010	0.010	0.010	0.010
b_t	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002
othManufact	0.000	0.001	0.001	0.001	0.002	0.002	0.003	0.003	0.004	0.004	0.005	0.006	0.006
services	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Primary agriculture	0.001	0.003	0.005	0.006	0.008	0.010	0.013	0.015	0.017	0.020	0.020	0.020	0.019
Agricultural-related	0.002	0.003	0.005	0.007	0.009	0.012	0.014	0.017	0.020	0.023	0.023	0.023	0.022
All and related agriculture	0.001	0.003	0.005	0.007	0.009	0.011	0.014	0.016	0.019	0.022	0.022	0.021	0.021
All other industries	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002
All industries	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.003



**Table 3B: Trade Volumes – SACU and USA (percentage deviations from baseline values) – Elastic supply of unskilled labour/No exemptions**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>SACU to USA</b>													
wht	1.2	2.5	3.8	5.1	6.5	7.9	9.3	10.8	12.3	13.9	14.1	14.3	14.4
gro	0.1	0.2	0.4	0.5	0.7	0.9	1.1	1.3	1.5	1.8	2.0	2.1	2.2
v_f	2.0	4.0	6.1	8.3	10.5	12.8	15.2	17.5	20.0	22.5	22.7	22.9	22.9
osd	7.3	15.2	23.7	32.8	42.5	53.0	64.3	76.4	89.4	103.3	103.7	103.9	104.0
c_b	0.2	0.5	0.7	1.0	1.3	1.6	1.9	2.2	2.6	2.9	3.1	3.2	3.3
ocr	8.8	18.5	29.1	40.6	53.2	66.9	81.8	98.0	115.8	135.1	135.6	135.8	135.9
ctl	0.3	0.6	1.0	1.4	1.8	2.2	2.7	3.2	3.6	4.1	4.5	4.6	4.7
oap	0.3	0.7	1.2	1.6	2.1	2.6	3.1	3.6	4.1	4.6	4.9	5.1	5.1
rmk	-0.1	-0.1	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.4	0.6	0.7	0.8
other	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.7	0.7	0.8
Primary	1.7	3.5	5.4	7.3	9.3	11.3	13.3	15.5	17.6	19.8	20.1	20.3	20.3
cmt	1.6	3.2	4.9	6.7	8.4	10.3	12.1	14.1	16.0	18.0	18.3	18.4	18.5
omt	0.8	1.6	2.4	3.3	4.2	5.1	6.1	7.0	8.0	9.0	9.2	9.3	9.3
vol	16.8	36.5	59.6	86.5	118.1	155.0	198.2	248.7	307.7	376.8	377.8	378.2	378.5
mil	0.7	1.5	2.3	3.2	4.0	4.9	5.8	6.7	7.6	8.5	8.7	8.8	8.9
sgr	0.7	1.5	2.3	3.2	4.0	4.9	5.8	6.7	7.6	8.5	8.7	8.8	8.9
ofd	1.8	3.7	5.7	7.7	9.8	11.9	14.1	16.4	18.7	21.1	21.5	21.7	21.8
b_t	1.1	2.3	3.5	4.8	6.1	7.4	8.7	10.1	11.5	12.9	13.2	13.4	13.4
oth	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.1	0.2	0.3	0.4
Manufact	3.8	7.9	12.3	17.0	22.1	27.6	33.5	39.8	46.6	54.0	54.5	54.9	55.2
services	1.0	2.0	3.1	4.2	5.4	6.6	7.9	9.3	10.7	12.2	12.5	12.6	12.7
Primary agriculture	1.4	2.9	4.5	6.2	8.0	9.9	11.9	14.0	16.3	18.7	18.8	18.9	18.9
Agricultural-related	0.7	1.5	2.3	3.2	4.0	4.9	5.8	6.7	7.7	8.6	8.9	9.0	9.1
All and related agriculture	0.8	1.6	2.5	3.4	4.4	5.4	6.4	7.4	8.5	9.6	9.9	10.0	10.1
All other industries													
All industries													

*Table continued on next page.*

**Table 3B (continued): Trade Volumes – SACU and USA (percentage deviations from baseline values) – Elastic supply of unskilled labour/No exemptions**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>USA to SACU</b>													
wht	4.6	9.2	13.9	18.7	23.5	28.4	33.4	38.5	43.6	48.9	48.6	48.4	48.2
gro	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2
v_f	2.4	4.9	7.4	9.9	12.5	15.1	17.7	20.4	23.1	25.9	25.7	25.5	25.4
osd	2.2	4.4	6.7	9.0	11.3	13.7	16.1	18.5	21.0	23.5	23.5	23.5	23.4
c_b	0.3	0.5	0.8	1.1	1.3	1.6	1.9	2.2	2.4	2.7	2.7	2.8	2.8
ocr	2.5	5.1	7.7	10.4	13.1	15.9	18.8	21.7	24.7	27.8	27.8	27.8	27.8
ctl	0.0	0.0	-0.1	-0.2	-0.3	-0.4	-0.6	-0.7	-0.9	-1.1	-1.3	-1.4	-1.5
oap	-0.2	-0.4	-0.6	-0.9	-1.2	-1.5	-1.8	-2.1	-2.5	-2.9	-2.9	-3.0	-3.0
rmk	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
otherPrimary	17.4	37.6	61.2	88.8	120.8	158.0	201.3	251.3	309.3	376.1	375.5	375.1	374.8
cmt	8.5	17.5	26.9	36.8	47.2	58.2	69.6	81.6	94.1	107.2	106.8	106.7	106.5
omt	6.1	12.5	19.3	26.5	34.1	42.1	50.7	59.7	69.2	79.3	79.3	79.3	79.4
vol	14.0	29.8	47.8	68.2	91.5	117.8	147.7	181.5	219.9	263.3	263.0	262.9	262.8
mil	19.5	42.9	70.7	104.0	143.8	191.3	248.0	315.8	396.7	493.4	493.0	492.9	492.8
sgr	2.6	5.2	7.9	10.6	13.4	16.2	19.1	22.1	25.1	28.2	28.1	28.1	28.0
ofd	1.8	3.6	5.4	7.3	9.1	11.0	12.9	14.9	16.8	18.8	18.7	18.6	18.6
b_t	2.4	4.8	7.2	9.7	12.2	14.8	17.4	20.1	22.8	25.6	25.5	25.4	25.4
othManufact	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2
services	2.5	5.1	7.7	10.3	13.0	15.6	18.3	21.1	23.9	26.7	26.5	26.3	26.1
Primary agriculture	4.8	9.8	15.1	20.7	26.7	33.1	40.0	47.3	55.1	63.6	63.7	64.0	64.2
Agricultural-related	4.1	8.3	12.8	17.5	22.4	27.6	33.1	38.8	45.0	51.5	51.3	51.1	50.9
All and related agriculture	1.7	3.4	5.2	7.0	8.8	10.7	12.6	14.5	16.5	18.5	18.4	18.4	18.4
All other industries	1.9	3.9	5.9	7.9	10.0	12.1	14.3	16.5	18.8	21.2	21.1	21.0	20.9

**Table 4B: Regional Contributions to the Long-run Percentage Deviations in SACU exports, by commodity – Elastic supply of unskilled labour/No exemptions**

Commodity	SACU	USA	Canada Mex	EU	EFTA	Sth America	JapKor TwnSng	China HK	RestSS Africa	ROW	Total=	
											% deviation,	2023
wht	0.00	0.43	0.01	0.10	0.01	0.01	0.04	0.01	0.91	1.16	2.68	
gro	0.00	0.00	0.00	0.01	0.00	0.12	0.03	0.00	0.45	0.01	0.62	
v_f	0.00	1.11	0.03	0.36	0.02	0.00	0.03	0.10	0.03	0.04	1.72	
osd	0.00	13.53	0.02	0.08	0.00	0.00	0.04	0.00	0.02	0.01	13.71	
c_b	0.00	0.26	0.01	0.35	0.00	0.01	0.03	0.02	0.00	0.04	0.72	
ocr	0.00	8.34	0.00	0.10	0.00	0.02	0.01	0.13	0.04	0.16	8.80	
ctl	0.00	0.33	0.01	0.22	0.03	0.01	0.05	0.28	0.41	0.08	1.41	
oap	0.00	0.23	0.00	0.95	0.00	0.02	0.05	0.11	0.06	0.18	1.58	
rmk	0.00	0.20	0.03	0.18	0.01	0.07	0.11	0.12	0.01	0.20	0.91	
otherPrimary	0.00	0.02	0.00	0.19	0.03	0.01	0.05	0.03	0.02	0.05	0.40	
cmt	0.00	0.46	0.00	0.98	0.14	0.01	0.02	0.01	0.01	0.03	1.65	
omt	0.00	0.85	0.01	0.40	0.27	0.01	0.11	0.27	0.15	0.08	2.16	
vol	0.00	0.16	0.00	0.06	0.00	0.00	0.03	1.09	0.08	0.08	1.51	
mil	0.00	47.39	0.02	0.15	0.02	0.02	0.10	0.02	0.36	0.11	48.20	
sgr	0.00	1.56	0.01	0.53	0.00	0.00	0.16	0.01	0.18	0.34	2.80	
ofd	0.00	1.69	0.02	0.52	0.02	0.01	0.07	0.10	0.12	0.13	2.68	
b_t	0.00	1.56	0.19	0.53	0.08	0.09	0.08	0.05	0.21	0.07	2.84	
othManufact	0.00	1.21	0.02	0.36	0.02	0.03	0.20	0.07	0.19	0.13	2.22	
services	0.00	0.08	0.02	0.15	0.01	0.02	0.06	0.02	0.00	0.07	0.44	

