

Effect of the COMESA-SADC-EAC Free Trade Area on the East African Region: Towards a New Economic Geography

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Abstract

This study evaluated the economic effects of proposed COMESA-SADC-EAC Free Trade Area on production, value of trade and distribution of welfare effects in the East African region. We used the Global Trade Analysis Project(GTAP) computable general equilibrium model and database to measure the static effects of the proposed FTA on welfare, trade flows, prices, consumption and production in the region. Simulation results from the GTAP model suggest a net welfare gain of \$10.7 billion, however the distribution of these gains will be heavily skewed with 92% of welfare gains going to consumers in Egypt, South Africa and Zimbabwe.

Key words: Free Trade Agreements; International Trade

1.0 Introduction

In spite of the their popularity, the welfare effects of free trading areas remain ambiguous. If joining the Free Trade Area(FTA) leads to the replacement of high cost domestic production with low cost imports from other members of the FTA - trade creation- then a country gains. However if low cost imports from the rest of the world are replaced by higher cost imports from members of the FTA -trade diversion- then a country loses(krugman, 1991).

The proposed free trade area between the Common Market for Eastern and Southern Africa (COMESA), the South African Development Community (SADC) and East African Community (EAC), has the main objective of strengthening and deepening economic integration in the Southern and Eastern Africa region. COMESA has a membership of 19 states . The COMESA-SADC-EAC free trade area would include 26 African countries with an aggregate GDP at Purchasing Power Parity(PPP) of more than USD 1.8 trillion - this figure is comparable to the GDP of India of approximately USD 1.9 trillion -, and a population of 618 million. South Africa and Egypt have the biggest share of GDP at 31.8% and 29.5% respectively(Table 2, appendix).

They are important structural similarities and differences between the economies in the proposed free trade area. (table 3, appendix) Seychelles, Mauritius, and South Africa have the largest share of services

in their economies at 83%, 71% and 68% respectively. In manufacturing largest economies by share of GDP are Swaziland, Zimbabwe and Mauritius at 44%, 18 and 17% respectively. In the agriculture sector, the largest economies by share of GDP are Ethiopia Congo and Burundi with shares at 46%, 46% and 40% respectively.

Dirk(2013) estimates the welfare effect of the COMESA-SADC-EAC FTA, using a GLOBE CGE model and GTAP data base. He finds that the FTA leads to a welfare benefit of \$578 million when they assume a complete tariff liberalization between the three blocs. The default GLOBE CGE model assumes full employment . Their macro-closure rules fix investment, and the current account balance. In contrast to the above study , our model closure uses the standard GTAP closure, and unemployment closure - fixed wages within the Tripartite Region – this is the way the model is used to simulate for high levels of under- and un-employment. Therefore, industries can hire as many workers as they need following an economic shock, without bidding up wages (Burfisher, 2011).

The rest of this paper is organized as follows: the second section provides a discussion of the empirical literature on free trade areas. The third section describes the methodology used for the analysis. The fourth section presents the main findings from the CGE simulations. The concluding section summerizes the findings and offers policy prescriptions.

2.0 Empirical Evidence on the Impact of Economic Integration

Empirical studies of economic integration can be divided into partial equilibrium analyses, computable general equilibrium (CGE) models and econometric studies. Although not without their detractors¹, computable general equilibrium approaches are generally preferable because of the way they attempt to capture the complex interaction between and within sectors to the stimulus of trade liberalisation measures. In a partial equilibrium setting, such interactions on relative prices and factor utilization between sectors are lost. Hence in this brief review we will focus firstly on econometric studies, and then on computable general equilibrium studies.

Econometric studies of trade liberalization have focused on the extent to which trade liberalisation has affected economic growth, exports and import flows, and the trade balance. Most initial studies

¹ Because the framework tends to be long run, which often abstracts from short-run realities of structural rigidities in developing countries, such as ‘missing’ or inefficient factor markets, some scholars have argued that they may not be appropriate for analysing the problems of the typical developing country (e.g., De Maio et al., 1999; Charlton and Stiglitz, 2004).

resoundingly endorsed trade liberalisation as a way of enhancing economic growth and development. Wacziarg and Welch (2003) studied the relationship between economic integration and economic growth, over the period 1950-1998 and found that countries that liberalized trade regimes experienced on average an increase in annual rates of growth 1.5 percentage points higher compared to the pre-liberalisation period. The post-liberalisation increase in investment was between 1.5 and 2.5 percentage points and that liberalisation raised the trade to GDP ratio on average by five percentage points. Felbermayr (2005) used a dynamic Panel Data model to test for evidence of a Trade-Income relationship and found a strong positive effect of openness on income growth. Emiko Fukase (2010) analyzed the relationship between openness, education and economic growth using a series of panel data techniques, using data for 106 countries over the period 1969 to 2004 and found that trade openness had had a positive effect on economic growth.

On the other hand, Rodriguez and Rodrik (2000) reviewed a number of empirical studies, including Dollar (1992), Ben-David (1993), Sachs and Warner (1995), and Edwards (1998), and they found no evidence of a robust positive relationship between open trade policies and economic growth. Santos-Paulino and Thirlwall,(2004) estimated the effect of trade liberalisation on export growth, import growth, the balance of trade and the balance of payments for a sample of 22 developing countries that had adopted trade liberalisation policies since the mid-1970s. Although they found that liberalisation stimulated export growth, it also raised import growth by more, leading to a worsening of the balance of trade and payments which constrained the growth of output.

In contrast, Wu and Zeng (2008) studied the impact of trade liberalisation on imports, exports, and overall trade balance for developing countries and found strong and consistent evidence that trade liberalisation resulted in higher imports and exports, but no robust evidence that liberalisation had a negative impact on the trade balance. Among the African-specific studies, Jones and Morrissey (2008) studied the impact of liberalisation on imports. They compared imports of liberalizing countries to non-liberalizing countries in Africa and found no evidence to suggest that imports increased disproportionately after liberalisation. Allaro (2012) examined the impact of trade liberalisation on Ethiopia's trade balance using the data over the period 1974 to 2009, and found that trade liberalisation led to a worsening trade balance as a result of a rapid increase in imports in Ethiopia.

