Trade Facilitation, Economic Welfare, and Sustainable Development of West and South Africa

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ABSTRACT

The purpose of this study is to estimate the potential annual economic gain to be had from trade facilitation by the member countries of the South African Customs Union (SACU) and the coastal countries of the Economic Community of West African States (ECOWAS). These measures would decrease the border and documentary compliance time and costs associated with the administration of international trade. They will increase regional trade integration enabling the achievement of the sustainable development goals of these countries. A partial equilibrium welfare economics framework is used. It employs sets of export supply and import demand elasticities for each country that are derived using a general equilibrium estimation method. The annual economic welfare gains resulting from the reduction of excessive trade compliance costs for the ECOWAS region are estimated to between US$1.6 billion to US$2.7 billion (2019 prices). This is between 0.24% and 0.42% of the combined GDPs of these countries. The magnitude of this economic gain is between 6% and 10% of the governments' budgets assigned for education, and is between 33% and 58% of the amounts of their budgets allocated for health. In the absence of reform, these inefficient practices waste an amount equal to between 15% and 26% of the annual net official development assistance these countries receive. The economic gains for SACU countries from reducing the excess administrative costs for imports and exports of SACU countries would be between US$2.2 billion and US$3.7 billion (2018 prices) or between 0.54% and 0.90% of GDP of the member countries of this region. This gain is 1.6 to 2.6 times greater than the annual net official development assistance received. For South Africa, the gain from reducing these excess compliance costs is between

US$2.1 billion and US$3.5 billion, which is 2.3 to 3.8 times greater than the annual development assistance they receive.

Keywords: Trade facilitation; West Africa; Economic Community of West African States (ECOWAS); South African Customs Union (SACU); South Africa; Regional Integration; Trade Compliance Costs; Trade Reform; Economic Welfare Gains; Sustainable Development; SDGs 2030.

ÖZ

Bu çalışmanın amacı, Güney Afrika Gümrük Birliği (SACU) üye ülkeleri ve Batı Afrika Devletleri Ekonomik Topluluğu'nun (ECOWAS) kıyı ülkeleri tarafından ticaretin kolaylaştırılmasından elde edilecek potansiyel yıllık ekonomik kazancı tahmin etmektir. Bu önlemler, sınır ve belgesel uyum süresini ve maliyetleri uluslararası ticaretin idaresi ile ilgili azaltacaktır. Bunlar bölgesel ticaret entegrasyonunu artırarak bu ülkelerin sürdürülebilir kalkınma hedeflerine ulaşmasını sağlayacaktır. Kısmi bir denge refah ekonomisi çerçevesi kullanılmaktadır. Genel bir denge tahmin yöntemi kullanılarak türetilen her ülke için ihracat arzı ve ithalat talebi esnekliklerini kullanır. ECOWAS bölgesi için aşırı ticaret uyum maliyetlerinin düşürülmesinden kaynaklanan yıllık ekonomik refah kazançlarının 1,6 milyar ABD Doları ile 2,7 milyar ABD Doları (2019 fiyatları) arasında olduğu tahmin edilmektedir. Bu ülkelerin birleşik GSYİH'larının %0,24 ile %0,42'si arasındadır. Bu ekonomik kazancın büyüklüğü, hükümetlerin eğitim için ayrılan bütçelerinin %6 ile %10'u arasındadır ve sağlık için ayrılan bütçelerinin %33 ile %58'i arasındadır. Reformun yokluğunda, bu verimsiz uygulamalar, yukarıda verilen ülkelerin aldığı yıllık net resmi kalkınma yardımının % 15 ile % 26'sına eşit bir miktarı boşa harcıyor. SACU ülkelerinin ithalat ve ihracatına yönelik fazla idari maliyetleri azaltmanın ekonomik kazanımı 2,2 milyar ABD Doları ile 3,7 milyar ABD Doları (2018 fiyatları) arasında olacaktır. Bu bölgeye üye ülkelerin GSYİH'sinin %0,54 ile %0,90'ı arasındadır. Bu kazanç, alınan yıllık net resmi kalkınma yardımının 1,6 ile 2,6 katıdır. Güney Afrika için, bu fazla uyum maliyetlerinin azaltılmasından elde edilen kazanç, aldıkları yıllık kalkınma yardımından 2,3 ile 3,8 kat daha fazla olan 2,1 milyar ile 3,5 milyar ABD Doları arasındadır.

Anahtar Kelimeler: Ticareti kolaylaştırma; Batı Afrika; Batı Afrika Devletleri Ekonomik Topluluğu (ECOWAS); Güney Afrika Gümrük Birliği (SACU); Güney Afrika; Bölgesel entegrasyon; Ticaret Uyum Maliyetleri; Ticaret Reformu; Ekonomik Refah Kazanımları; Sürdürülebilir Kalkınma; SDG'ler 2030.

DEDICATION

This dissertation is indeed dedicated to my precious diamonds of my life, ***my beloved parents****, to who I am greatly indebted all my life, happiness, and success.*

And also, it is dedicated to ***my unique brother****, who has never left my side.*

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LIST OF SYMBOLS AND ABBREVIATIONS

CC	Compliance costs
CC_0^M	Efficient rate of import compliance costs
CC_0^X	Efficient rate of export compliance costs
CC^M	Compliance costs of imports, observed for a country
CC^X	Compliance costs of exports, observed for a country
CC_e^M	Excessive import compliance costs, compared to the benchmark
CC_e^X	Excessive export compliance costs, compared to the benchmark
Q^M	Level of imports
Q^X	Level of exports
t	Tariffs
ε^X	Supply elasticity of export
ε^M	Demand elasticity of import
ΔG	Change in the welfare gain
ΔQ^M	Change in the level of imports
ΔQ^X	Change in the level of exports
AfCFTA	African Continent Free Trade Area
CET	Common External Tariff
CGE	Computable General Equilibrium
CIF	Cost, Insurance and Freight
ECOWAS	Economic Community of West African States
ETLS	ECOWAS Trade Liberalization Scheme
EU	European Union
FDI	Foreign Direct Investment