**Table 1C: Macroeconomic Variables – SACU and USA (percentage deviations from baseline values) – Fixed long-run employment/less conservative**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>SACU</b>													
Real private consumption	0.017	0.027	0.036	0.043	0.050	0.057	0.062	0.067	0.070	0.073	0.055	0.053	0.052
Real investment	0.124	0.193	0.254	0.308	0.358	0.410	0.455	0.498	0.541	0.582	0.423	0.372	0.344
Real government consumption	0.010	0.015	0.017	0.018	0.017	0.017	0.014	0.010	0.005	-0.001	-0.018	-0.019	-0.018
Export volume	0.023	0.077	0.139	0.210	0.288	0.380	0.480	0.587	0.700	0.817	0.931	0.976	1.000
Import volume	0.114	0.212	0.310	0.407	0.505	0.613	0.720	0.829	0.940	1.054	0.976	0.946	0.926
Real GDP	0.013	0.022	0.030	0.038	0.045	0.054	0.062	0.070	0.077	0.085	0.082	0.087	0.091
Employment-unskilled	0.013	0.020	0.024	0.028	0.030	0.034	0.036	0.038	0.040	0.041	0.011	0.004	0.002
Employment-skilled	0.015	0.022	0.026	0.029	0.031	0.034	0.036	0.038	0.038	0.039	0.007	0.002	0.000
Employment-total	0.013	0.020	0.025	0.028	0.030	0.034	0.036	0.038	0.039	0.040	0.010	0.003	0.001
Capital	0.008	0.021	0.037	0.056	0.077	0.101	0.126	0.153	0.182	0.211	0.260	0.286	0.299
Real wage rate-unskilled	0.013	0.028	0.045	0.064	0.084	0.107	0.131	0.156	0.182	0.209	0.231	0.240	0.243
Real wage rate-skilled	0.015	0.031	0.049	0.069	0.089	0.112	0.136	0.160	0.185	0.210	0.224	0.228	0.229
Price of private consumption	0.005	0.006	0.004	0.001	-0.004	-0.013	-0.024	-0.037	-0.050	-0.064	-0.086	-0.095	-0.100
Price of investment	-0.005	-0.013	-0.024	-0.036	-0.050	-0.065	-0.082	-0.100	-0.119	-0.139	-0.155	-0.162	-0.165
Price of GDP at market prices	0.007	0.009	0.008	0.005	0.000	-0.009	-0.020	-0.033	-0.047	-0.062	-0.090	-0.103	-0.110
Price of GDP at factor cost	0.019	0.032	0.043	0.053	0.061	0.067	0.071	0.074	0.077	0.079	0.050	0.037	0.029
Terms of trade	0.009	0.014	0.017	0.019	0.019	0.017	0.012	0.007	0.000	-0.008	-0.035	-0.049	-0.059
<b>USA</b>													
Real private consumption	0.000	0.001	0.001	0.001	0.001	0.002	0.002	0.003	0.003	0.003	0.003	0.004	0.004
Real investment	0.002	0.003	0.004	0.005	0.007	0.008	0.009	0.010	0.011	0.012	0.009	0.008	0.007
Real government consumption	0.000	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.004	0.004
Export volume	0.002	0.004	0.007	0.010	0.013	0.016	0.018	0.022	0.025	0.028	0.031	0.031	0.032
Import volume	0.005	0.009	0.013	0.018	0.023	0.028	0.033	0.039	0.044	0.050	0.048	0.048	0.048
Real GDP	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002
Employment-unskilled	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
Employment-skilled	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
Employment-total	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
Capital	0.000	0.000	0.001	0.001	0.001	0.002	0.002	0.003	0.003	0.004	0.005	0.005	0.006
Real wage rate-unskilled	0.000	0.000	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.004	0.004	0.005	0.005
Real wage rate-skilled	0.000	0.000	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.004	0.004	0.004	0.004
Price of private consumption	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.010	0.011	0.010	0.010	0.010
Price of investment	0.001	0.002	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009	0.009	0.009	0.009
Price of GDP at market prices	0.001	0.002	0.003	0.004	0.006	0.007	0.008	0.010	0.011	0.013	0.012	0.012	0.012
Price of GDP at factor cost	0.001	0.002	0.003	0.005	0.006	0.007	0.009	0.010	0.012	0.014	0.013	0.013	0.013
Terms of trade	0.001	0.003	0.004	0.005	0.007	0.008	0.010	0.012	0.014	0.015	0.015	0.015	0.015

**Table 2C: Industry Output – SACU and USA (percentage deviations from baseline values) – Fixed long-run employment/less conservative**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>SACU</b>													
wht	-0.009	-0.003	0.004	0.014	0.027	-1.043	-2.165	-3.334	-4.549	-5.805	-5.804	-5.815	-5.832
gro	-0.015	-0.020	-0.023	-0.023	-0.022	-0.009	0.007	0.024	0.043	0.063	0.103	0.126	0.142
v_f	0.007	0.023	0.042	0.064	0.089	0.123	0.160	0.199	0.240	0.283	0.322	0.340	0.349
osd	0.149	0.350	0.581	0.831	1.107	1.428	1.777	2.157	2.567	3.010	3.075	3.105	3.123
c_b	-0.038	0.194	0.441	0.714	1.005	1.389	1.797	2.230	2.688	3.173	3.269	3.330	3.381
ocr	0.061	0.153	0.259	0.376	0.507	0.663	0.836	1.024	1.231	1.456	1.509	1.540	1.561
ctl	-0.016	-0.032	-0.051	-0.072	-0.098	-0.117	-0.140	-0.168	-0.200	-0.239	-0.233	-0.226	-0.221
oap	-0.001	0.006	0.015	0.024	0.035	0.058	0.082	0.109	0.136	0.165	0.183	0.197	0.208
rmk	0.003	0.014	0.026	0.039	0.053	0.075	0.098	0.122	0.147	0.173	0.181	0.191	0.199
otherPrimary	-0.012	-0.016	-0.016	-0.013	-0.008	0.003	0.015	0.030	0.046	0.064	0.115	0.138	0.152
cmt	-0.021	-0.048	-0.079	-0.115	-0.157	-0.193	-0.236	-0.286	-0.343	-0.409	-0.407	-0.403	-0.402
omt	0.006	0.011	0.016	0.022	0.027	0.043	0.059	0.076	0.093	0.111	0.116	0.123	0.128
vol	-0.047	-0.091	-0.134	-0.177	-0.221	-0.242	-0.261	-0.279	-0.295	-0.311	-0.259	-0.221	-0.188
mil	0.003	0.005	0.008	0.010	0.013	0.022	0.031	0.040	0.049	0.058	0.064	0.070	0.075
sgr	-0.044	0.227	0.518	0.837	1.177	1.623	2.096	2.598	3.128	3.687	3.788	3.848	3.895
ofd	-0.005	-0.010	-0.014	-0.017	-0.019	-0.008	0.005	0.019	0.035	0.052	0.074	0.093	0.109
b_t	-0.007	-0.007	-0.004	0.003	0.013	0.034	0.058	0.085	0.115	0.146	0.203	0.236	0.260
othManufact	0.001	0.005	0.010	0.016	0.023	0.035	0.048	0.063	0.079	0.097	0.131	0.149	0.158
services	0.018	0.029	0.039	0.048	0.057	0.067	0.076	0.084	0.093	0.100	0.082	0.081	0.081
Primary agriculture	0.004	0.025	0.049	0.077	0.107	0.115	0.125	0.136	0.150	0.165	0.198	0.219	0.235
Agricultural-related	-0.010	0.001	0.013	0.029	0.046	0.082	0.120	0.161	0.205	0.252	0.289	0.316	0.336
All and related agriculture	-0.003	0.013	0.032	0.054	0.078	0.099	0.121	0.147	0.174	0.204	0.238	0.262	0.280
All other industries	0.012	0.020	0.028	0.037	0.045	0.055	0.066	0.076	0.086	0.097	0.095	0.100	0.103
All industries	0.011	0.020	0.029	0.038	0.047	0.058	0.070	0.081	0.092	0.104	0.105	0.111	0.115

*Table continued on next page.*

**Table 2C (continued): Industry Output – SACU and USA (percentage deviations from baseline values) – Fixed long-run employment/less conservative**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>USA</b>													
wht	-0.002	-0.003	-0.005	-0.007	-0.008	0.034	0.079	0.127	0.176	0.227	0.230	0.231	0.233
gro	0.000	0.000	0.000	0.001	0.002	0.002	0.002	0.003	0.004	0.005	0.005	0.005	0.005
v_f	-0.001	-0.002	-0.003	-0.004	-0.005	-0.007	-0.009	-0.011	-0.013	-0.016	-0.015	-0.016	-0.016
osd	0.001	0.001	0.002	0.003	0.004	0.004	0.004	0.004	0.003	0.003	0.003	0.003	0.002
c_b	0.001	-0.019	-0.039	-0.062	-0.086	-0.112	-0.141	-0.171	-0.202	-0.236	-0.246	-0.255	-0.265
ocr	-0.002	-0.004	-0.006	-0.008	-0.010	-0.014	-0.018	-0.023	-0.027	-0.032	-0.032	-0.033	-0.033
ctl	0.001	0.003	0.006	0.009	0.012	0.016	0.021	0.026	0.033	0.040	0.041	0.042	0.042
oap	-0.001	-0.002	-0.002	-0.003	-0.004	-0.006	-0.007	-0.009	-0.011	-0.012	-0.013	-0.014	-0.015
rmk	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
otherPrimary	-0.001	-0.002	-0.003	-0.004	-0.005	-0.006	-0.007	-0.009	-0.010	-0.011	-0.011	-0.010	-0.010
cmt	0.002	0.005	0.008	0.011	0.016	0.021	0.027	0.033	0.042	0.051	0.052	0.053	0.054
omt	0.000	-0.001	-0.001	-0.002	-0.002	-0.003	-0.004	-0.005	-0.006	-0.007	-0.007	-0.007	-0.008
vol	0.007	0.014	0.022	0.030	0.039	0.048	0.057	0.067	0.077	0.087	0.087	0.086	0.084
mil	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
sgr	0.001	-0.019	-0.040	-0.063	-0.087	-0.114	-0.142	-0.173	-0.205	-0.239	-0.248	-0.258	-0.268
ofd	0.000	0.001	0.002	0.003	0.003	0.004	0.005	0.005	0.006	0.007	0.007	0.007	0.007
b_t	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
othManufact	0.000	0.001	0.001	0.002	0.003	0.003	0.004	0.005	0.005	0.006	0.007	0.007	0.008
services	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Primary agriculture	0.000	-0.001	-0.002	-0.002	-0.003	-0.001	0.001	0.003	0.005	0.007	0.008	0.007	0.007
Agricultural-related	0.000	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.004	0.004	0.004	0.004	0.004
All and related agriculture	0.000	0.000	0.000	0.000	0.000	0.001	0.002	0.003	0.004	0.005	0.006	0.005	0.005
All other industries	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002
All industries	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002