Falvey et al. (2008) studied the effects of timing on the liberalisation process, and found evidence that an economic crisis at the time trade liberalisation had a negative effect on post- liberalisation growth performance. The success or failure of trade reforms in developing countries could thus be partly

attributed to the timing of the reforms - trade reforms undertaken during an economic crisis lead to lower subsequent growth while trade reforms undertaken during non-crisis periods led to higher post-liberalisation growth.

How do these results compare with those generated by CGE models? In the 1990s, CGE models were used widely to estimate large welfare gains from the trade liberalization achieved under the Uruguay Round. The OECD, along with others, predicted global welfare gains in the order of US\$200 billion, approximately a third of which would accrue to developing countries. In hindsight, however, it appears that these estimates were excessively optimistic.. According to subsequent estimates, 70 per cent of the gains from the Uruguay Round would go to the developed countries; more importantly, the remaining 30 per cent would be captured by few large export-oriented developing countries. Indeed, the 48 least-developed countries (LDCs) could be worse off by some US\$600 million a year within the first six years of the Uruguay Round (1995–2001), with SSA worse off by US\$1.2 billion (UNDP, 1997, cited by Charlton and Stiglitz, 2005, p. 47).

Using the GTAP 6.0 CGE trade model, Fosu and Mold (2008) simulate a complete global liberalization scenario to measure the distribution of gains across countries. The global welfare gains amounted to only US\$94 billion or a mere 0.3 per cent of world GDP. However, the gains for SSA are even smaller - the estimated welfare gain of US\$259 million is equivalent to only 0.08 per cent of SSA GDP. In per capita terms, this represents a welfare gain for SSA equivalent to 36 cents per capita on a one-off basis. Moreover, even these results hinge on the inclusion of South Africa within the group of 12 SSA regions. Excluding South Africa, the welfare result is a loss for SSA of US\$579 million. The conclusion is that SSA stands to gain relatively little from any further global trade liberalization.²

3.0 Methodology

This paper uses the Global Trade Analysis Project (GTAP) Computable General Equilibrium (CGE) model and database (version 8.0) to measure the static effects of the proposed COMESA-SADC-EAC

² See Fosu and Mold (ibid.) for an explanation of why global gains have declined over time. The principal reason for the downscaling of expected gains is the updating of the GTAP database — the GTAP 6 database uses data from 2001 (compared to 1997 for GTAP 5). This incorporates trade agreements reached up until 2005 in the baseline, including China's entry into the WTO, the expansion of the EU in 2004 and the end of the Multifibre Agreement. In this latter database, then, the world has less protectionism to dismantle and so the benefits are correspondingly smaller (Ackerman, 2005, p. 3). Furthermore, when the erosion under WTO of preferential tariff arrangements is incorporated, SSA's global gains drop by 55 per cent (van der Mensbrugghe, 2005, p. 64).

free trade area on welfare, trade flows, prices, consumption and production in the region. The CGE economic models use actual economic data to estimate how an economy might react to future changes in policy or other external shocks. The CGE models adopt a multi-sector and multi-region general equilibrium framework, and are able to capture interactions of different sectors and markets in a given economy and at the international level. The underlying data dates back to 2007, prior to reaching the Tripartite Agreement.

The model is run using an aggregation which includes the 16 regions included within the GTAP model which make up the Tripartite region (27 countries in all) and 10 aggregated sectors.³ The model closure uses the standard GTAP closure, but adjusted so as to allow for fixed wages within the Tripartite Region – this is the way the model is used to simulate for high levels of under- and un-employment. The simulation involves completely eliminating tariffs on trade between Tripartite members.⁴

4.0 Results from the GTAP Model

Simulation results from the GTAP model show net welfare gains of \$10.7 billion (table 4) to consumers within the Tripartite block as a result of establishment of the tripartite free trade area. However the distribution of these gains will be heavily skewed with 92% of welfare gains going to consumers in Egypt, South Africa and Zimbabwe. For other countries, welfare benefits are small.

³ As a result, the results for some countries in the region should not be considered as robust, as these countries are part of an aggregate sum region where no specific underlying data exists for the countries in question.

⁴ No adjustments are made to existing external tariffs on trade - although there is of course the possibility of eventually negotiating a common external tariff, because of uncertainty about how these would be set, for simulation purposes it was considered better to maintain the tariffs which exist in the model for 2007.

Table 4: Welfare Gains (\$US, Millions)

	Welfare (total)	Share of welfare Gains
Egypt	5577.5	52.2
South Africa	2534.1	23.7
Zimbabwe	1808	16.9
Mozambique	166.5	1.6
Rest EA	110	1.0
Ethiopia	109.4	1.0
South Central Africa	89.6	0.8
Kenya	89.1	0.8
Uganda	59	0.6
SCU	46.6	0.4
Tanzania	20.3	0.2
Namibia	19	0.2
Mauritius	14.2	0.1
Malawi	11.4	0.1
Zambia	8.3	0.1
Madagascar	6.3	0.1
Botswana	5.8	0.1
SSA	4.3	0.0
Total	10679.4	100.0

Source: GTAP results

Table 5 shows the decomposition of welfare gains in the region. Allocative efficiency gains which are due to the decrease in the excess taxes make up the largest share of welfare gains to countries in the region with Egypt, South Africa and Zimbabwe enjoying the largest gains. Endowment effects which represent changes in the factors of production constitute the second largest share of welfare gains (\$4.2 billion).