FOB	Free On Board
FTA	Free Trade Agreement
GDP	Gross Domestic Production
HIPCs	Heavily Indebted Poor Countries
RTAs	Regional Trade Agreements
SACU	South African Customs Union
SADC	Southern African Development Community
SDGs	Sustainable Development Goals
SMEs	Small and Medium-sized Enterprises
SSA	Sub-Saharan Africa
TFA	Trade Facilitation Agreement
TFIG	Trade Facilitation Implementation Guide
UNCTAD	United Nations Conference on Trade and Development
WITS	World Integrated Trade Solution
WTO	World Trade Organization

Chapter 1

INTRODUCTION

1.1 Introduction

For developing countries, an increased level of integration into the global economy has shown to be a key driver of productivity and growth (Sakyi et al., 2017; Seck, 2017). In this regard, simplifying the process of the movement of goods between countries and reducing trade transaction costs is of paramount importance. Trade facilitation actions that reduce the costs of engaging in international trade must be at the core of long-term development policy in developing countries. The ECOWAS region of West Africa and SACU area of South Africa are not the exception to these market forces.

1.2 Background, Significance, and Aim of the Study

The main aim of this study is to estimate the annual economic welfare gains that can be achieved by the member countries of South African Customs Union (SACU) and the coastal member countries of the Economic Community of West African States (ECOWAS) through the implementation of reforms to eliminate excessive trade compliance costs.

Economic welfare is a monetary valuation of the wellbeing of consumers and producers in a society. Changes in economic welfare because of trade facilitation refers to the monetary value that consumers would benefit from lower prices of imports plus the monetary value of the change in profits that producers accrue because of the

reduction in the costs of doing business brought about by trade facilitation interventions. Economic welfare is measured by applying the principles enunciated by Harberger as the three basic postulates for applied welfare economics (Harberger, 1971).

The focus of this research is on the reform of a series of administrative functions - border compliance and documentary compliance - whose economic costs can be greatly reduced without bearing significant investment costs. These procedures' time and costs are recorded annually by countries through the Ease of Doing Business Survey of the World Bank. Border compliance is the time and cost associated with a country's customs clearance, an inspection of goods, and handling at ports or borders. The latter, documentary compliance refers to the associated time and cost of compliance with the required documentation to ship goods from the country of origin in order to reach the destination country (Doing Business, 2020c).

Trade facilitation measures are reforms to simplify, standardize, and harmonize the laws, regulations, procedures, and processes of border movement and customs clearance of trading merchandise. The ultimate objective is to achieve a faster, more transparent, and secure system for carrying out trade transactions (UNCTAD, 2017; Fuenzalida-O'Shee, Valenzuela-Klagges & Corvalán-Quiroz, 2018; Nguenkwe & Tchitchoua, 2019; TFIG (Trade Facilitation Implementation Guide), 2020c; WTO, 2020b). The decrease in time and cost of trading makes possible connections to the global production (WTO, 2020a). That can lead to an improvement in the welfare of the residents of ECOWAS and SACU economies.

To the best of our knowledge, no study has estimated how trade facilitation and the reduction of compliance costs contribute to the economic welfare of the residents of ECOWAS and SACU countries. In addition, this study addresses comprehensively the contribution that trade facilitation brings through improving the efficiency of the country's tradable goods sectors, to achieve its sustainable development goals. This dissertation both quantifies the impacts of a specific set of trade facilitation reforms on regional trade integration, the volume of exports, imports and economic efficiency gains. It also makes the link between these reforms and the Sustainable Development Goals (SDGs) of the country. A traditional analysis of the economic welfare gains from reducing import tariffs is carried out to compare the magnitudes of the trade flows and economic welfare impacts of a major tariff reform with that of a benchmarked reform of trade administration. We are not aware that such an analysis has been conducted to date by other researchers.

Reforms on trade policies and cutting red tape at the borders serves to reduce trade transaction compliance costs associated with the administration of international trade flows. A reduction in these costs will result in lower prices for consumers buying imported goods. Particularly for small and medium-sized enterprises (SMEs), the lower trade administration costs associated with exports will enable more of them to be able to enter global markets. Trade facilitation improves the control and safety of a country, leading to improved business conditions that will enhance the inflow of foreign direct investment (FDI) (Odularu, 2017; Peterson, 2017; Sakyi et al., 2017; Fuenzalida-O'Shee, Valenzuela-Klagges & Corvalán-Quiroz, 2018; G. Odularu & TFIG, 2020c; WTO, 2020a).

For the ECOWAS and SACU member countries, trade facilitation is an important tool to achieve the dimensions of the SDGs of the United Nations 2030 Agenda. This Agenda has 5 dimensions of people, planet, peace, partnership, and prosperity, which are set out in the form of 17 goals (G. Odularu, 2019; United Nations, 2020b, 2020c). The goals are considered guidelines for a sustainable future (Varela et al., 2020). Trade facilitation contributes toward the realization of the development goals, particularly on poverty and hunger reduction, and sustained economic growth (G. Odularu, 2019).

The need for trade facilitation is greater in Sub-Sahara Africa (SSA) than elsewhere because of the heavier burden of trade costs that are currently present in SSA relative to the rest of the world (Djankov, Freund & Pham, 2010; Arvis et al., 2016; Porteous, 2019; Hassan, Odularu, & Babatunde, 2020). The past two decades have been accompanied by a variety of successful trade facilitation interventions in SSA countries. The main focus of much subsequent research has been dedicated to estimating the potential extent that international trade flows can be stimulated by a reduction in trade-related costs.