**Table 3C: Trade Volumes – SACU and USA (percentage deviations from baseline values) – Fixed long-run employment/less conservative**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>SACU to USA</b>													
wht	1.1	2.2	3.3	4.4	5.6	7.0	8.6	10.1	11.8	13.4	13.6	13.6	13.7
gro	0.1	0.2	0.3	0.4	0.6	0.7	0.9	1.0	1.2	1.3	1.5	1.5	1.5
v_f	2.0	4.0	6.1	8.2	10.4	12.6	14.9	17.3	19.7	22.1	22.2	22.3	22.3
osd	7.3	15.2	23.6	32.6	42.3	52.7	63.9	75.9	88.8	102.6	102.8	102.8	102.8
c_b	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.7	1.9	2.0	2.1	2.1
ocr	8.9	18.5	29.0	40.5	52.9	66.6	81.4	97.5	115.1	134.2	134.4	134.5	134.6
ctl	0.3	0.6	0.9	1.2	1.5	1.9	2.3	2.7	3.1	3.5	3.7	3.8	3.8
oap	0.3	0.6	1.0	1.3	1.7	2.1	2.5	2.9	3.4	3.9	4.0	4.1	4.1
rmk	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.1	0.2	0.2
other	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.7
Primary	0.0	-0.1	-0.1	-0.1	-0.1	0.0	0.1	0.2	0.3	0.4	0.6	0.6	0.6
Forestry, fishing and mining	1.5	3.1	4.7	6.3	8.0	9.8	11.6	13.4	15.3	17.2	17.4	17.4	17.5
Meat: cattle, sheep, goats, horses	0.8	1.5	2.3	3.1	4.0	4.9	5.8	6.7	7.7	8.7	8.8	8.8	8.9
Other meat products	0.0	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.4
Vegetable oils and fats	0.0	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.4
Dairy products	-0.2	2.7	5.8	9.1	12.5	16.1	19.9	23.9	28.0	32.4	32.5	32.5	32.5
Raw and refined sugar	0.7	1.4	2.2	3.0	3.7	4.6	5.5	6.4	7.3	8.2	8.3	8.4	8.4
Other food products	1.8	3.7	5.6	7.6	9.7	11.8	14.0	16.2	18.5	20.8	21.0	21.1	21.2
Beverages and tobacco products	1.1	2.2	3.3	4.5	5.6	6.8	8.1	9.3	10.6	11.9	12.0	12.1	12.1
Other manufacturing	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.1
Services	3.8	7.8	12.2	16.9	21.9	27.3	33.1	39.4	46.1	53.4	53.8	54.0	54.3
Primary agriculture	0.5	2.2	4.0	5.9	7.8	9.9	12.0	14.3	16.6	19.0	19.1	19.1	19.1
Agricultural-related	1.0	3.1	5.3	7.6	10.0	12.6	15.3	18.2	21.2	24.3	24.3	24.3	24.2
All and related agriculture	0.7	1.4	2.2	2.9	3.7	4.5	5.3	6.2	7.0	7.9	8.0	8.1	8.2
All other industries	0.7	1.6	2.4	3.3	4.3	5.2	6.2	7.3	8.3	9.4	9.6	9.7	9.8

*Table continued on next page.*

**Table 3C (continued): Trade Volumes – SACU and USA (percentage deviations from baseline values) – Fixed long-run employment/less conservative**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>USA to SACU</b>													
wht	0.0	0.0	0.1	0.1	0.2	9.3	18.8	28.6	38.9	49.5	49.2	49.0	48.7
gro	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2
v_f	2.4	4.9	7.5	10.0	12.6	15.3	18.0	20.8	23.6	26.4	26.2	26.1	26.0
osd	2.2	4.5	6.8	9.1	11.5	13.9	16.4	18.9	21.5	24.1	24.1	24.1	24.0
c_b	0.2	0.6	1.0	1.5	2.0	2.6	3.2	3.8	4.5	5.2	5.2	5.3	5.3
ocr	2.5	5.1	7.8	10.5	13.3	16.2	19.2	22.2	25.3	28.4	28.4	28.4	28.4
ctl	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.3	-0.4	-0.5	-0.6	-0.7	-0.7
oap	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2
rmk	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2
otherPrimary	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.6
Forestry, fishing and mining	17.4	37.6	61.3	88.8	120.9	158.2	201.4	251.4	309.3	376.1	375.6	375.3	375.0
Meat: cattle, sheep, goats, horses	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	-0.1	-0.1	-0.2	-0.2	-0.2
Other meat products	6.1	12.5	19.3	26.5	34.1	42.1	50.6	59.6	69.1	79.1	79.1	79.1	79.2
Vegetable oils and fats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.2
Dairy products	19.5	42.9	70.9	104.3	144.3	191.8	248.7	316.5	397.6	494.4	494.2	494.1	494.1
Raw and refined sugar	2.6	5.2	7.9	10.6	13.4	16.3	19.2	22.1	25.1	28.2	28.1	28.1	28.1
Other food products	1.8	3.6	5.4	7.2	9.1	10.9	12.8	14.7	16.7	18.6	18.5	18.5	18.5
Beverages and tobacco products	2.2	4.5	6.8	9.1	11.4	13.8	16.3	18.7	21.3	23.8	23.7	23.7	23.7
Other manufacturing	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Services	0.5	1.0	1.5	2.0	2.6	7.2	12.0	17.0	22.1	27.3	27.1	26.9	26.7
Primary agriculture	2.2	4.5	7.0	9.6	12.3	15.3	18.5	21.9	25.6	29.7	29.7	29.7	29.8
Agricultural-related	1.7	3.4	5.2	7.2	9.3	12.7	16.4	20.3	24.5	28.9	28.8	28.8	28.7
All and related agriculture	1.6	3.2	4.8	6.5	8.2	9.9	11.7	13.5	15.3	17.2	17.1	17.1	17.1
All other industries	1.6	3.2	4.9	6.6	8.3	10.2	12.1	14.1	16.1	18.2	18.1	18.0	18.0



**Table 4C: Regional Contributions to the Long-run Percentage Deviations in SACU exports, by commodity – Fixed long-run employment/less conservatives**

Commodity	SACU	USA	Canada Mex	EU	EFTA	Sth America	JapKor TwnSng	China HK	RestSS Africa	ROW	Total= % deviation, 2023
wht	0.00	0.41	0.01	0.07	0.01	0.01	0.03	0.01	0.65	0.82	2.00
gro	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.07	0.00	0.11
v_f	0.00	1.07	0.00	0.03	0.00	0.00	0.00	0.01	0.00	0.00	1.12
osd	0.00	13.35	-0.04	-0.18	0.00	0.00	-0.09	0.00	-0.07	-0.02	12.94
c_b	0.00	0.16	-0.01	-0.49	-0.01	-0.01	-0.04	-0.03	0.00	-0.06	-0.49
ocr	0.00	8.24	0.00	-0.04	0.00	-0.01	-0.01	-0.05	-0.02	-0.06	8.06
ctl	0.00	0.26	0.00	0.06	0.01	0.00	0.01	0.07	0.10	0.02	0.54
oap	0.00	0.18	0.00	0.29	0.00	0.00	0.02	0.03	0.02	0.06	0.60
rmk	0.00	0.05	0.01	0.04	0.00	0.02	0.03	0.03	0.00	0.05	0.23
otherPrimary	0.00	0.02	0.00	0.10	0.01	0.01	0.03	0.02	0.01	0.02	0.21
cmt	0.00	0.02	0.00	0.46	0.07	0.00	0.01	0.01	0.00	0.01	0.58
omt	0.00	0.80	0.00	0.14	0.09	0.00	0.04	0.09	0.05	0.03	1.25
vol	0.00	0.15	0.00	0.04	0.00	0.00	0.02	0.75	0.06	0.06	1.08
mil	0.00	0.05	0.01	0.05	0.01	0.01	0.03	0.01	0.11	0.04	0.31
sgr	0.00	5.66	0.01	0.30	0.00	0.00	0.09	0.01	0.10	0.19	6.35
ofd	0.00	1.58	0.01	0.29	0.01	0.01	0.04	0.05	0.06	0.07	2.12
b_t	0.00	1.50	0.10	0.28	0.04	0.05	0.04	0.02	0.11	0.04	2.18
othManufact	0.00	1.08	0.01	0.14	0.01	0.01	0.08	0.02	0.07	0.05	1.46
services	0.00	0.02	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.01	0.07

**Table ID: Macroeconomic Variables – SACU and USA (percentage deviations from baseline values) – Elastic supply of unskilled labour/less conservative**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>SACU</b>													
Real private consumption	0.034	0.063	0.093	0.124	0.156	0.192	0.228	0.265	0.302	0.340	0.353	0.371	0.382
Real investment	0.181	0.291	0.397	0.495	0.589	0.692	0.786	0.878	0.969	1.060	0.866	0.791	0.742
Real government consumption	0.028	0.052	0.076	0.101	0.127	0.157	0.186	0.216	0.246	0.276	0.293	0.313	0.326
Export volume	0.010	0.060	0.121	0.192	0.274	0.369	0.477	0.594	0.719	0.852	1.052	1.156	1.222
Import volume	0.140	0.261	0.383	0.507	0.631	0.770	0.909	1.050	1.193	1.339	1.260	1.227	1.202
Real GDP	0.028	0.054	0.082	0.112	0.144	0.181	0.219	0.259	0.300	0.342	0.379	0.410	0.430
Employment-unskilled	0.041	0.080	0.122	0.166	0.212	0.267	0.324	0.382	0.442	0.505	0.535	0.560	0.577
Employment-skilled	0.024	0.037	0.048	0.056	0.062	0.071	0.077	0.082	0.086	0.090	0.035	0.018	0.010
Employment-total	0.035	0.066	0.098	0.130	0.163	0.203	0.243	0.284	0.326	0.368	0.371	0.382	0.390
Capital	0.012	0.031	0.056	0.087	0.122	0.163	0.208	0.256	0.309	0.364	0.473	0.543	0.586
Real wage rate-unskilled	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Real wage rate-skilled	0.024	0.053	0.087	0.125	0.167	0.215	0.267	0.321	0.378	0.436	0.507	0.544	0.564
Price of private consumption	0.008	0.009	0.008	0.005	0.000	-0.009	-0.021	-0.034	-0.049	-0.065	-0.101	-0.120	-0.132
Price of investment	-0.002	-0.011	-0.021	-0.033	-0.047	-0.062	-0.080	-0.099	-0.119	-0.140	-0.168	-0.183	-0.192
Price of GDP at market prices	0.011	0.013	0.013	0.011	0.006	-0.003	-0.015	-0.030	-0.046	-0.063	-0.109	-0.134	-0.151
Price of GDP at factor cost	0.022	0.037	0.049	0.059	0.067	0.073	0.076	0.078	0.079	0.078	0.030	0.005	-0.012
Terms of trade	0.012	0.018	0.021	0.023	0.024	0.021	0.015	0.008	0.000	-0.011	-0.054	-0.079	-0.097
<b>USA</b>													
Real private consumption	0.000	0.000	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.004
Real investment	0.002	0.003	0.004	0.005	0.007	0.008	0.009	0.010	0.011	0.012	0.009	0.008	0.007
Real government consumption	0.000	0.000	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003
Export volume	0.002	0.005	0.008	0.011	0.014	0.017	0.020	0.023	0.027	0.030	0.032	0.033	0.033
Import volume	0.005	0.009	0.013	0.018	0.023	0.028	0.033	0.038	0.044	0.050	0.048	0.048	0.048
Real GDP	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002
Employment-unskilled	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
Employment-skilled	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
Employment-total	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
Capital	0.000	0.000	0.001	0.001	0.001	0.002	0.002	0.003	0.003	0.004	0.005	0.006	0.006
Real wage rate-unskilled	0.000	0.000	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.004	0.004	0.005	0.005
Real wage rate-skilled	0.000	0.000	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.004	0.004	0.004	0.005
Price of private consumption	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.010	0.011	0.010	0.010	0.010
Price of investment	0.001	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009	0.009	0.009	0.009
Price of GDP at market prices	0.001	0.002	0.003	0.004	0.006	0.007	0.008	0.010	0.011	0.013	0.012	0.012	0.012
Price of GDP at factor cost	0.001	0.002	0.003	0.005	0.006	0.007	0.009	0.010	0.012	0.014	0.013	0.013	0.013
Terms of trade	0.001	0.003	0.004	0.005	0.007	0.008	0.010	0.012	0.014	0.015	0.015	0.015	0.015