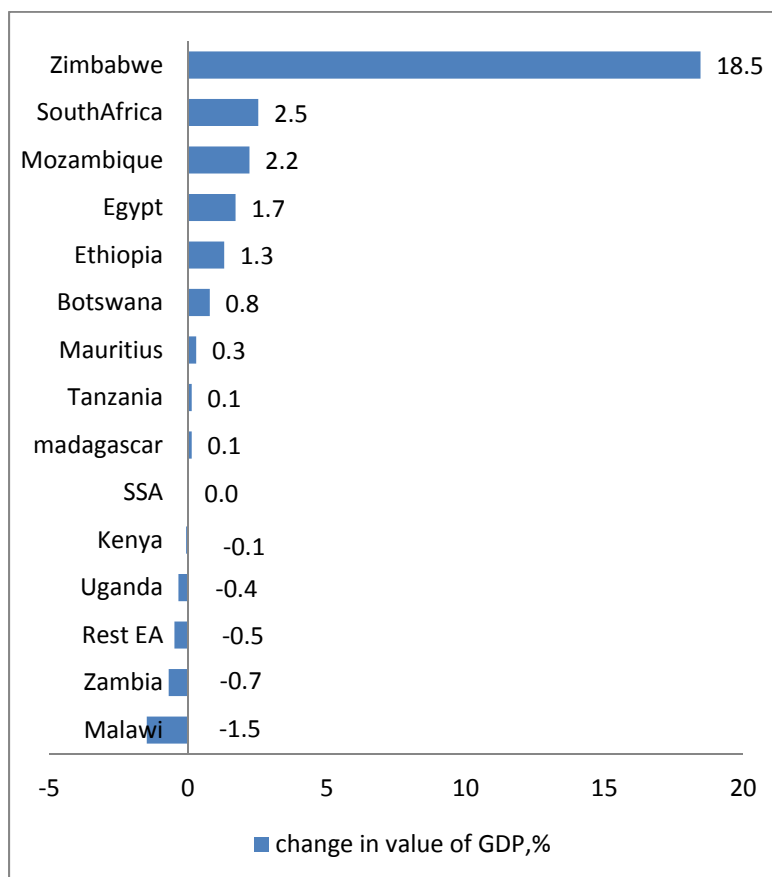
Table 5: Welfare Decomposition (\$US, Millions)

Countries	Welfare (total)	Allocative efficiency	Endowment effect	Commodity terms of trade effect	Investment -savings
Egypt	5577.5	3476.9	2476.7	-353.4	-22.7
South Africa	2534.1	571.8	690.7	1223.9	47.6
Zimbabwe	1808	1555.3	498.1	-78.1	-167.3
Mozambique	166.5	40.6	108.7	16.7	0.4
Rest EA	110	47.9	110.5	-38.9	-9.5
Ethiopia	109.4	20.3	51.4	29.6	8
South Central Africa	89.6	20.5	34.9	-15.8	50
Kenya	89.1	56.1	71.6	-28.5	-10.1
Uganda	59	37.7	34	-13	0.3
SCU	46.6	2.2	15	51.3	-22
Tanzania	20.3	2.2	17.5	1.7	-1.1
Namibia	19	6.1	8.4	-4.6	9.1
Mauritius	14.2	2.2	7.7	4.2	0
Malawi	11.4	4.9	22.1	-16.2	0.5
Zambia	8.3	10.3	35	-43.4	6.4
Madagascar	6.3	1.1	5.3	-0.3	0.2
Botswana	5.8	1.1	35.5	-21.6	-9.3
SSA	4.3	-3.3	-8.8	17.8	-1.3
Rest of World	-641.4	8.4	0	-757.7	107.9
Total	10038	5862.4	4214.5	-26.3	-12.6

Source: GTAP Results

Figure 1 shows the changes in value of GDP. Most countries in the region experience limited gains in values of GDP, with members of the EAC experiencing small losses in value of GDP. However Zimbabwe enjoys significant increases in values of GDP (18.5%).⁵

Figure 1: Changes in Value of GDP (%)



Source: GTAP results

The tripartite would result in the realignment of supply and demand in the region leading to changes in the values of industry output within the region. Table 6 shows the distribution of percentage changes in industry output. Industry output increases for all the countries in the region, Zimbabwe and Mozambique would have the largest gains, with output increasing by 243.7% and 121.9% respectively. In contrast, Uganda, Madagascar and Tanzania would have the smallest gains with output increasing by 3.1%, 1.9%, and 1.7% respectively.

⁵ It has to be remembered that gains under the GTAP model are usually proportional to the pre-existing barriers to trade – highly-protected countries have potentially more to gain from trade liberalization than countries that have already achieved lower levels of tariffs.

Table 6: Percentage Change in industry output by region

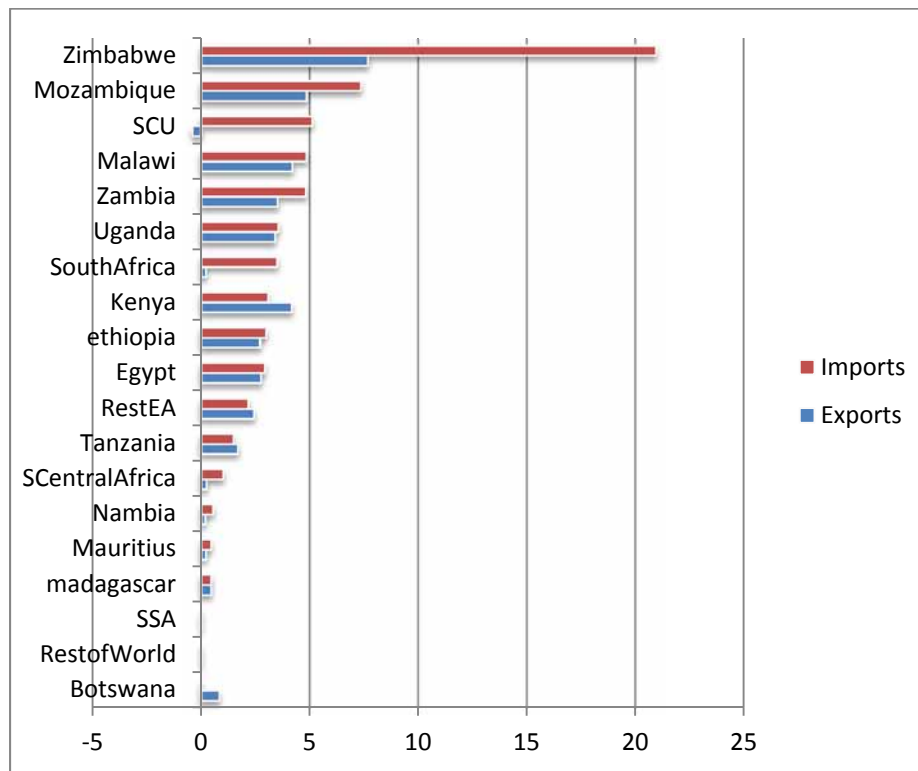
	Total industry output (%)
Zimbabwe	243.7
Mozambique	121.9
South African CU	25.2
Botswana	19.2
South Africa	17.6
Egypt	13.5
Kenya	11.3
Namibia	10.8
Tanzania	9.0
Malawi	6.1
Ethiopia	4.2
Mauritius	3.7
Rest EA	3.4
Uganda	3.1
Madagascar	1.9
Zambia	1.7
S Central Africa	0.02
SSA	-0.08
Rest of World	-0.11