1.3 The ECOWAS

The ECOWAS was established on May 28, 1975 via the Treaty of Lagos. The community, located in the Western Africa region comprises 15 member countries: Benin, Burkina Faso, Cape Verde (Cabo Verde), Cote d'Ivoire (Ivory Coast), The Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo (ECOWAS, 2020a; UNECA (United Nations Economic Commission for Africa), 2020); see Figure 1.1.

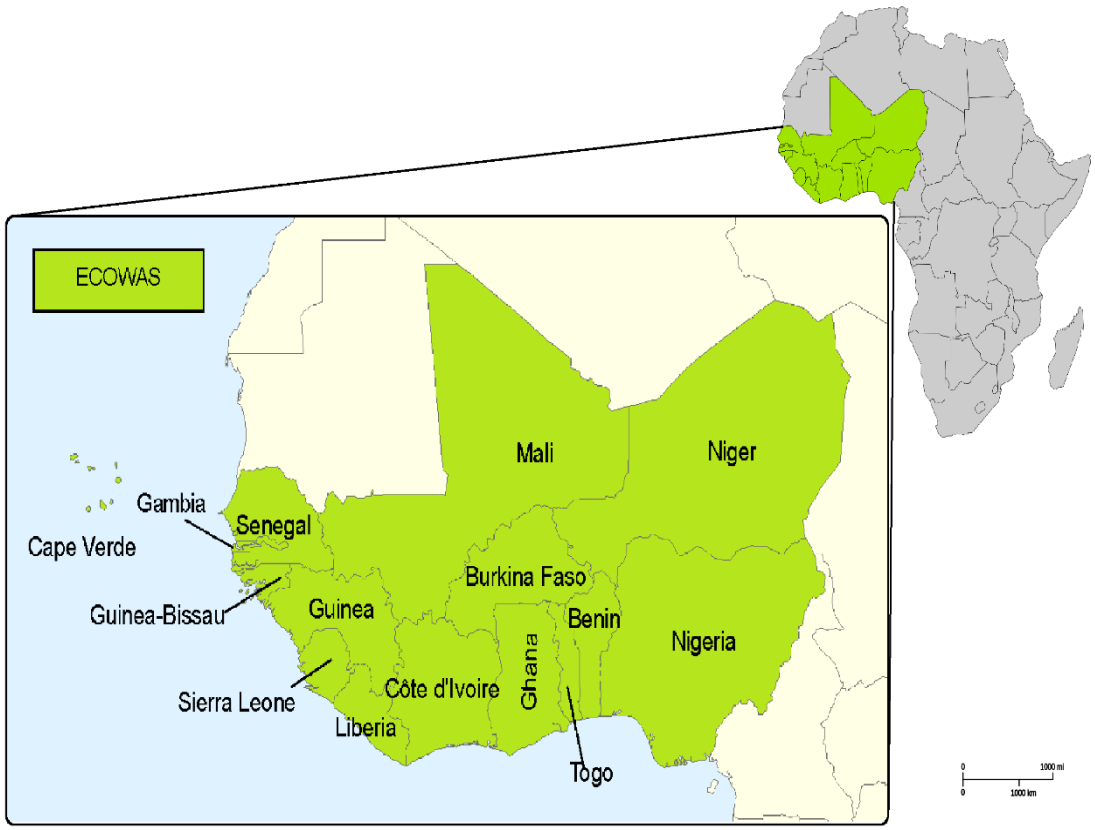

Figure 1.1: Location of ECOWAS Countries

The ECOWAS members are heterogeneous in terms of population (ranging from 0.5 million people in Cape Verde to about 200 million people in Nigeria), the size of economy (with a range in GDP of US$ 1.5 billion in Guinea-Bissau to US$ 398 billion in Nigeria), colonial background, language, and culture. They also vary in GDP per capita of US$ 414 in Niger to US$ 3,635 in Cape Verde, as of 2018 (African Development Bank Group, 2019; IMF, 2020; World Bank, 2020b). Nevertheless, the ECOWAS countries are categorized in either the Low or Lower Middle Income group. All members, with the exception of Cape Verde and Nigeria, are listed as the heavily indebted poor countries (HIPCs) (World Bank, 2020a).

As of 2019, more than US$ 650 billion or about 40% of the total gross domestic product (GDP) of SSA is produced by ECOWAS countries. The major contributor to

GDP in the region is Nigeria (US$ 448 billion, 26% of SSA). Regarding international trade, 25% of the SSA's merchandise import volume and 32% of its merchandise export volume are produced by members of the ECOWAS community (IMF (International Monetary Fund), 2020; World Bank, 2020b); see Appendix B for more details. These facts demonstrate how important the economic commission of ECOWAS is in SSA and in turn, how international trade is a significant factor in the economy of ECOWAS countries.

The vision of the ECOWAS Commission is a borderless region in which everybody is able to take advantage of similar opportunities to exploit abundant existing resources under a sustainable environment (ECOWAS, 2020a). The ECOWAS Treaty, revised in 1993, has defined its aims as establishing an economic union to provide economic stability and enhance the living standards of the people in West Africa. It specifies the necessity of removing obstacles to free movement of goods, services, and people, and also the application of common social, financial, and economic policies for integrating economies to establish a Free Trade Area, a Customs Union, a Common Market, and eventually a Monetary and Economic Union to reach the aims of the community. (ECOWAS, 1993; African Development Bank Group, 2019; UNECA, 2020).

In order to deepen the economic integration process, the ECOWAS Trade Liberalization Scheme (ETLS) came into existence in 1979 to address the protocols on free circulation of goods in the free trade area, and to establish a customs union. Agricultural and artisan handcrafted goods and unprocessed products were initially covered by ETLS, and later, in 1990, this was extended to industrial goods (ECOWAS, 2020a; UNECA, 2020). With the objective of establishing a customs union in West Africa in line with article 3 of the revised ECOWAS Treaty, there should be a common

trade policy vis-à-vis third countries. Hence, the ECOWAS Common External Tariff (CET) was adopted on 25th October 2013, to set identical customs duties and non-tariff barriers to goods crossing community borders. The ECOWAS CET has structured duty rates as follows: 0% (Basic Social Goods), 5% (Basic Goods, Raw Goods, and Capital Goods), 10% (Inputs and Semi-Finished Goods), 20% (Finished Goods), and 35% (Specific Goods for Economic Development) (GIZ, 2016; ECOWAS, 2020b).