**Table 2D: Industry Output – SACU and USA (percentage deviations from baseline values) – Elastic supply of unskilled labour/less conservative**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>SACU</b>													
wht	-0.003	0.011	0.029	0.052	0.078	-0.977	-2.081	-3.233	-4.429	-5.666	-5.626	-5.611	-5.610
gro	-0.011	-0.009	-0.004	0.007	0.020	0.048	0.080	0.115	0.154	0.195	0.281	0.334	0.371
v_f	0.009	0.031	0.059	0.091	0.127	0.175	0.228	0.285	0.346	0.410	0.498	0.548	0.580
osd	0.149	0.356	0.595	0.856	1.144	1.480	1.847	2.246	2.679	3.145	3.275	3.347	3.395
c_b	-0.037	0.199	0.454	0.735	1.037	1.433	1.856	2.306	2.782	3.286	3.443	3.544	3.622
ocr	0.066	0.166	0.283	0.413	0.559	0.732	0.924	1.134	1.363	1.613	1.719	1.785	1.831
ctl	-0.006	-0.011	-0.016	-0.023	-0.031	-0.031	-0.033	-0.039	-0.049	-0.063	-0.024	0.003	0.021
oap	0.007	0.025	0.046	0.070	0.096	0.137	0.182	0.229	0.279	0.332	0.386	0.424	0.451
rmk	0.013	0.037	0.063	0.092	0.123	0.166	0.210	0.258	0.307	0.359	0.399	0.430	0.451
otherPrimary	-0.012	-0.011	-0.005	0.006	0.023	0.045	0.073	0.104	0.139	0.177	0.282	0.342	0.381
cmt	-0.011	-0.027	-0.044	-0.065	-0.089	-0.106	-0.128	-0.156	-0.189	-0.231	-0.197	-0.173	-0.158
omt	0.017	0.034	0.054	0.075	0.099	0.135	0.174	0.214	0.256	0.300	0.338	0.366	0.385
vol	-0.041	-0.077	-0.109	-0.140	-0.169	-0.173	-0.173	-0.171	-0.166	-0.158	-0.061	0.006	0.058
mil	0.014	0.030	0.047	0.067	0.089	0.120	0.153	0.187	0.223	0.260	0.301	0.331	0.350
sgr	-0.045	0.231	0.527	0.854	1.204	1.661	2.149	2.666	3.214	3.792	3.958	4.061	4.139
ofd	0.002	0.007	0.015	0.024	0.036	0.064	0.095	0.129	0.165	0.204	0.259	0.299	0.329
b_t	-0.003	0.005	0.018	0.039	0.064	0.103	0.148	0.198	0.252	0.310	0.425	0.497	0.547
othManufact	0.010	0.027	0.049	0.075	0.105	0.143	0.186	0.232	0.283	0.336	0.438	0.500	0.539
services	0.037	0.068	0.100	0.134	0.169	0.210	0.251	0.294	0.337	0.381	0.396	0.416	0.429
Primary agriculture	0.010	0.040	0.076	0.116	0.161	0.186	0.214	0.246	0.281	0.319	0.394	0.443	0.478
Agricultural-related	-0.003	0.016	0.040	0.069	0.101	0.154	0.212	0.275	0.341	0.412	0.492	0.547	0.587
All and related agriculture	0.003	0.029	0.059	0.093	0.133	0.170	0.212	0.258	0.307	0.360	0.438	0.490	0.527
All other industries	0.027	0.053	0.081	0.111	0.144	0.183	0.224	0.267	0.311	0.357	0.397	0.429	0.450
All industries	0.026	0.051	0.079	0.110	0.143	0.182	0.223	0.266	0.311	0.357	0.400	0.433	0.455

*Table continued on next page.*

**Table 2D (continued): Industry Output – SACU and USA (percentage deviations from baseline values) – Elastic supply of unskilled labour/less conservative**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>USA</b>													
wht	-0.002	-0.003	-0.005	-0.006	-0.008	0.035	0.080	0.127	0.177	0.229	0.231	0.233	0.234
gro	0.000	0.000	0.001	0.001	0.002	0.002	0.002	0.003	0.004	0.005	0.005	0.005	0.005
v_f	-0.001	-0.002	-0.003	-0.004	-0.005	-0.007	-0.009	-0.011	-0.013	-0.016	-0.016	-0.016	-0.016
osd	0.001	0.002	0.002	0.003	0.004	0.004	0.004	0.004	0.004	0.003	0.003	0.003	0.002
c_b	0.001	-0.019	-0.039	-0.062	-0.086	-0.112	-0.141	-0.171	-0.202	-0.236	-0.246	-0.256	-0.267
ocr	-0.002	-0.004	-0.006	-0.008	-0.010	-0.014	-0.018	-0.022	-0.027	-0.032	-0.032	-0.032	-0.033
ctl	0.001	0.003	0.006	0.009	0.012	0.016	0.021	0.026	0.033	0.041	0.041	0.042	0.042
oap	-0.001	-0.002	-0.002	-0.003	-0.004	-0.005	-0.007	-0.009	-0.010	-0.012	-0.013	-0.014	-0.015
rmk	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
otherPrimary	-0.001	-0.002	-0.003	-0.004	-0.004	-0.006	-0.007	-0.008	-0.009	-0.010	-0.010	-0.010	-0.010
cmt	0.002	0.005	0.008	0.011	0.016	0.021	0.027	0.033	0.042	0.051	0.052	0.053	0.054
omt	0.000	-0.001	-0.001	-0.002	-0.002	-0.003	-0.004	-0.005	-0.006	-0.007	-0.007	-0.007	-0.007
vol	0.007	0.014	0.022	0.031	0.040	0.048	0.057	0.067	0.077	0.088	0.087	0.086	0.084
mil	0.000	0.000	0.000	0.000	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
sgr	0.001	-0.019	-0.040	-0.062	-0.087	-0.114	-0.142	-0.173	-0.205	-0.239	-0.249	-0.259	-0.270
ofd	0.000	0.001	0.002	0.003	0.003	0.004	0.005	0.005	0.006	0.007	0.007	0.007	0.007
b_t	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
othManufact	0.000	0.001	0.002	0.002	0.003	0.004	0.004	0.005	0.006	0.007	0.007	0.008	0.008
services	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Primary agriculture	0.000	-0.001	-0.002	-0.002	-0.003	-0.001	0.001	0.003	0.005	0.008	0.008	0.007	0.007
Agricultural-related	0.000	0.001	0.001	0.002	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.004
All and related agriculture	0.000	0.000	0.000	0.000	0.000	0.001	0.002	0.003	0.004	0.005	0.006	0.005	0.005
All other industries	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002
All industries	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002

**Table 3D: Trade Volumes – SACU and USA (percentage deviations from baseline values) – Elastic supply of unskilled labour/less conservative**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>SACU to USA</b>													
wht	1.0	2.1	3.3	4.4	5.6	7.0	8.6	10.2	11.8	13.5	13.7	13.9	14.0
gro	0.1	0.2	0.3	0.4	0.5	0.7	0.9	1.0	1.2	1.4	1.6	1.7	1.8
v_f	2.0	4.0	6.1	8.2	10.4	12.6	14.9	17.3	19.7	22.2	22.4	22.5	22.6
osd	7.3	15.1	23.6	32.6	42.3	52.8	63.9	76.0	88.9	102.7	103.1	103.2	103.4
c_b	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.3	2.4
ocr	8.8	18.5	29.0	40.5	52.9	66.6	81.4	97.5	115.2	134.3	134.8	135.0	135.2
ctl	0.3	0.5	0.9	1.2	1.5	1.9	2.3	2.7	3.2	3.6	3.9	4.1	4.2
oap	0.3	0.6	0.9	1.3	1.6	2.1	2.5	3.0	3.4	3.9	4.2	4.3	4.4
rmk	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1	-0.1	0.0	0.1	0.3	0.4	0.5
other	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.5	0.6	0.7
Primary	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.1	0.2	0.3	0.5	0.7	0.8	0.9
cmt	1.5	3.1	4.7	6.3	8.0	9.8	11.6	13.5	15.4	17.3	17.5	17.7	17.7
omt	0.7	1.5	2.3	3.1	4.0	4.9	5.8	6.8	7.7	8.7	8.9	9.0	9.1
vol	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.1	0.2	0.2	0.4	0.5	0.6
mil	-0.2	2.7	5.8	9.1	12.5	16.1	19.9	23.9	28.0	32.4	32.6	32.7	32.7
sgr	0.7	1.4	2.2	3.0	3.7	4.6	5.5	6.4	7.3	8.2	8.4	8.5	8.6
ofd	1.8	3.7	5.6	7.6	9.6	11.7	13.9	16.1	18.4	20.7	21.1	21.3	21.5
b_t	1.1	2.2	3.3	4.4	5.6	6.8	8.1	9.3	10.6	11.9	12.2	12.4	12.5
oth	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	0.0	0.1	0.2
Manufact	3.8	7.8	12.2	16.9	21.9	27.3	33.2	39.4	46.2	53.5	54.0	54.4	54.7
services	0.5	2.2	4.0	5.9	7.8	9.9	12.0	14.3	16.6	19.0	19.2	19.3	19.3
Primary agriculture	1.0	3.1	5.3	7.6	10.0	12.6	15.3	18.2	21.2	24.3	24.5	24.5	24.4
Agricultural-related	0.7	1.4	2.2	2.9	3.7	4.5	5.3	6.2	7.0	7.9	8.2	8.3	8.4
All and related agriculture	0.7	1.6	2.4	3.3	4.3	5.2	6.2	7.3	8.4	9.5	9.8	9.9	10.0