Source: GTAP results

Figures in the Appendix show the maps of percentage changes in the output of various industrial sectors within in the region. Changes within and between industries are not evenly distributed across the region. For example in the Light Manufacturing industry, output in Mozambique increased by 107.6%, while in Zimbabwe it declined by 59.3%. In the textile industry, Botswana, Tanzania, and Zimbabwe would be the largest beneficiaries, output would increase by 16%, 7.3%, and 6% respectively. In contrast Mozambique, Malawi and Zambia would be the largest losers, output would decline by 12%, 1.4%, and 1.3% respectively.

Figure 2 shows the percentage changes in volume of imports and exports in the tripartite scenario. The volume of imports and exports increased for all countries in the region; in most countries the increase in imports was greater than the increase in exports with the exception of Kenya, Tanzania, Rest of East Africa and Botswana.

Figure 2: Percentage change in volume of Imports and Exports



Source: GTAP results

5.0 Conclusion and Policy Implications

This paper analyzed the effect of the proposed COMESA-SADC-EAC free trade area on production and trade flows within the region using a static CGE model. Simulation results from the GTAP model suggest a net welfare gain of \$10.7 billion, however the distribution of these gains will be heavily skewed with 92% of welfare gains going to consumers in Egypt, South Africa and Zimbabwe.

The tripartite will lead to increased exports and imports within the region as a result of realignment of demand and supply within the region, increased aggregate demand in the region will result in increased industrial production across the region as new firms join the regional market. The distribution of changes in production will vary between different countries both within and between sectors.

APPENDICIES

Table 1: Overlapping memberships across COMESA, EAC and SADC

	COMESA	EAC	SADC
Angola			X
Botswana			X
Burundi	X	X	
Comoros	X		
Congo DR	X		X
Djibouti	X		
Egypt	X		
Eritrea	X		
Ethiopia	X		
Kenya	X	X	
Lesotho			X
Libya	X		
Madagascar	X		X
Malawi	X		X
Mauritius	X		X
Mozambique	X		X
Namibia			X
Rwanda	X	X	
Seychelles	X		X
South Africa			X
Sudan	X		
Swaziland	X		X
Uganda	X	X	
Tanzania		X	X
Zambia	X		X
Zimbabwe	X		X
TOTAL REC MEMBERSHIP	19	5	15

Source: Tsidiso Disenyana, 2009

Table 2: Size of the proposed Free Trade Area (2011)

Country	GDP, PPP (current , billions \$)	Population (Millions)	GDP per capita, PPP (current \$)	GDP by country share(%)
Angola	125.0	21	6010	6.9
Botswana	32.3	2	16100	1.8
Burundi	5.4	10	551	0.3
Comoros	0.9	1	1210	0.0
Congo, Dem. Rep.	27.3	66	415	1.5
Djibouti		1		
Egypt, Arab Rep.	534.0	81	6610	29.5
Eritrea	3.4	6	557	0.2
Ethiopia	102.0	92	1110	5.6
Kenya	75.0	43	1740	4.1
Lesotho	4.0	2	1930	0.2
Libya		6		0.0
Madagascar	21.5	22	962	1.2
Malawi	12.0	16	753	0.7
Mauritius	19.2	1	14900	1.1
Mozambique	25.4	25	1010	1.4
Rwanda	15.3	12	1330	0.8
Seychelles	2.4	0	26700	0.1
South Africa	576.0	51	11300	31.8
South Sudan	0.0	11		
Sudan	80.4	37	2160	4.4
Swaziland	6.4	1	5160	0.4
Tanzania	73.1	48	1570	4.0
Uganda	48.3	36	1330	2.7
Zambia	23.7	14	1680	1.3
Zimbabwe		14		
Total	1812.9	618		100