Despite the formal commitment, the financial-economic integration, and the freedom of movement, the trading bloc of ECOWAS continues to face impediments with poor leadership, weak infrastructure, and a low level of intra-regional trade. The cumbersome customs procedures and complicated border procedures with high trade compliance costs have resulted in a significant amount of informal trade (Efobi & Osabuohien, 2016; Odebiyi & Alege, 2019; Adegboye et al., 2020). Altogether has caused the economic growth in the region to not perform well in bringing about inclusive development (Onyekwena & Oloko, 2016). Hence, the contribution of trade facilitation measures complements the ECOWAS CET and its trade liberalization policies (Shuaibu, 2015).

1.4 The SACU

SACU is an integrated regional trade bloc located in the southern core of Sub-Saharan Africa. The member countries of SACU consists of South Africa, Botswana, Eswatini (Swaziland), Lesotho and Namibia (SACU, 2020). This union is the world's oldest customs union still in existence, with its inception in 1889 (Ngalawa, 2014). A new SACU union was entered into force on 15th July of 2004, after all the members ratified

and signed it “Southern African Customs Union Agreement, 2002” (SACU, 2018); see Figure 1.2.

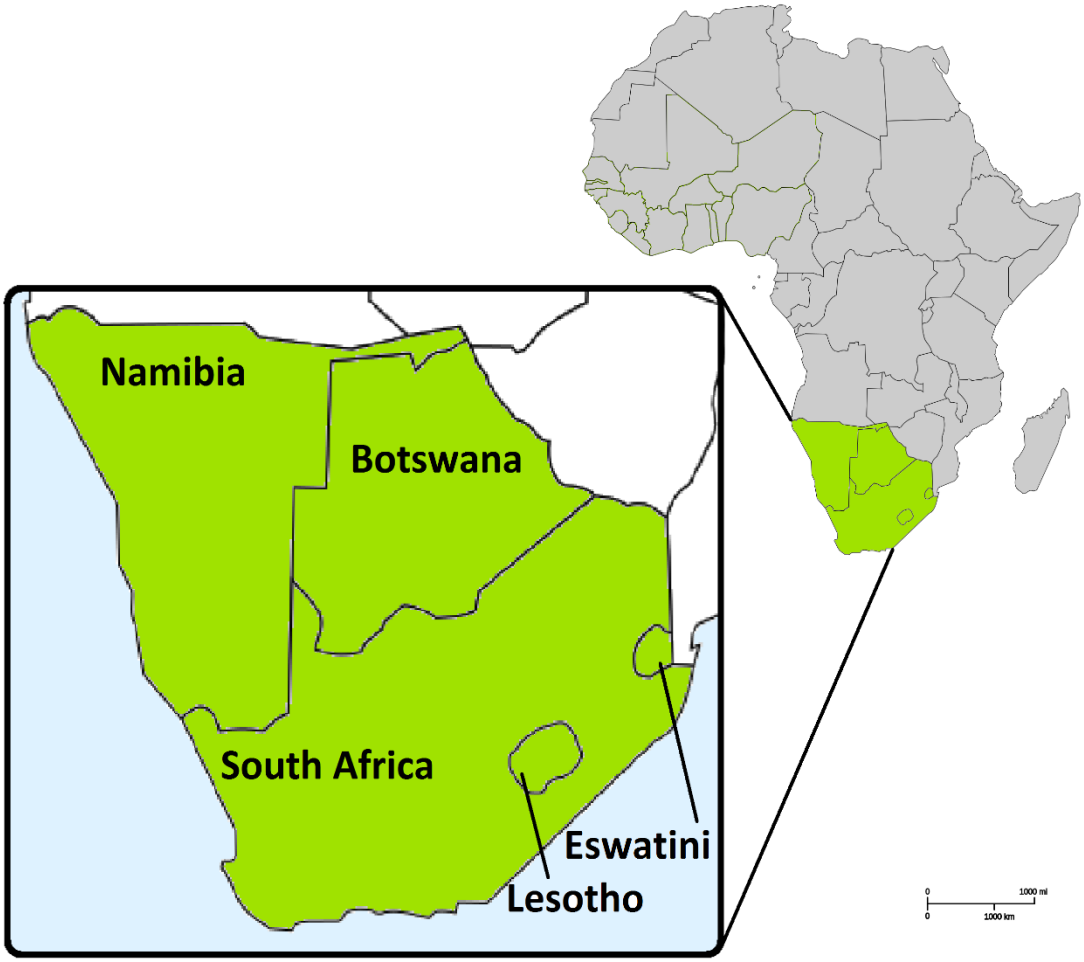

Figure 1.2: Location of SACU Countries

The members of SACU, in the agreement of 2002, implemented a policy of trade liberalisation, with duty-free transit of domestic products within the common custom area. At the same time, they have implemented a commons regime of customs duties on goods imported from rest of the world into the SACU member countries. According to this agreement, all customs and excise duties collected in the area of the customs union are deposited in the common revenue pool. This revenue, after deducting the administrative cost of the union, is shared between the SACU members of the union

based on a revenue-sharing formula that has created and agreed (SACU, 2002; SACU, 2020).

SACU members are substantially different in population, surface area, and level of economic development. Owing to its relative size and stage of development, South Africa is the dominant partner in setting policy and in the day-to-day operations of SACU (Manwa, Wijeweera, & Kortt, 2019). South Africa is the most populated country, with US$ 58 million people, of the union, and the country's GDP is US$ 368 billion. By a large margin, the next bigger economies of the region are Botswana and Namibia, US$ 18 billion and US$14 billion, respectively. While Eswatini and Lesotho are small landlocked countries categorized in the lower-middle-income group, the others are in the Upper-middle-income group (World Bank, 2019a).