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**Table 3D (continued): Trade Volumes – SACU and USA (percentage deviations from baseline values) – Elastic supply of unskilled labour/less conservative**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>USA to SACU</b>													
wht	0.0	0.1	0.1	0.2	0.2	9.3	18.9	28.8	39.0	49.7	49.4	49.2	49.0
gro	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3
v_f	2.5	5.0	7.5	10.1	12.7	15.4	18.1	20.9	23.7	26.6	26.4	26.2	26.1
osd	2.2	4.5	6.8	9.1	11.5	14.0	16.5	19.0	21.6	24.3	24.3	24.2	24.2
c_b	0.2	0.6	1.1	1.6	2.1	2.6	3.3	3.9	4.6	5.3	5.3	5.4	5.4
ocr	2.5	5.2	7.8	10.6	13.4	16.3	19.3	22.3	25.4	28.6	28.6	28.6	28.6
ctl	0.1	0.1	0.1	0.1	0.1	0.0	-0.1	-0.2	-0.3	-0.4	-0.6	-0.7	-0.8
oap	0.1	0.2	0.2	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.3
rmk	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.4	0.4
otherPrimary	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.0	1.0
Forestry, fishing and mining	17.4	37.7	61.3	89.0	121.1	158.4	201.7	251.9	309.9	376.9	376.3	375.9	375.6
Meat: cattle, sheep, goats, horses	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	-0.1	-0.1
Other meat products	6.1	12.5	19.3	26.5	34.2	42.2	50.7	59.8	69.3	79.4	79.4	79.4	79.5
Vegetable oils and fats	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Dairy products	19.6	43.0	71.0	104.4	144.4	192.1	249.0	317.0	398.2	495.2	494.9	494.8	494.8
Raw and refined sugar	2.6	5.2	7.9	10.7	13.5	16.4	19.3	22.3	25.3	28.4	28.3	28.2	28.2
Other food products	1.8	3.6	5.4	7.3	9.2	11.1	13.0	14.9	16.9	18.9	18.8	18.7	18.7
Beverages and tobacco products	2.3	4.5	6.8	9.2	11.6	14.0	16.5	19.0	21.6	24.2	24.1	24.1	24.0
Other manufacturing	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3
Services	0.5	1.0	1.5	2.1	2.6	7.3	12.1	17.1	22.2	27.5	27.3	27.1	26.9
Primary agriculture	2.2	4.5	7.0	9.6	12.4	15.4	18.6	22.1	25.8	29.9	29.9	29.9	30.0
Agricultural-related	1.7	3.4	5.3	7.3	9.3	12.8	16.5	20.5	24.7	29.1	29.0	29.0	28.9
All and related agriculture	1.6	3.2	4.9	6.6	8.3	10.1	11.9	13.7	15.6	17.5	17.5	17.5	17.5
All other industries	1.6	3.3	4.9	6.7	8.4	10.3	12.3	14.3	16.4	18.5	18.4	18.4	18.3

**Table 4D: Regional Contributions to the Long-run Percentage Deviations in SACU exports, by commodity – Elastic supply of unskilled labour/less conservative**

Commodity	SACU	USA	Canada Mex	EU	EFTA	Sth America	JapKor TwnSng	China HK	RestSS Africa	ROW	Total= % deviation, 2023
wht	0.00	0.42	0.01	0.08	0.01	0.01	0.03	0.01	0.78	0.99	2.36
gro	0.00	0.00	0.00	0.00	0.00	0.07	0.02	0.00	0.28	0.00	0.38
v_f	0.00	1.09	0.02	0.21	0.01	0.00	0.02	0.06	0.02	0.03	1.45
osd	0.00	13.44	-0.01	-0.05	0.00	0.00	-0.02	0.00	-0.02	-0.01	13.33
c_b	0.00	0.19	-0.01	-0.22	0.00	0.00	-0.02	-0.01	0.00	-0.03	-0.10
ocr	0.00	8.29	0.00	0.03	0.00	0.01	0.00	0.05	0.01	0.05	8.44
ctl	0.00	0.29	0.00	0.14	0.02	0.01	0.03	0.17	0.25	0.05	0.97
oap	0.00	0.20	0.00	0.57	0.00	0.01	0.03	0.06	0.03	0.11	1.01
rmk	0.00	0.13	0.02	0.11	0.00	0.05	0.07	0.08	0.00	0.13	0.59
otherPrimary	0.00	0.02	0.00	0.13	0.02	0.01	0.03	0.02	0.01	0.03	0.27
cmt	0.00	0.02	0.00	0.72	0.10	0.00	0.01	0.01	0.00	0.02	0.90
omt	0.00	0.82	0.01	0.23	0.16	0.01	0.06	0.16	0.09	0.04	1.57
vol	0.00	0.15	0.00	0.05	0.00	0.00	0.02	0.93	0.07	0.07	1.31
mil	0.00	0.09	0.01	0.10	0.01	0.01	0.06	0.01	0.23	0.07	0.61
sgr	0.00	5.71	0.01	0.41	0.00	0.00	0.12	0.01	0.14	0.27	6.66
ofd	0.00	1.64	0.01	0.41	0.01	0.01	0.06	0.08	0.09	0.10	2.41
b_t	0.00	1.53	0.15	0.42	0.06	0.07	0.07	0.04	0.17	0.05	2.56
othManufact	0.00	1.12	0.01	0.27	0.01	0.02	0.15	0.05	0.14	0.10	1.87
services	0.00	0.05	0.01	0.09	0.01	0.01	0.03	0.01	0.00	0.04	0.25

**Table 1E: Macroeconomic Variables – SACU and USA (percentage deviations from baseline values) – Fixed long-run employment/more conservative**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>SACU</b>													
Real private consumption	0.015	0.023	0.030	0.036	0.041	0.045	0.049	0.053	0.056	0.059	0.046	0.044	0.043
Real investment	0.114	0.174	0.228	0.277	0.322	0.364	0.404	0.444	0.482	0.520	0.386	0.339	0.312
Real government consumption	0.009	0.012	0.014	0.015	0.014	0.013	0.012	0.010	0.008	0.006	-0.005	-0.006	-0.006
Export volume	0.019	0.065	0.117	0.177	0.243	0.314	0.390	0.470	0.553	0.639	0.740	0.783	0.805
Import volume	0.102	0.186	0.269	0.353	0.436	0.519	0.603	0.688	0.774	0.860	0.797	0.771	0.753
Real GDP	0.011	0.019	0.026	0.033	0.039	0.046	0.053	0.059	0.066	0.074	0.074	0.079	0.082
Employment-unskilled	0.011	0.017	0.021	0.023	0.025	0.026	0.028	0.029	0.029	0.030	0.009	0.004	0.001
Employment-skilled	0.013	0.019	0.022	0.024	0.026	0.027	0.028	0.028	0.029	0.029	0.006	0.001	0.000
Employment-total	0.012	0.017	0.021	0.024	0.025	0.027	0.028	0.028	0.029	0.030	0.008	0.003	0.001
Capital	0.008	0.019	0.033	0.050	0.069	0.090	0.113	0.137	0.162	0.189	0.234	0.258	0.271
Real wage rate-unskilled	0.011	0.024	0.038	0.054	0.071	0.088	0.106	0.125	0.144	0.163	0.181	0.189	0.192
Real wage rate-skilled	0.013	0.027	0.043	0.059	0.076	0.094	0.112	0.130	0.148	0.167	0.178	0.181	0.181
Price of private consumption	0.006	0.006	0.005	0.002	-0.002	-0.007	-0.013	-0.019	-0.027	-0.034	-0.054	-0.063	-0.068
Price of investment	-0.004	-0.014	-0.024	-0.037	-0.050	-0.065	-0.081	-0.097	-0.114	-0.132	-0.147	-0.154	-0.157
Price of GDP at market prices	0.008	0.008	0.007	0.003	-0.001	-0.008	-0.015	-0.024	-0.033	-0.043	-0.068	-0.080	-0.087
Price of GDP at factor cost	0.018	0.028	0.037	0.045	0.051	0.056	0.060	0.063	0.066	0.068	0.042	0.029	0.021
Terms of trade	0.009	0.012	0.014	0.014	0.014	0.012	0.010	0.007	0.002	-0.003	-0.025	-0.037	-0.045
<b>USA</b>													
Real private consumption	0.000	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003
Real investment	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.008	0.009	0.010	0.007	0.006	0.006
Real government consumption	0.000	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003
Export volume	0.002	0.004	0.006	0.008	0.011	0.013	0.016	0.019	0.022	0.024	0.026	0.027	0.027
Import volume	0.004	0.008	0.012	0.016	0.020	0.024	0.029	0.033	0.038	0.042	0.041	0.041	0.041
Real GDP	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002
Employment-unskilled	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
Employment-skilled	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
Employment-total	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
Capital	0.000	0.000	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.004	0.005	0.005
Real wage rate-unskilled	0.000	0.000	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.004	0.004	0.004
Real wage rate-skilled	0.000	0.000	0.001	0.001	0.001	0.002	0.002	0.003	0.003	0.003	0.004	0.004	0.004
Price of private consumption	0.001	0.002	0.003	0.004	0.004	0.005	0.006	0.007	0.008	0.010	0.009	0.009	0.009
Price of investment	0.001	0.001	0.002	0.003	0.004	0.004	0.005	0.006	0.007	0.008	0.008	0.008	0.008
Price of GDP at market prices	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.009	0.010	0.011	0.011	0.011	0.011
Price of GDP at factor cost	0.001	0.002	0.003	0.004	0.005	0.007	0.008	0.009	0.010	0.012	0.011	0.011	0.011
Terms of trade	0.001	0.002	0.004	0.005	0.006	0.007	0.009	0.010	0.012	0.013	0.012	0.012	0.012