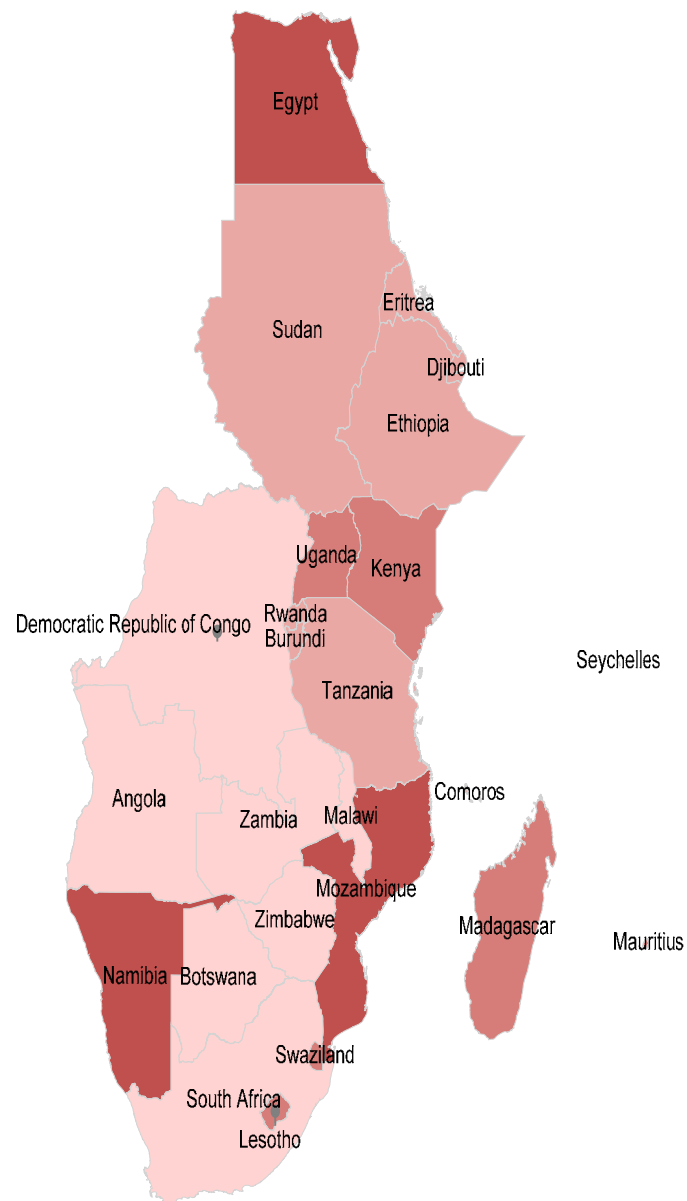
Source; World Development Indicators,2014 *GDP data missing for Djibouti, Libya, South Sudan, and Zimbabwe

Table 3: Value added to GDP by Sector, (2011)

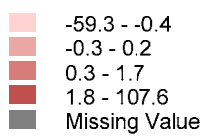
Country	Manufacturing, value added (% of GDP)	Agriculture, value added (% of GDP)	Services, etc., value added (% of GDP)
Angola	6	9	29
Botswana	6	3	57
Burundi	10	40	43
Comoros			
Congo, D. R	5	46	33
Djibouti			
Egypt,	15	15	48
Eritrea			
Ethiopia	4	46	44
Kenya	11	29	54
Lesotho	12	9	58
Libya			
Madagascar			
Malawi	12	30	51
Mauritius	17	4	71
Mozambique	14	31	48
Rwanda	7	32	52
Seychelles	7	2	83
South Africa	13	2	68
South Sudan			
Sudan	7	25	47
Swaziland	44	7	45
Tanzania	10	28	47
Uganda	8	23	51
Zambia	8	20	43
Zimbabwe	18	16	48
Median	48	21	10

Source; World Development Indicators,2014 *Other sectors like the mineral and natural resource sector not included