As of 2018, 24% of SSA's total gross domestic product (GDP) is created in the SACU countries, predominantly South Africa. In terms of international trade, 36% of the value of SSA's imports and 32% of the value of its exports are produced by SACU countries. While exports and imports each account for more than 20% of SSA's GDP, these ratios are much higher for SACU, at 29% and 35%, respectively (World Bank, 2019a; IMF, 2019); see Appendix F for more details. This illustrates the importance of the SACU trading bloc in SSA and, in turn, the importance of international trade in the functioning of the economy of the SACU countries.

Over the past two decades, there has been an evolving realization by policymakers in emerging economies that if the benefits of international trade are to be realized, trade facilitation measures must be implemented. The countries of SACU, and particularly South Africa, have the information technology and management skills and financial

resources to facilitate trade and dramatically reduce the trade transaction costs. Examples abound of successful reforms in this area by developing countries, starting with Singapore in 1989 (TFIG, 2020a).

1.5 The Structure of the Dissertation

The remainder of the dissertation is designed as follows:

Chapter 2 is dedicated to reviewing the literature on the concepts of trade facilitation, regional trade agreements, the area of ECOWAS, the community of SACU, and the SDGs.

Chapter 3 is devoted to specifying the model and explaining the methodology used in this dissertation.

Chapters 4 and 5 are reporting the empirical analysis done for the ECOWAS and SACU, respectively. In each chapter, the steps undertaken in the economic estimation of the impacts of excessive compliance costs to import/ export is discussed separately. Subsequently, the overall results and outcomes for each region have been explained.

Chapter 6 concludes the study by presenting a summary of the results. The policy implications and the suggestions are discussed as a last section of the dissertation.

Chapter 2

LITERATURE REVIEW

2.1 Introduction

This chapter contains a review of the literature on trade facilitation, the background, and its importance. This is, then followed by the concept of regional trade agreements. Moreover, it reviews the studies that focused on the importance of sustainable trade for the countries of ECOWAS and SACU regions. The last section is to highlight the impacts of the facilitation of trade on achieving the goals of sustainable development.

2.2 Trade Facilitation

World Trade Organization (WTO) members opened a discussion on trade facilitation during the first WTO Ministerial Conference in Singapore, 1996. After 8 years of exploratory work, members began negotiations in 2004, and concluded the negotiations by adopting the text of the Trade Facilitation Agreement (TFA) at the ninth WTO Ministerial Conference in 2013. Following ratification by two-thirds of WTO members, TFA came into force in 2017. By January 2020 the TFA had been ratified by more than 85 per cent of the 41 WTO member countries from Africa (Hassan, 2020; WTO, 2020a, 2020b).

Trade facilitation policy plays a decisive role in the performance of the economy. Among policy measures for enhancing economic growth, trade facilitation is particularly imperative due to its direct impact on international trade costs (Portugal-Perez & Wilson, 2009; Sakyi et al., 2017). In two studies, covering 35 and 52 African

countries that investigated the impacts of trade facilitation and international trade on economic growth, Sakyi et al. (2017) and Sakyi and Afesorgbor (2019), respectively, found that economic growth will be affected by international trade, which can be increased through extending trade facilitation measures.

There is a growing body of research that has explored different features of trade facilitation and their impacts on bilateral trade in SSA (Portugal-Perez & Wilson, 2009; Valensisi, Lisinge & Karingi, 2016; Balistreri et al., 2018; Turkson, Adjei & Barimah, 2020). Balistreri et al. (2018) by using a computable general equilibrium (CGE) model measured the effects of trade cost reduction on poverty and incomes of the bottom 40% of the income distribution in the East African Customs Union and the Tripartite Free Trade Agreement. They found that the facilitation of trade to decrease the trade costs can lead to a higher share of income for the bottom 40% of income distribution, and also reducing inequality. They emphasised on the importance of trade reforms beside deep regional integration for the reduction of poverty.

Valensisi, Lisinge, and Karingi (2016) employed a CGE model to consider the TFA in Africa's regional integration framework. The extent to which trade facilitation measures could enrich participation in international trade was assessed, and how trade-related costs hinder not only integration into the rest of the world but also regional integration.

2.3 Regional Trade Agreements

In the context of the Regional Trade Agreements (RTAs), there have been extensive studies (Vicard, 2011; Deen-Swarray, Adekunle & Odularu, 2014; Ferreira & Steenkamp, 2020). Since the independence of African countries, many RTAs have

organized to accelerate the sustainable development of regional economic interactions. RTAs based on putting greater effort into cooperation and liberalization can take place in different integration phases of the preferential trade area, free trade agreement, customs union, and an economic union (Osabuohien et al., 2019).

With a focus within SSA, Ferreira and Steenkamp (2020) used a market selection tool to apply the main large growing import demand potential and the capacity of supply export of the countries in tripartite Free Trade Agreement (FTA) for a period of five years. Then, they matched the demand for import and supply of export to identify an array of potential intra-regional trade opportunities that would occur with an improvement in the integration of trading relationships across the 26 member countries of the tripartite FTA. The authors concluded that the level of unnecessary costs associated with international trade in the region must be eliminated. These include the costs of poor infrastructure, slow border and customs procedures, and excessive documentation requirements.

2.4 The ECOWAS

With the aim of liberalising trade flow through regional integration and economic cooperation, 15 countries in western Africa combined to form the ECOWAS Commission. This large trading bloc has a population of over 375 million people (G. Odularu & Odularu, 2017; World Bank, 2020b).