**Table 2E: Industry Output – SACU and USA (percentage deviations from baseline values) – Fixed long-run employment/more conservative**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>SACU</b>													
wht	-0.005	-0.006	-0.006	-0.005	-0.002	0.002	0.006	0.012	0.018	0.024	0.048	0.061	0.070
gro	-0.011	-0.015	-0.018	-0.019	-0.018	-0.015	-0.012	-0.007	-0.002	0.003	0.036	0.053	0.063
v_f	-0.022	-0.036	-0.049	-0.060	-0.070	-0.078	-0.086	-0.093	-0.100	-0.108	-0.074	-0.060	-0.052
osd	0.151	0.336	0.548	0.778	1.032	1.311	1.614	1.944	2.301	2.687	2.739	2.759	2.768
c_b	-0.023	-0.034	-0.041	-0.045	-0.046	-0.045	-0.041	-0.037	-0.031	-0.025	0.031	0.058	0.076
ocr	0.061	0.138	0.229	0.329	0.442	0.568	0.708	0.863	1.033	1.220	1.266	1.292	1.308
ctl	0.003	0.005	0.007	0.009	0.012	0.015	0.018	0.021	0.024	0.028	0.034	0.040	0.044
oap	0.000	0.002	0.004	0.007	0.011	0.015	0.020	0.025	0.030	0.036	0.050	0.060	0.066
rmk	0.003	0.006	0.009	0.012	0.015	0.019	0.022	0.027	0.031	0.035	0.041	0.047	0.051
otherPrimary	-0.011	-0.013	-0.011	-0.006	0.001	0.010	0.021	0.034	0.047	0.062	0.109	0.132	0.145
cmt	0.003	0.006	0.009	0.012	0.015	0.018	0.022	0.025	0.029	0.033	0.038	0.043	0.046
omt	0.005	0.010	0.015	0.021	0.026	0.033	0.039	0.046	0.053	0.061	0.067	0.074	0.079
vol	-0.048	-0.091	-0.133	-0.177	-0.220	-0.264	-0.308	-0.353	-0.399	-0.445	-0.400	-0.368	-0.342
mil	0.003	0.006	0.010	0.014	0.018	0.023	0.028	0.034	0.039	0.045	0.052	0.059	0.063
sgr	-0.027	-0.039	-0.048	-0.052	-0.053	-0.052	-0.048	-0.043	-0.037	-0.030	0.034	0.064	0.084
ofd	0.000	0.002	0.004	0.007	0.011	0.016	0.021	0.027	0.033	0.039	0.053	0.062	0.069
b_t	-0.025	-0.043	-0.058	-0.071	-0.081	-0.089	-0.096	-0.101	-0.106	-0.110	-0.062	-0.035	-0.019
othManufact	0.000	0.007	0.013	0.021	0.030	0.040	0.051	0.063	0.076	0.089	0.124	0.142	0.151
services	0.016	0.026	0.035	0.043	0.051	0.059	0.067	0.075	0.083	0.091	0.079	0.079	0.079
Primary agriculture	0.005	0.015	0.028	0.043	0.062	0.083	0.107	0.134	0.164	0.197	0.223	0.238	0.249
Agricultural-related	-0.010	-0.016	-0.021	-0.025	-0.027	-0.028	-0.029	-0.029	-0.028	-0.027	-0.002	0.013	0.023
All and related agriculture	-0.002	0.000	0.004	0.011	0.019	0.030	0.043	0.057	0.074	0.092	0.117	0.131	0.141
All other industries	0.011	0.019	0.027	0.035	0.043	0.052	0.060	0.070	0.079	0.089	0.091	0.096	0.099
All industries	0.010	0.017	0.025	0.033	0.041	0.050	0.059	0.069	0.079	0.089	0.093	0.099	0.102

*Table continued on next page.*

*Table 2E (continued): Industry Output – SACU and USA (percentage deviations from baseline values) – Fixed long-run employment/more conservative*

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>USA</b>													
wht	-0.002	-0.004	-0.005	-0.007	-0.009	-0.011	-0.013	-0.016	-0.018	-0.020	-0.019	-0.019	-0.019
gro	-0.001	-0.002	-0.002	-0.003	-0.004	-0.005	-0.006	-0.007	-0.008	-0.009	-0.009	-0.009	-0.009
v_f	0.000	-0.001	-0.001	-0.001	-0.002	-0.002	-0.002	-0.003	-0.003	-0.004	-0.003	-0.003	-0.003
osd	0.001	0.001	0.002	0.003	0.004	0.005	0.006	0.008	0.009	0.010	0.010	0.010	0.009
c_b	-0.001	-0.001	-0.002	-0.002	-0.003	-0.004	-0.004	-0.005	-0.005	-0.006	-0.006	-0.006	-0.006
ocr	-0.002	-0.003	-0.005	-0.007	-0.009	-0.011	-0.013	-0.016	-0.018	-0.021	-0.021	-0.021	-0.022
ctl	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.004	-0.005	-0.005	-0.006	-0.006	-0.006	-0.006
oap	-0.001	-0.002	-0.003	-0.004	-0.005	-0.006	-0.008	-0.009	-0.011	-0.012	-0.013	-0.013	-0.014
rmk	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
otherPrimary	-0.001	-0.002	-0.003	-0.003	-0.004	-0.005	-0.006	-0.007	-0.008	-0.009	-0.008	-0.008	-0.008
Meat: cattle, sheep, goats, horses	0.000	-0.001	-0.001	-0.001	-0.002	-0.002	-0.002	-0.003	-0.003	-0.004	-0.004	-0.004	-0.004
omt	0.000	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.004	-0.005	-0.005	-0.005	-0.006	-0.006
vol	0.006	0.014	0.021	0.029	0.038	0.047	0.056	0.066	0.077	0.089	0.088	0.087	0.085
mil	0.000	0.000	0.000	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
sgr	-0.001	-0.001	-0.002	-0.002	-0.003	-0.004	-0.004	-0.005	-0.005	-0.005	-0.006	-0.006	-0.006
ofd	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.004	-0.005	-0.005	-0.006	-0.006	-0.006	-0.006
b_t	0.000	0.001	0.001	0.002	0.002	0.003	0.003	0.004	0.004	0.005	0.005	0.005	0.004
othManufact	0.000	0.001	0.002	0.002	0.003	0.004	0.005	0.005	0.006	0.007	0.008	0.008	0.008
services	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Primary agriculture	-0.001	-0.001	-0.002	-0.003	-0.004	-0.005	-0.005	-0.006	-0.007	-0.008	-0.008	-0.008	-0.009
Agricultural-related	0.000	0.000	0.000	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
All and related agriculture	0.000	-0.001	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.003	-0.004	-0.004	-0.004	-0.004
All other industries	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002
All industries	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002

**Table 3E: Trade Volumes – SACU and USA (percentage deviations from baseline values) – Fixed long-run employment/more conservative**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>SACU to USA</b>													
wht	1.1	2.2	3.3	4.4	5.6	6.8	8.0	9.2	10.4	11.7	11.8	11.9	11.9
gro	0.1	0.2	0.3	0.4	0.6	0.7	0.9	1.0	1.2	1.3	1.4	1.5	1.5
v_f	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.1	0.1	0.1
osd	7.3	15.2	23.6	32.7	42.4	52.8	64.0	76.0	88.9	102.7	102.8	102.9	102.9
c_b	0.2	0.5	0.8	1.0	1.3	1.6	1.9	2.2	2.5	2.8	2.9	3.0	3.0
ocr	8.9	18.5	29.1	40.5	53.0	66.6	81.5	97.6	115.2	134.3	134.5	134.6	134.7
ctl	0.3	0.6	0.9	1.2	1.5	1.9	2.2	2.6	2.9	3.3	3.5	3.5	3.6
oap	0.3	0.6	1.0	1.3	1.7	2.1	2.4	2.8	3.2	3.6	3.7	3.8	3.8
rmk	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.1	0.1
otherPrimary	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.7
Forestry, fishing and mining	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.7
Meat: cattle, sheep, goats, horses	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.1	0.1	0.2
cmt	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.1	0.1	0.2
omt	1.5	3.1	4.7	6.4	8.0	9.7	11.5	13.2	15.0	16.9	17.0	17.1	17.1
vol	0.7	1.5	2.3	3.1	4.0	4.8	5.6	6.5	7.4	8.3	8.3	8.4	8.4
mil	0.0	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2
Dairy products	0.0	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Raw and refined sugar	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.1	0.1	0.1
sgr	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.1	0.1	0.1
ofd	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
Other food products	0.0	-0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.5	0.5	0.6
b_t	0.0	-0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.5	0.5	0.6
Beverages and tobacco products	1.0	2.1	3.1	4.2	5.4	6.5	7.6	8.8	10.0	11.2	11.3	11.4	11.4
othManufact	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.1
Services	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.1
Primary agriculture	2.7	5.6	8.9	12.5	16.4	20.6	25.3	30.3	35.8	41.8	42.3	42.7	43.1
Agricultural-related	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.3	0.4
All and related agriculture	0.4	0.9	1.4	2.0	2.6	3.3	4.0	4.8	5.7	6.6	6.7	6.6	6.6
All other industries	0.7	1.4	2.1	2.8	3.5	4.3	5.1	5.8	6.6	7.4	7.6	7.7	7.7
All industries	0.6	1.3	2.0	2.7	3.5	4.2	5.0	5.8	6.5	7.4	7.5	7.6	7.6

*Table continued on next page.*

**Table 3E (continued): Trade Volumes – SACU and USA (percentage deviations from baseline values) – Fixed long-run employment/more conservative**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>USA to SACU</b>													
wht	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
gro	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
v_f	2.4	4.9	7.4	10.0	12.6	15.3	18.0	20.7	23.5	26.4	26.2	26.1	25.9
osd	2.2	4.4	6.7	9.0	11.3	13.7	16.1	18.6	21.1	23.6	23.5	23.5	23.5
c_b	0.2	0.3	0.5	0.7	0.8	1.0	1.2	1.3	1.5	1.7	1.7	1.7	1.7
ocr	2.5	5.1	7.8	10.5	13.2	16.1	19.0	21.9	25.0	28.1	28.1	28.0	28.0
ctl	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	-0.1	-0.1
oap	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.4	0.4	0.4
rmk	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
other	0.1	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.6	0.6	0.6	0.6
Primary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1
cmt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1
omt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1
vol	6.1	12.5	19.3	26.5	34.1	42.2	50.7	59.7	69.2	79.3	79.3	79.3	79.4
mil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1
sgr	19.5	42.9	70.8	104.1	144.0	191.6	248.4	316.4	397.6	494.6	494.3	494.3	494.2
ofd	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1	-0.1
b_t	1.8	3.6	5.3	7.2	9.0	10.9	12.8	14.7	16.6	18.6	18.5	18.5	18.5
oth	2.1	4.2	6.4	8.6	10.8	13.0	15.3	17.6	20.0	22.4	22.4	22.3	22.3
Manufact	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
services	0.5	1.0	1.5	2.0	2.5	3.0	3.6	4.1	4.7	5.3	5.3	5.3	5.4
Primary agriculture	0.9	1.8	2.8	3.7	4.7	5.8	6.8	7.9	9.1	10.2	10.1	10.0	10.0
Agricultural-related	0.8	1.6	2.4	3.2	4.0	4.9	5.8	6.7	7.6	8.6	8.5	8.4	8.4
All and related agriculture	1.5	3.0	4.6	6.1	7.7	9.3	11.0	12.7	14.4	16.2	16.1	16.1	16.1
All other industries	1.4	2.9	4.4	5.9	7.4	9.0	10.6	12.2	13.9	15.6	15.5	15.5	15.5