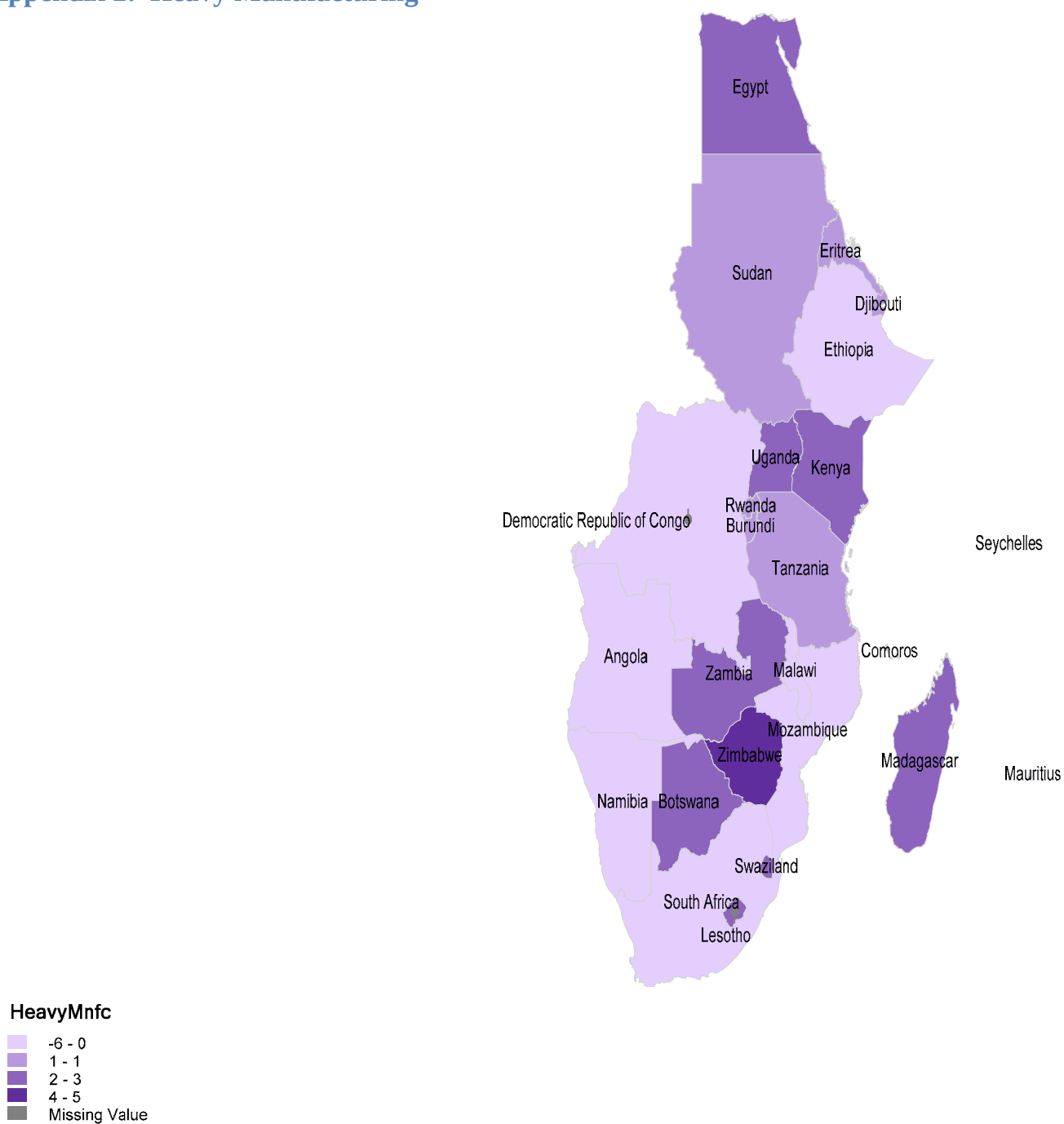
Appendix 1: Light Manufacturing



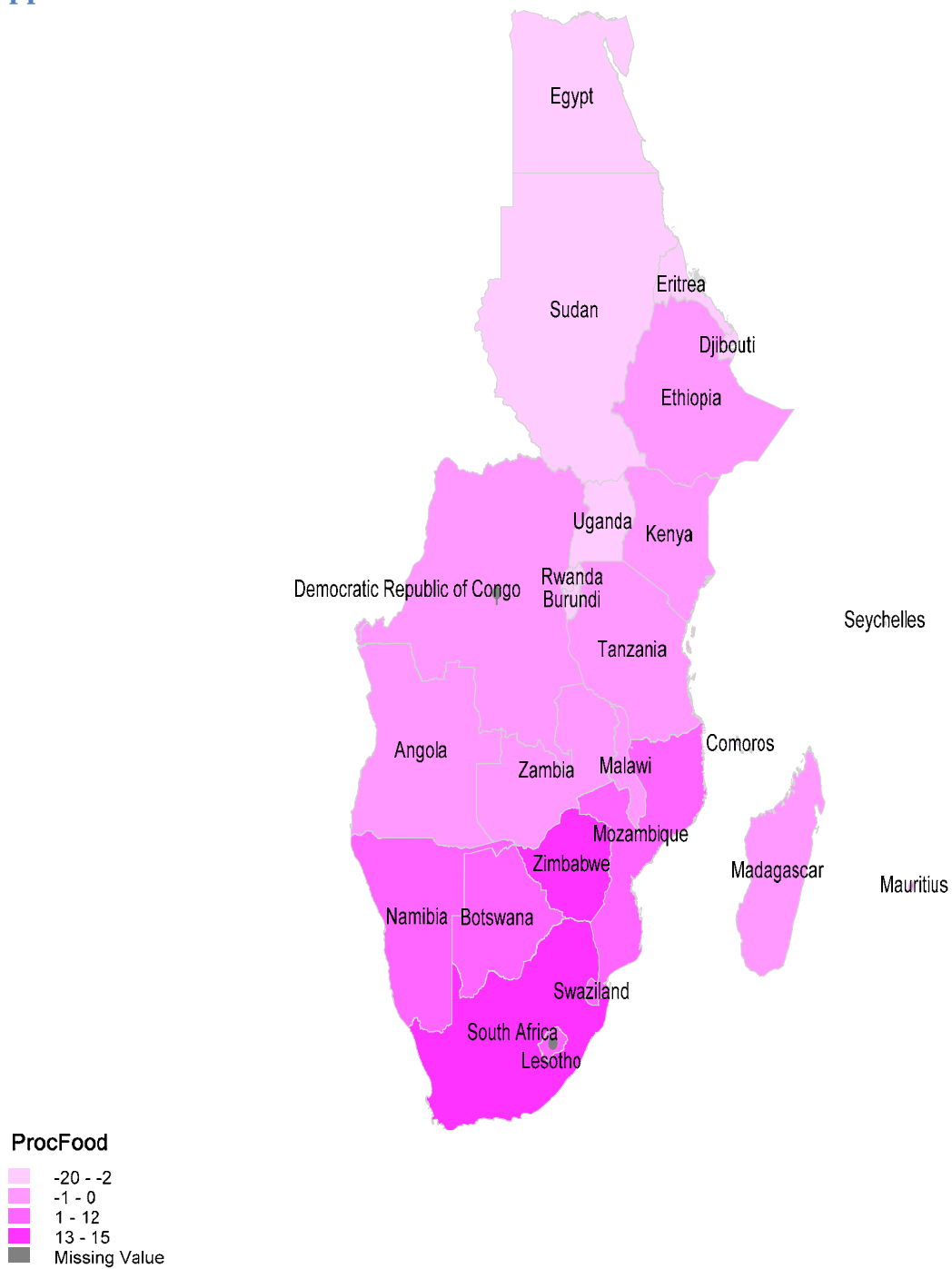
LightMnfc



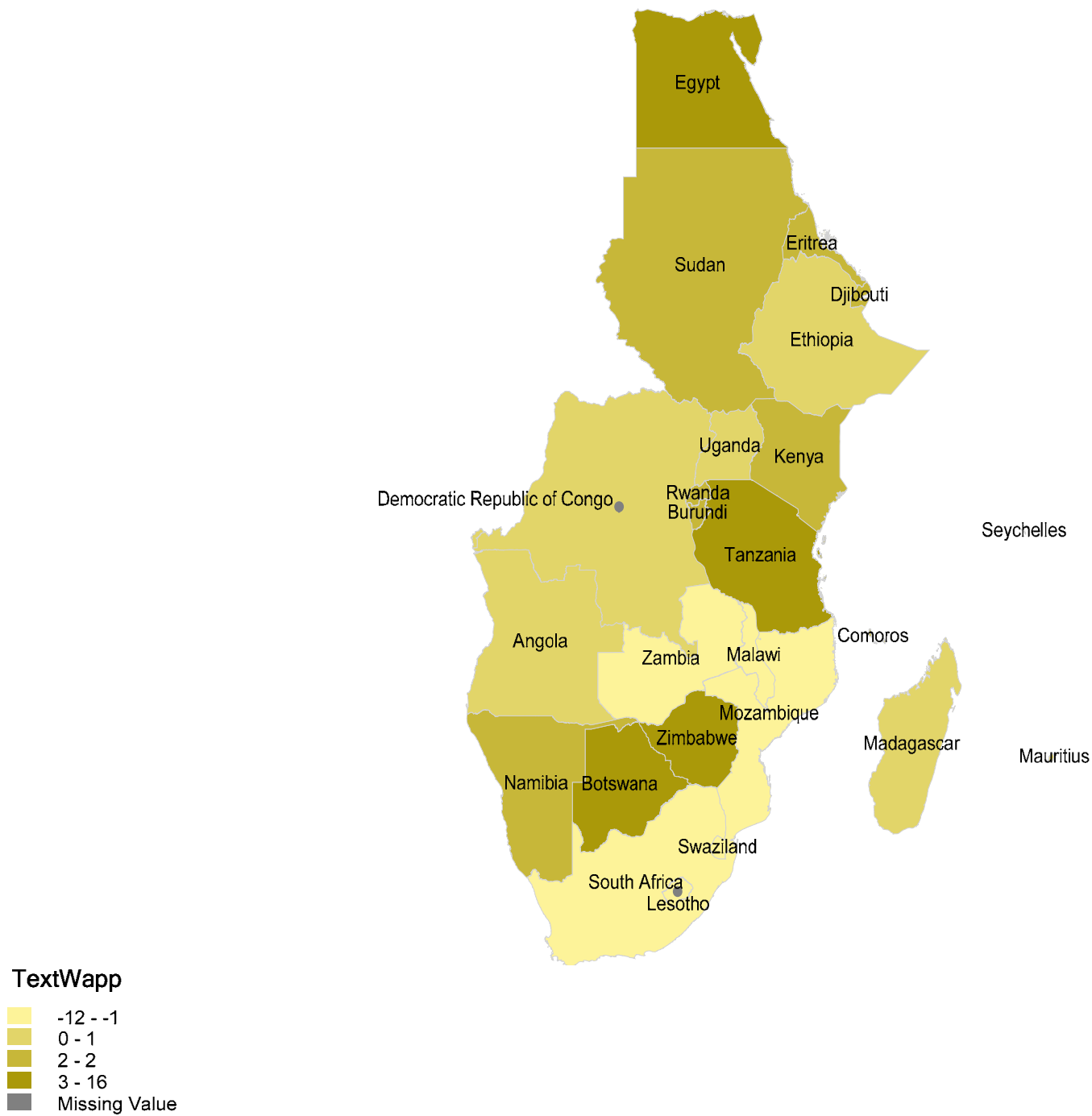
Appendix 2: Heavy Manufacturing



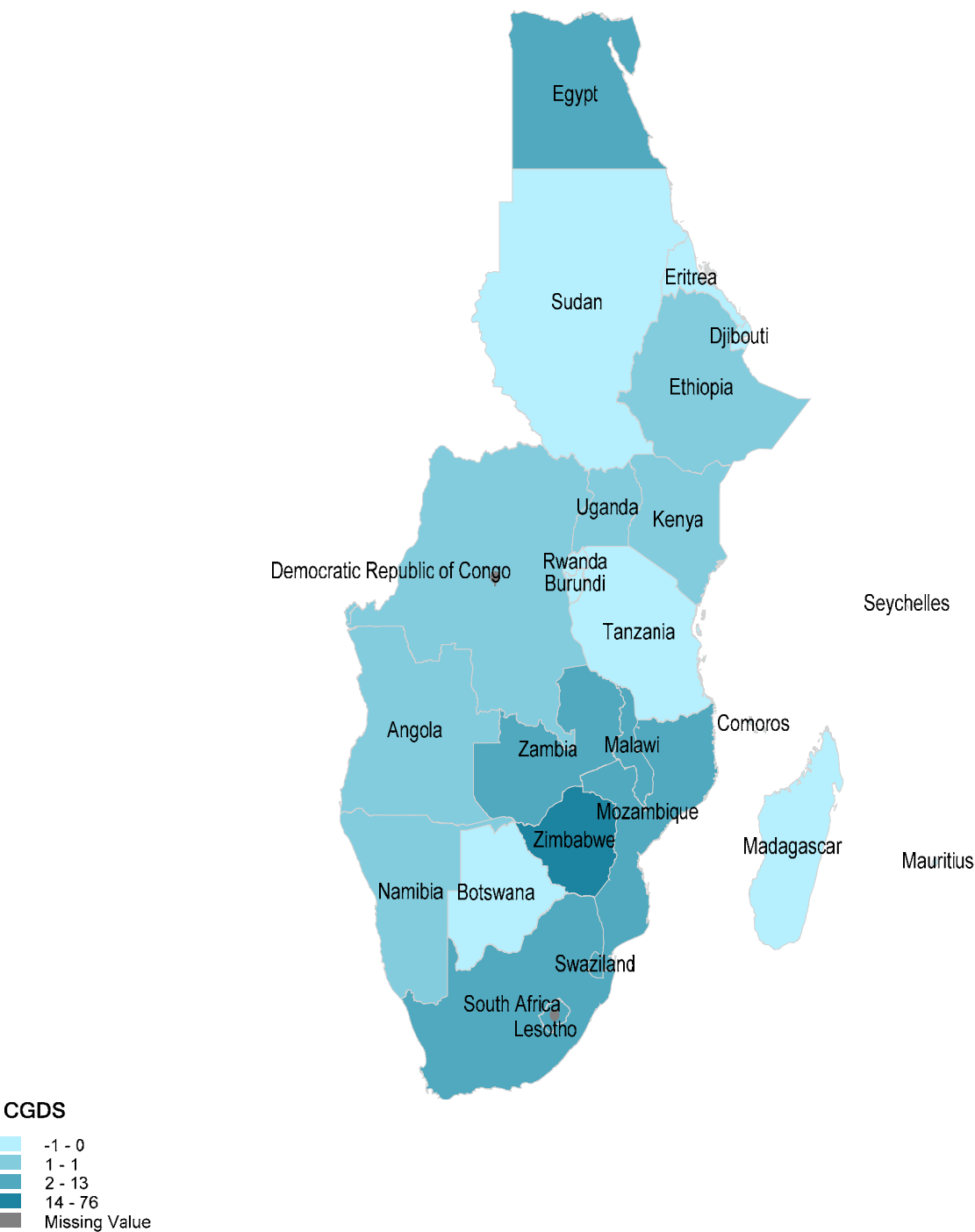
Appendix 3: Processed Food



Appendix 4: Textiles



Appendix 5: Capital Goods



Appendix 6: Change in Volume of Exports

DVol, exports of i from r to s, I.M.P.										
DQXS	Egypt	Ethiopia	Kenya	Madagascar	Malawi	Mozambique	Tanzania	Uganda	Zambia	Zimbabwe
Egypt	0	102.5	-4.1	0.6	-0.3	1.5	37.5	2.8	-0.9	0
Ethiopia	0.8	0	2.5	0	0.3	0.1	0.3	0.2	0.1	0
Kenya	-15.9	69	0	0.2	-5.2	8.9	36.9	-7.7	-11.3	-2.5
Madagascar	-0.2	0	-0.1	0	0	0.1	0	0	0	-0.2
Malawi	-4	0	-1	0.2	0	3.6	2.3	-0.6	-1.2	8.7
Mozambique	-0.5	0.1	115.2	0.6	3.6	0	0.7	4.5	-0.8	243.9
Tanzania	1.5	2.1	-12.4	0.1	19.9	20.6	0	-7.1	-0.2	13.1
Uganda	-1	0.8	-8.4	0	0	0.1	-0.2	0	0	0
Zambia	6	0.7	-0.1	0	-4.2	0.5	5.8	0	0	-2.4