Since its inception, ECOWAS' desire has been to provide a united, secure sub-region that lessens poverty and promotes sustainable development (ECOWAS, 2020b). G. Odularu and A. Odularu (2017) stated that RTAs are strongly correlated to trade facilitation, and Cissokho et al. (2013) stated there is a strong relationship between the

adoption of trade facilitation and acceleration of economic development. In so doing, the ECOWAS countries have deployed trade facilitation measures to promote inter and intra-regional trade and to realize their aim for economic integration (Cissokho et al., 2013; G. Odularu & Odularu, 2017; ECOWAS, 2020a). For instance, some members have implemented destination inspection and scanners to protect against security risks (G. Odularu & Odularu, 2017).

Olayiw ola et al. (2015) by using a dynamic gravity model to estimate the impact of trade facilitation, proxied by required processing days, on ECOWAS agricultural exports, found that a 1% decline in the number of days to process the export of agriculture commodities correlated with an expansion of approximately 0.07% of agricultural exports.

Odebiyi and Alege (2019) identified that to increase trade flows under RTAs, not only are liberalization and elimination of tariffs required but also the adoption of trade facilitation policies. A similar pattern was observed in the ECOWAS community that tariff reduction would not result in a significant increase in the volume of intra-regional trade. They found that sub-regional trade was significantly affected by bilateral trade costs. A combination of lengthy customs procedures, poor logistics performance, lack of transparent information, and excessive documentation requirements are of the dominant trade barriers existing in ECOWAS (Shuaibu, 2015; Nguenkwe & Tchitchoua, 2019; Odebiyi & Alege, 2019; A. Odularu, 2019; G. Odularu, 2019).

The ECOWAS countries also struggle with high levels of unrecorded informal trade, as a consequence formal intra-regional trade accounts for a relatively small percentage of the community's total trade (Shuaibu, 2015; Torres & Van Seters, 2016; Odebiyi &

Alege, 2019; Adegboye et al., 2020). It was found that formal trade is averaging 11% of total trade, which is several times smaller than the average rate of intra-trade for Europe's economic union (66%), between 2001 and 2014 (Odebiyi & Alege, 2019). These may indicate that ECOWAS members are suffering from high trade-related costs (African Development Bank Group, 2019). The relatively high burden of the cost of customs clearance and border procedures drives up the cost of trade, making potential exports uncompetitive, and thereby erodes their ability to integrate into global value chains (ICTSD, 2012; G. Odularu & Odularu, 2017; African Development Bank Group, 2019).

The ECOWAS region has a weak trade complementarity among its members. They produce similar primary commodities concentrated on oil, gas, and primary goods. Local producers seem to have a low level of comparative advantage as compared to trading countries beyond ECOWAS territory (Torres & Van Seters, 2016; African Development Bank Group, 2019). Nigeria, a large, dominant ECOWAS economy, is the largest producer of oil in Africa. To drop its dependency on oil would require it to diversify its export product market. Therefore, an array of possible opportunities for the trade would happen if industrial infrastructure capacity were to be enriched (A. Odularu, 2019; Oluwusi & Punt, 2019).

Torres and Seters (2016), in an overview study of West African trade, point out that the ECOWAS Treaty is an ambitious RTA but has not in actual fact implemented its commitments. Community members are also facing official and unofficial barriers to trade and a poor level of infrastructure that negatively affects trade flows. They found that pproximately 75% of intra-region trade is informal trade, carried out by small traders, mainly females, to escape costly, time-consuming, and unpredictable border

procedures. The study demonstrates the need to pay particular attention to trade facilitation.

2.5 The SACU

A substantial body of research has been published focusing on the need for South Africa to enhance its economic growth by diversifying its international markets to those providing a sustainable export demand (Matthee, Idsardi & Krugell, 2015; Matthee & Santana-Gallego, 2017; Mhonyera, Steenkamp & Matthee, 2018; Turkson, Adjei & Barimah, 2020). The European Union (EU) is one such sustainable market. The estimation of the impacts on trade flows, revenue and economic welfare has been carried out for a progression to free trade through the existing Trade Development and Cooperation Agreement between South Africa and the EU. The estimated annual impact for trade expansion by South Africa is over US$1 billion, with an increase in economic welfare of approximately US$130 million. This study demonstrates the importance of sustainable trade flows for South Africa's economic growth (Guei, Mugano & Le Roux, 2017).

After reviewing the current research, Hoekman and Shepherd (2015) concluded that while the studies assessed the potential effects of trade facilitation on export diversification and the volume of trade in Africa, very little direct quantitative assessment had been carried out on its economic welfare impacts. In light of the importance of trade facilitation, the following section will explore the possible impacts of the economic welfare gains from trade facilitation on achieving sustainable development goals for ECOWAS and SACU.

2.6 Sustainable Development Implications

In the context of regional trade agreements, West African countries and similarly South African ones can contribute through the implementation of trade facilitation towards achieving sustainable development goals, both directly and indirectly. As defined by the United Nations, international trade is the means of implementation of sustainable development goals (United Nations, 2020a, 2020b), hence the facilitation of trade is of great importance to the achievement of the SDGs across many of its objectives.

Trade facilitation streamlines and increases international trade and, as a result, brings about the availability of more goods that are important for the aims of food security and eradicating hunger and poverty [SDG *1*: No poverty & SDG *2*: Zero hunger]. Meanwhile, trade facilitation allows trading to take place in less time. This is becoming increasingly important for agricultural goods and intermediate inputs, as more perishable goods are being traded, and faster delivery times prevent wastage [supporting SDGs *1*, *2*, & *12*]. Furthermore, trade facilitation provides producers with the input factors that are needed for competitive production of goods that are intended for both local consumers and/or export. New exporting producers are enabled due to the reduction of the administration costs for exporting goods [SDG *12*: Responsible consumption and production & SDG 8: Decent work and growth] (United Nations, 2019, 2020a, 2020b, 2020c; Sachs et al., 2020).