**Table 4E: Regional Contributions to the Long-run Percentage Deviations in SACU exports, by commodity –Fixed long-run employment/more conservative**

Commodity	SACU	USA	Canada Mex	EU	EFTA	Sth America	JapKor TwnSng	China HK	RestSS Africa	ROW	Total= % deviation, 2023
wht	0.00	0.35	0.00	0.01	0.00	0.00	0.00	0.00	0.06	0.08	0.51
gro	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.08	0.00	0.11
v_f	0.00	0.01	0.01	0.07	0.00	0.00	0.01	0.02	0.00	0.01	0.12
osd	0.00	13.37	-0.04	-0.16	0.00	0.00	-0.08	0.00	-0.06	-0.02	13.00
c_b	0.00	0.23	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.01	0.31
ocr	0.00	8.25	0.00	-0.03	0.00	0.00	0.00	-0.04	-0.01	-0.05	8.10
ctl	0.00	0.24	0.00	0.03	0.00	0.00	0.01	0.03	0.04	0.01	0.37
oap	0.00	0.17	0.00	0.12	0.00	0.00	0.01	0.01	0.01	0.02	0.34
rmk	0.00	0.03	0.00	0.03	0.00	0.01	0.02	0.02	0.00	0.03	0.14
otherPrimary	0.00	0.02	0.00	0.10	0.01	0.01	0.03	0.02	0.01	0.02	0.21
cmt	0.00	0.00	0.00	0.12	0.02	0.00	0.00	0.00	0.00	0.00	0.15
omt	0.00	0.78	0.00	0.05	0.04	0.00	0.01	0.04	0.02	0.01	0.95
vol	0.00	0.14	0.00	0.03	0.00	0.00	0.01	0.47	0.03	0.04	0.72
mil	0.00	0.03	0.00	0.03	0.00	0.00	0.02	0.00	0.07	0.02	0.20
sgr	0.00	0.03	0.00	0.05	0.00	0.00	0.02	0.00	0.02	0.03	0.14
ofd	0.00	0.05	0.00	0.11	0.00	0.00	0.02	0.02	0.02	0.03	0.26
b_t	0.00	0.04	0.08	0.22	0.03	0.04	0.04	0.02	0.09	0.03	0.59
othManufact	0.00	1.02	0.01	0.13	0.01	0.01	0.07	0.02	0.07	0.05	1.39
services	0.00	0.02	0.00	0.03	0.00	0.00	0.01	0.00	0.00	0.01	0.08

**Table 1F: Macroeconomic Variables – SACU and USA (percentage deviations from baseline values) – Elastic supply of unskilled labour/more conservative**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>SACU</b>													
Real private consumption	0.030	0.054	0.079	0.104	0.130	0.157	0.184	0.211	0.240	0.268	0.281	0.295	0.303
Real investment	0.164	0.258	0.349	0.435	0.515	0.593	0.669	0.743	0.816	0.889	0.732	0.668	0.625
Real government consumption	0.025	0.044	0.065	0.085	0.107	0.129	0.152	0.175	0.199	0.223	0.239	0.256	0.266
Export volume	0.007	0.051	0.102	0.163	0.231	0.308	0.390	0.479	0.572	0.670	0.837	0.925	0.981
Import volume	0.125	0.227	0.332	0.436	0.541	0.647	0.754	0.862	0.971	1.081	1.019	0.992	0.971
Real GDP	0.025	0.047	0.070	0.096	0.123	0.151	0.180	0.211	0.243	0.275	0.308	0.333	0.349
Employment-unskilled	0.036	0.068	0.103	0.140	0.179	0.219	0.261	0.304	0.348	0.394	0.420	0.442	0.454
Employment-skilled	0.021	0.032	0.041	0.047	0.052	0.056	0.060	0.062	0.065	0.067	0.027	0.014	0.007
Employment-total	0.031	0.057	0.083	0.110	0.137	0.166	0.195	0.225	0.255	0.286	0.291	0.301	0.308
Capital	0.011	0.028	0.050	0.077	0.108	0.142	0.180	0.221	0.265	0.310	0.402	0.460	0.497
Real wage rate-unskilled	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Real wage rate-skilled	0.021	0.045	0.074	0.107	0.142	0.180	0.219	0.260	0.302	0.346	0.401	0.430	0.445
Price of private consumption	0.008	0.009	0.009	0.006	0.002	-0.004	-0.010	-0.018	-0.027	-0.036	-0.066	-0.082	-0.093
Price of investment	-0.002	-0.011	-0.022	-0.034	-0.048	-0.063	-0.079	-0.097	-0.115	-0.134	-0.157	-0.170	-0.178
Price of GDP at market prices	0.010	0.012	0.011	0.008	0.003	-0.004	-0.012	-0.022	-0.033	-0.045	-0.083	-0.105	-0.119
Price of GDP at factor cost	0.021	0.032	0.042	0.050	0.056	0.060	0.063	0.065	0.066	0.067	0.026	0.004	-0.012
Terms of trade	0.011	0.015	0.017	0.018	0.017	0.015	0.012	0.007	0.001	-0.006	-0.040	-0.061	-0.076
<b>USA</b>													
Real private consumption	0.000	0.000	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.003
Real investment	0.002	0.003	0.004	0.005	0.006	0.007	0.007	0.008	0.009	0.010	0.007	0.006	0.006
Real government consumption	0.000	0.000	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.003
Export volume	0.002	0.004	0.007	0.009	0.012	0.015	0.017	0.020	0.023	0.026	0.028	0.028	0.028
Import volume	0.004	0.008	0.012	0.016	0.020	0.024	0.028	0.033	0.037	0.042	0.041	0.041	0.041
Real GDP	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002
Employment-unskilled	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
Employment-skilled	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
Employment-total	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000
Capital	0.000	0.000	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.004	0.005	0.005
Real wage rate-unskilled	0.000	0.000	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.004	0.004	0.004
Real wage rate-skilled	0.000	0.000	0.001	0.001	0.001	0.002	0.002	0.002	0.003	0.003	0.004	0.004	0.004
Price of private consumption	0.001	0.002	0.003	0.003	0.004	0.005	0.006	0.007	0.008	0.009	0.009	0.009	0.009
Price of investment	0.001	0.001	0.002	0.003	0.004	0.004	0.005	0.006	0.007	0.008	0.008	0.008	0.008
Price of GDP at market prices	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.010	0.011	0.011	0.011	0.011
Price of GDP at factor cost	0.001	0.002	0.003	0.004	0.005	0.006	0.008	0.009	0.010	0.011	0.011	0.011	0.011
Terms of trade	0.001	0.002	0.004	0.005	0.006	0.007	0.009	0.010	0.011	0.013	0.012	0.012	0.012

**Table 2F: Industry Output – SACU and USA (percentage deviations from baseline values) – Elastic supply of unskilled labour/more conservative**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>SACU</b>													
wht	0.000	0.006	0.015	0.027	0.041	0.058	0.076	0.097	0.119	0.141	0.197	0.232	0.255
gro	-0.008	-0.007	-0.002	0.007	0.018	0.032	0.049	0.067	0.087	0.108	0.176	0.217	0.244
v_f	-0.020	-0.029	-0.035	-0.037	-0.037	-0.034	-0.029	-0.023	-0.015	-0.007	0.064	0.104	0.129
osd	0.152	0.341	0.561	0.799	1.064	1.355	1.672	2.018	2.392	2.795	2.896	2.950	2.982
c_b	-0.023	-0.029	-0.031	-0.027	-0.018	-0.006	0.009	0.027	0.048	0.070	0.170	0.228	0.266
ocr	0.065	0.149	0.249	0.360	0.486	0.626	0.781	0.952	1.140	1.345	1.432	1.485	1.521
ctl	0.011	0.023	0.036	0.051	0.068	0.085	0.104	0.124	0.145	0.167	0.199	0.221	0.235
oap	0.008	0.018	0.031	0.046	0.062	0.081	0.101	0.122	0.145	0.168	0.211	0.239	0.258
rmk	0.012	0.025	0.040	0.056	0.074	0.093	0.114	0.136	0.158	0.181	0.213	0.235	0.250
otherPrimary	-0.011	-0.009	-0.001	0.010	0.027	0.046	0.069	0.095	0.122	0.152	0.241	0.292	0.326
cmt	0.012	0.024	0.039	0.055	0.072	0.090	0.110	0.130	0.152	0.174	0.204	0.226	0.239
omt	0.014	0.030	0.047	0.066	0.087	0.109	0.132	0.157	0.183	0.209	0.243	0.266	0.281
vol	-0.043	-0.079	-0.112	-0.145	-0.176	-0.206	-0.236	-0.266	-0.295	-0.324	-0.244	-0.189	-0.148
mil	0.013	0.027	0.043	0.062	0.082	0.104	0.127	0.152	0.177	0.204	0.240	0.264	0.280
sgr	-0.029	-0.037	-0.040	-0.038	-0.030	-0.018	-0.002	0.016	0.037	0.060	0.171	0.234	0.276
ofd	0.006	0.016	0.028	0.042	0.058	0.076	0.095	0.115	0.137	0.159	0.199	0.225	0.242
b_t	-0.022	-0.033	-0.039	-0.041	-0.038	-0.031	-0.022	-0.010	0.005	0.021	0.114	0.170	0.207
othManufact	0.008	0.026	0.047	0.071	0.099	0.130	0.164	0.200	0.238	0.279	0.366	0.418	0.451
services	0.033	0.059	0.087	0.116	0.146	0.177	0.209	0.242	0.277	0.311	0.326	0.343	0.353
Primary agriculture	0.010	0.028	0.050	0.076	0.107	0.142	0.180	0.223	0.269	0.320	0.378	0.415	0.440
Agricultural-related	-0.004	-0.003	0.002	0.009	0.020	0.032	0.047	0.063	0.081	0.100	0.159	0.196	0.220
All and related agriculture	0.003	0.013	0.027	0.044	0.065	0.090	0.117	0.147	0.180	0.216	0.274	0.311	0.335
All other industries	0.024	0.047	0.071	0.098	0.127	0.157	0.189	0.222	0.257	0.293	0.329	0.356	0.372
All industries	0.023	0.044	0.068	0.094	0.122	0.152	0.184	0.217	0.252	0.287	0.325	0.352	0.370