Zimbabwe	1.3	2.6	-1.1	1	2.5	-0.3	8.7	0.2	-1.4	0
11 Botswana	-0.1	0	0.3	0	0.9	0.2	0	0	-0.1	151.1
South Africa	3416.4	56.3	375.8	7.5	135.3	348	61.7	126	354.2	401.3
Namibia	-0.1	0.2	0.1	0	0.1	13.7	0.1	0	0.5	7
Mauritius	-0.1	0.1	-0.5	-1.3	-0.2	0.7	0.1	0.1	-0.9	-1.6
SCentralAfri	0.1	0	0	0	0	0.1	0.1	1.2	0.1	0.6
SCU	0	8.6	115	-3.8	0.9	1.4	2.5	74	-0.6	0.1
SSA	-16	0	-1.6	0	-0.1	0	-0.1	-0.1	-3.6	0.2
Rest EA	20.1	129.5	-2.4	1.4	0.5	0.1	7.9	0.5	0.4	0.1
Rest of World	-2069.4	-209.3	-294.1	5.1	-94	-116.1	-85.7	-105.4	-173.7	-147.7
Total	1338.9	163.3	283.2	11.5	59.8	283.3	78.8	88.6	160.6	671.6

Appendix 6: Change in volume of exports continued

Dqxs	Botswana	South Africa	Namibia	Mauritius	Scentral africa	Scu	Ssa	Rest EA	Rest of world	Total
Egypt	3.1	52.3	0.4	1.6	6.6	2.1	10.9	-16.3	886.3	1086.4
Ethiopia	0	3.1	0	0	0	0.6	-0.7	166.9	-100.2	74
Kenya	0.5	17.2	0.4	0.2	2.4	1.8	3.8	138.4	49.8	286.8
Madagascar	0	0.2	0	0	0.2	0.1	0	24	-12.6	11.6