Enhancing trade results in the transfer of technologies, fostering efficient usage of resources, and encouraging competition which brings about productivity gains and growth for the economy [SDG *9*: Industry, innovation, and infrastructure & SDG *8*].

Improving infrastructure is a part of the reforms for facilitating trade, which itself brings about the improvement of development [SDG *9*]. One of the trade facilitation indicators, the Logistic Performance Index, is one of the indicators of sustainable development for evaluating SDG *9*. One of the main impediments of ECOWAS borders is informal trade by small producers, of whom many are females. Easy and less costly border administration would secure borders and, meanwhile, make exportation affordable for females [SDGs *16* & *5* are to promote peace and empower females] (United Nations, 2019, 2020a, 2020b, 2020c; Sachs et al., 2020).

The ECOWAS regional trade agreement was signed by many countries that have backgrounds of conflicts, face border issues, have a large dependency on external finance, and suffer poverty. The aim of integration is to increase intra-regional trade, enjoy a peaceful and secure environment to share their culture and resources and to synergize their benefits [SDG *16*: Peace, justice and strong institutions & SDG *11*: Sustain cities & communities]. Transparent and simple market access as a result of integration and trade facilitation would moderate inequality within and among the countries [SDG *10*: Reduced inequalities] (ECOWAS, 1993, 2020a; United Nations, 2019, 2020a, 2020b, 2020c; Sachs et al., 2020).

In the 2030 Agenda, international trade is recognized as being fundamental for promoting inclusive economic growth, poverty reduction, job creation, real wage increase, and the enhanced welfare of people (United Nations, 2020a, 2020b). The final goal, SDG 17, is to ‘Strengthen the means of implementation and revitalize the global partnership for sustainable development’. Promoting a universal non-discriminatory multilateral trade system through global partnership is one of the SDG

targets (SDG Compass, 2020). Hence, trade facilitation is a key component for the implementation of these development goals, SDG 17 in particular.

Integrated West African countries, and similarly the integrated countries of South Africa would be able to contribute to fostering the sustainable development goals via deeper integration and employment of trade facilitation, thus bringing about economic welfare gains to their economies.

In attempting to measure the importance of trade facilitation, the following parts of this paper are allocated to specify the model, explain the estimation methodology, and analyse the data empirically to quantify the potential benefits to be gained through trade facilitation measures affecting importation and exportation.

Chapter 3

METHODOLOGY

3.1 Introduction

This chapter particularly focuses on the research methodology used in this study. It specifies the model, and the relevant expressions to explain the impacts of tariffs and trade compliance costs on the demand for importation and the economic welfare gains of an individual county. The chapter proceeds with the theoretical presentation and expressions to explore the effects of export compliance costs on the supply of exportation and the economic gains of an economy.

3.2 Model Specification

Different models of international trade have been used in order to estimate the consequences of trade facilitation on trade flows. Many researchers employed gravity equations to measure quantity changes in exports and imports that could be realized by decreasing costs through trade facilitation measures (Portugal-Perez & Wilson, 2009; Jordaan, 2014; Arvis et al., 2016). Some studies have undertaken firm-level assessments of these impacts via econometric estimates of firms' comparative responses across countries (Seck, 2017). CGE models have been used in some other studies to estimate how the volume of trade flows would change and what the impact of trade facilitation is on poverty groups (Balistreri et al., 2018), and on regional integration in Africa (Valensisi, Lisinge & Karingi, 2016).

A partial equilibrium model that has been applied in many studies is the WITS-SMART Model developed by the United Nations Conference on Trade and Development (UNCTAD). It permits one to obtain an approximate measurement of the change in consumer surplus from trade policy changes. This model has been used to evaluate the welfare impacts of signing the African Continent Free Trade Area (AfCFTA) on food sustainability in the Southern African Development Community (SADC) (Pasara & Diko, 2020). The demand elasticities employed in the current versions of the WITS-SMART simulation model are those proposed by Kee, Nicita, and Olarreaga (2008). Nevertheless, the default assumption of the model is that export supply elasticities are infinitely elastic. This assumption reduces the usefulness of the model when estimating economic welfare changes that involve changes in the trade costs facing exporters.

The present study, utilizes a partial equilibrium framework but takes advantage of up-to-date sets of general equilibrium estimates for both import demand and export supply elasticities of each country (Ghodsi, Grübler & Stehrer, 2016; Tokarick, 2014). These estimated elasticities are derived using the GDP function approach as developed by Kohli (1991) and Kee et al. (2008).

A major advantage of the approach used in this study is that the analysis is based soundly on the three basic postulates of applied welfare economics (Harberger, 1971). This theoretical framework has been well tested over a period of decades in the economic analysis of numerous international trade policies. The estimation procedure is transparent and can easily be subjected to a sensitivity analysis to test the reliability of the results. This is a very great advantage as compared to the construction of many CGE models, where the bulk of the parameters are not derived from the country in

question but are assumptions transferred from estimates made for other countries. In the analysis of this thesis, the key elasticities of supply of exports and demand for imports are country-specific and estimated by employing the data for the specific country (Tokarick, 2014; Ghodsi et al., 2016).

3.3 Import Compliance Costs, Tariffs and the Demand for Importation

Figure 3.1 illustrates the nature of the effects of tariffs and compliance costs of imports on the quantity of imports, tariff revenues, and efficiency of the economy. The quantity of import demand in the case of non-existence of domestic marketing costs, domestic freight, import tariffs, and import compliance costs are determined through the demand function of imports and the CIF price of imports at the border of the importing country. As the focus of this research is on the effects of tariffs (t), and the compliance costs of administration of international import flows (CC^M), issues associated with domestic marketing costs and differential domestic freights costs have been set aside. The analysis begins by identifying the level of imports, including both final goods and intermediate goods, which would be demanded in a market that is not subjected to tariffs or trade compliance costs. This level is denoted as Q_1^M.