*Table continued on next page.*

**Table 2F (continued): Industry Output – SACU and USA (percentage deviations from baseline values) – Elastic supply of unskilled labour/more conservative**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>USA</b>													
wht	-0.002	-0.003	-0.005	-0.007	-0.009	-0.011	-0.013	-0.015	-0.017	-0.019	-0.019	-0.018	-0.019
gro	-0.001	-0.002	-0.002	-0.003	-0.004	-0.005	-0.006	-0.007	-0.008	-0.009	-0.009	-0.009	-0.010
v_f	0.000	-0.001	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.003	-0.004	-0.004	-0.004	-0.004
osd	0.001	0.001	0.002	0.003	0.004	0.005	0.006	0.008	0.009	0.010	0.010	0.009	0.009
c_b	-0.001	-0.001	-0.002	-0.002	-0.003	-0.004	-0.004	-0.005	-0.006	-0.006	-0.007	-0.008	-0.008
ocr	-0.002	-0.003	-0.005	-0.007	-0.009	-0.011	-0.013	-0.016	-0.018	-0.021	-0.021	-0.022	-0.022
ctl	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.004	-0.005	-0.005	-0.006	-0.006	-0.006	-0.006
oap	-0.001	-0.002	-0.003	-0.004	-0.005	-0.006	-0.008	-0.009	-0.011	-0.012	-0.013	-0.013	-0.014
rmk	0.000	0.000	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
otherPrimary	-0.001	-0.001	-0.002	-0.003	-0.004	-0.005	-0.006	-0.006	-0.007	-0.008	-0.008	-0.008	-0.008
cmt	0.000	-0.001	-0.001	-0.001	-0.002	-0.002	-0.002	-0.003	-0.003	-0.004	-0.004	-0.004	-0.004
omt	0.000	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.004	-0.005	-0.005	-0.005	-0.006	-0.006
vol	0.006	0.014	0.021	0.029	0.038	0.047	0.057	0.067	0.078	0.089	0.088	0.087	0.085
mil	0.000	0.000	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
sgr	-0.001	-0.001	-0.002	-0.002	-0.003	-0.004	-0.004	-0.005	-0.006	-0.006	-0.007	-0.008	-0.008
ofd	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.004	-0.005	-0.005	-0.006	-0.006	-0.006	-0.006
b_t	0.000	0.001	0.001	0.002	0.002	0.003	0.003	0.004	0.004	0.005	0.005	0.005	0.004
othManufact	0.000	0.001	0.002	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.008	0.008	0.008
services	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Primary agriculture	-0.001	-0.001	-0.002	-0.003	-0.004	-0.004	-0.005	-0.006	-0.007	-0.008	-0.008	-0.008	-0.009
Agricultural-related	0.000	0.000	0.000	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
All and related agriculture	0.000	-0.001	-0.001	-0.001	-0.002	-0.002	-0.002	-0.003	-0.003	-0.004	-0.004	-0.004	-0.004
All other industries	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002
All industries	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002



**Table 3F: Trade Volumes – SACU and USA (percentage deviations from baseline values) – Elastic supply of unskilled labour/more conservative**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>SACU to USA</b>													
wht	1.1	2.2	3.3	4.4	5.6	6.8	8.0	9.2	10.5	11.7	11.9	12.0	12.1
gro	0.1	0.2	0.3	0.4	0.6	0.7	0.9	1.0	1.2	1.4	1.6	1.7	1.7
v_f	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.2	0.3	0.3
osd	7.3	15.2	23.6	32.7	42.4	52.8	64.0	76.1	88.9	102.8	103.1	103.2	103.3
c_b	0.2	0.5	0.7	1.0	1.3	1.6	1.9	2.2	2.5	2.9	3.0	3.1	3.2
ocr	8.8	18.5	29.0	40.5	53.0	66.7	81.5	97.7	115.2	134.4	134.8	135.0	135.1
ctl	0.2	0.5	0.9	1.2	1.5	1.9	2.2	2.6	3.0	3.4	3.6	3.7	3.8
oap	0.3	0.6	1.0	1.3	1.7	2.1	2.4	2.8	3.2	3.6	3.9	4.0	4.1
rmk	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.2	0.3	0.3
other	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.6	0.7
Primary	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.2	0.3	0.4
cmt	1.5	3.1	4.7	6.4	8.0	9.7	11.5	13.3	15.1	16.9	17.1	17.2	17.3
omt	0.7	1.5	2.3	3.1	3.9	4.8	5.6	6.5	7.4	8.3	8.4	8.5	8.6
vol	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.4
mil	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.2	0.3	0.3
sgr	0.0	-0.1	-0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.4	0.4
ofd	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.1	0.2	0.2	0.5	0.7	0.8
b_t	1.0	2.1	3.1	4.2	5.3	6.5	7.7	8.8	10.1	11.3	11.5	11.6	11.7
oth	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	0.1	0.2
Manufact	2.7	5.6	8.9	12.5	16.4	20.6	25.3	30.4	35.9	41.9	42.5	43.0	43.4
services	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.4	0.5	0.5
Primary agriculture	0.4	0.8	1.4	1.9	2.6	3.3	4.0	4.8	5.7	6.7	6.8	6.8	6.8
Agricultural-related	0.7	1.4	2.1	2.8	3.5	4.3	5.1	5.9	6.7	7.5	7.7	7.8	7.9
All and related agriculture	0.6	1.3	2.0	2.7	3.4	4.2	5.0	5.8	6.6	7.4	7.6	7.7	7.8
All other industries													
All industries													

*Table continued on next page.*

**Table 3F (continued): Trade Volumes – SACU and USA (percentage deviations from baseline values) – Elastic supply of unskilled labour/more conservative**

Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2017	2020	2023
<b>USA to SACU</b>													
wht	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
gro	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
v_f	2.5	4.9	7.5	10.1	12.7	15.3	18.1	20.8	23.6	26.5	26.3	26.2	26.0
osd	2.2	4.4	6.7	9.0	11.4	13.8	16.2	18.7	21.2	23.7	23.7	23.6	23.6
c_b	0.2	0.3	0.5	0.7	0.9	1.0	1.2	1.4	1.6	1.8	1.8	1.8	1.8
ocr	2.5	5.1	7.8	10.5	13.3	16.1	19.1	22.0	25.1	28.3	28.2	28.2	28.2
ctl	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	-0.1	-0.2
oap	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.5	0.5	0.5
rmk	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.1
other	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0.9	0.9	0.9
Primary	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
cmt	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
omt	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
vol	6.1	12.5	19.3	26.5	34.2	42.2	50.8	59.8	69.4	79.5	79.5	79.6	79.6
mil	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
sgr	19.6	42.9	70.8	104.2	144.1	191.7	248.7	316.7	398.0	495.2	494.9	494.8	494.7
ofd	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	-0.1
b_t	1.8	3.6	5.4	7.2	9.1	11.0	12.9	14.9	16.8	18.8	18.7	18.7	18.7
oth	2.1	4.3	6.4	8.6	10.9	13.2	15.5	17.9	20.3	22.7	22.6	22.6	22.6
Manufact	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2
services	0.5	1.0	1.5	2.0	2.5	3.1	3.6	4.2	4.8	5.4	5.4	5.4	5.5
Primary agriculture	0.9	1.8	2.8	3.8	4.8	5.8	6.9	8.0	9.2	10.4	10.3	10.2	10.1
Agricultural-related	0.8	1.6	2.4	3.2	4.1	5.0	5.9	6.8	7.8	8.8	8.6	8.6	8.5
All and related agriculture	1.5	3.1	4.6	6.2	7.8	9.5	11.2	12.9	14.6	16.4	16.4	16.4	16.4
All other industries	1.5	2.9	4.4	5.9	7.5	9.1	10.7	12.4	14.1	15.8	15.8	15.8	15.8

**Table 4F: Regional Contributions to the Long-run Percentage Deviations in SACU exports, by commodity –Elastic supply of unskilled labour/more conservative**

Commodity	SACU	USA	Canada Mex	EU	EFTA	Sth America	JapKor TwnSng	China HK	RestSS Africa	ROW	Total=	
											% deviation, 2023	
wht	0.00	0.36	0.00	0.02	0.00	0.00	0.01	0.00	0.17	0.22	0.79	
gro	0.00	0.00	0.00	0.00	0.00	0.06	0.02	0.00	0.24	0.00	0.33	
v_f	0.00	0.02	0.02	0.22	0.01	0.00	0.02	0.06	0.02	0.03	0.38	
osd	0.00	13.44	-0.01	-0.05	0.00	0.00	-0.03	0.00	-0.02	-0.01	13.32	
c_b	0.00	0.25	0.01	0.28	0.00	0.01	0.02	0.02	0.00	0.03	0.62	
ocr	0.00	8.29	0.00	0.03	0.00	0.00	0.00	0.04	0.01	0.04	8.41	
ctl	0.00	0.27	0.00	0.09	0.01	0.00	0.02	0.12	0.17	0.03	0.72	
oap	0.00	0.18	0.00	0.34	0.00	0.01	0.02	0.04	0.02	0.06	0.67	
rmk	0.00	0.09	0.01	0.08	0.00	0.03	0.05	0.05	0.00	0.09	0.42	
otherPrimary	0.00	0.02	0.00	0.12	0.02	0.01	0.03	0.02	0.01	0.03	0.26	
cmt	0.00	0.01	0.00	0.32	0.05	0.00	0.01	0.00	0.00	0.01	0.41	
omt	0.00	0.80	0.00	0.13	0.09	0.00	0.04	0.09	0.05	0.02	1.21	
vol	0.00	0.15	0.00	0.04	0.00	0.00	0.02	0.61	0.04	0.05	0.90	
mil	0.00	0.07	0.01	0.07	0.01	0.01	0.05	0.01	0.17	0.05	0.44	
sgr	0.00	0.07	0.00	0.14	0.00	0.00	0.04	0.00	0.05	0.09	0.39	
ofd	0.00	0.10	0.01	0.21	0.01	0.00	0.03	0.04	0.05	0.05	0.49	
b_t	0.00	0.07	0.12	0.34	0.05	0.05	0.05	0.03	0.13	0.04	0.88	
othManufact	0.00	1.05	0.01	0.24	0.01	0.02	0.13	0.04	0.12	0.09	1.72	
services	0.00	0.04	0.01	0.08	0.00	0.01	0.03	0.01	0.00	0.04	0.22	