Malawi	0.1	11.7	0	0	0.8	0.2	0.1	13.1	27.8	62
Mozambique	0.1	-19.7	0	0.2	16.1	0.5	-0.4	10.7	-154	220.8
Tanzania	0	5.4	0	0	7.1	0	-0.6	51.9	-28.6	72.9
Uganda	0	4.3	0	0	36.1	0	1.9	39.3	28.5	101.4
Zambia	1.2	32.4	0.6	0.4	0.3	0.9	6.3	-0.6	107.6	155.4
Zimbabwe	16.6	81.6	1.5	0.2	30.1	1.7	9.8	0.3	87.1	242.4
Botswana	0	-3.1	0.2	0.4	1.2	0	-0.3	0.1	-101.1	49.9
South Africa	-64.6	0	-45.4	-1	419.6	-2.8	-194.7	382.2	-5608.9	166.9
Namibia	0	-18.8	0	-0.1	208.1	0.2	-4.4	2.3	-201.2	7.6
Mauritius	0.1	2.7	0.1	0	2.3	0.1	-0.2	43.3	-33.2	11.4
S Central Africa	0	-14.1	0.3	0.5	0	0	2.4	5.4	122.3	119.1
SCU	0	-7.6	-0.6	-1.1	-0.4	-0.5	-7.7	44.2	-230.2	-5.7
SSA	0.1	71.3	0.2	0.2	-6.1	0.4	8.3	-4	-28.2	20.9
Rest EA	0.1	7.4	0.1	1.3	0.4	1.3	3.7	-1.3	177.9	348.8
Rest of World	44	2750.4	67.1	17.5	-500.7	69.2	193.3	-608.1	3669.4	2412
Total	1.3	2976.6	25.1	20.3	224.1	76	31.6	291.8	-1341.6	5444.7

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