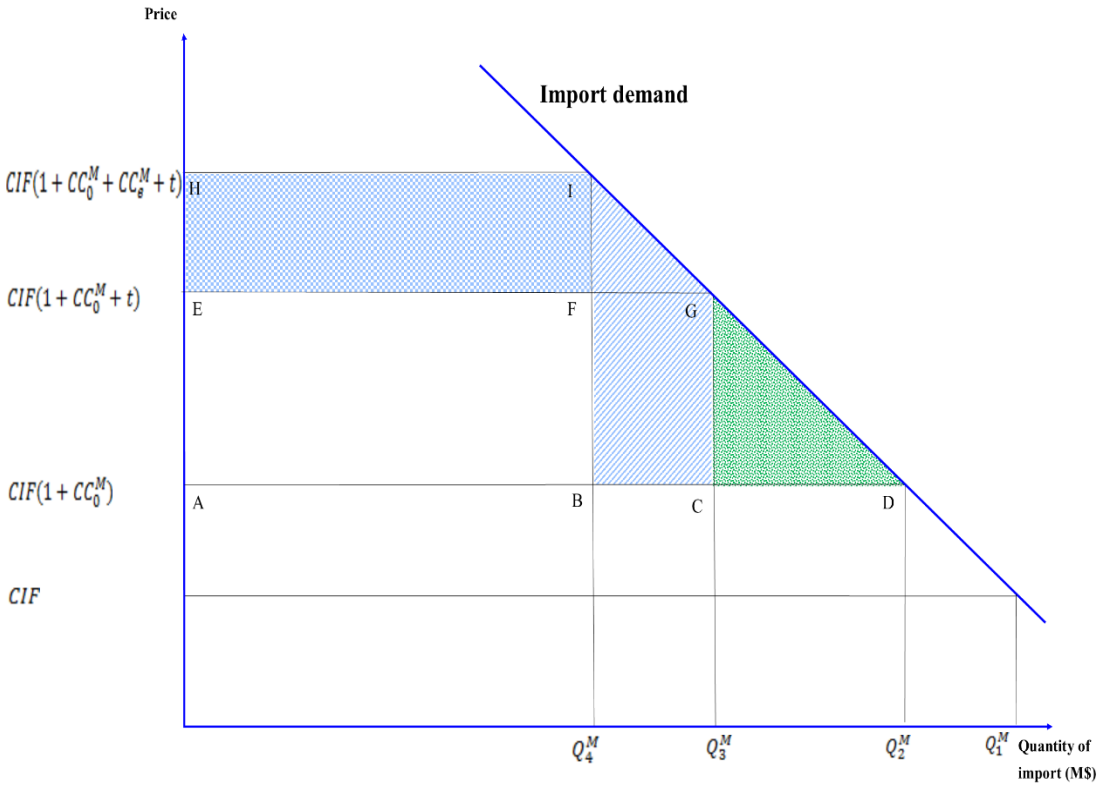

Figure 3.1: The Economic Impacts of Tariffs and Compliance Costs to Import

The importation of goods, even in the most efficient circumstances, accompanies with some rate of requisite compliance costs of import (CC^M). The total CC^M, observed for a country, comprises the minimum rate of compliance costs to import that is normal for an efficient administration system (CC_0^M), and the excess rate of compliance costs (CC_e^M). Equation 1 expresses this relationship for a country.

$$CC_e^M = CC^M - CC_0^M \quad (1)$$

CC_e^M is the rate of compliance costs to import that can be eradicated through the launch of administrative reforms. Although CC^M is observable for a country, CC_0^M is not. Though, the rates of CC^M of other countries that have implemented trade facilitation reforms for an efficient system are observable. Therefore, in the analysis of this study, the observed rates of those efficient countries are used as benchmark rates of CC_0^M.

Adding the efficient rate of import compliance costs, CC_0^M to the CIF price will increase the cost (price) of import for a country. The increase in the cost of import causes a reduction in the quantity of merchandise imported from Q_1^M to Q_2^M. Moreover, imposing a tariff (t) on the CIF price of imports will increase the price paid by domestic consumers for those imports leading to a further reduction in demand quantity of imports from Q_2^M to Q_3^M. Any rate of excessive compliance costs, CC_e^M, will raise the cost of imports and therefore affect the demand quantity of imported goods to drop to the level of Q_4^M, as shown in Figure 3.1. The level of Q_4^M is the quantity of imports reported as international trade statistics.

In the pre-reform scenario, the price of imported items can be stated as $CIF(1 + CC_0^M + t + CC_e^M)$, wherein the compliance costs of import can also be determined as a percentage of the CIF value of imports. By making the assumption that the ECOWAS and SACU member countries are relatively small countries, the level of imports demanded by these countries will not influence world prices of goods imported. Consequently, the level of imports can be declared in units of foreign exchange; thus, CIF is specified as being equal to one.

Implementing the reforms on administration procedure for removal of CC_e^M would decrease the cost of a unit of imports to $(1 + CC_0^M + t)$ and bring about a rise in the level of demanded imports from Q_4^M to Q_3^M. This change in the level of imports, denoted as $(\Delta Q^M)_1$, can be expressed as in equation 2.

$$(\Delta Q^M)_1 = CC_e^M * \varepsilon^M * Q_4^M \quad (2)$$

ε^M is the demand elasticity of imports and CC_e^M is the percentage change in the price of imports if excess compliance costs of import are removed.

The economic welfare gain obtained from the removal of CC_e^M ensues from two sources. The first welfare gain (ΔG_1) comes from the lower cost for importing those quantities of merchandise being imported prior to the reforms. This is illustrated in Figure 3.1, by the EHIF rectangle, which is an indication of a decrease in real resources used in the required administrative process of importing goods. This saving of resources can be measured as in equation 3.

$$\Delta G_1 = CC_e^M * Q_4^M \tag{3}$$

The second economic welfare gain, ΔG, arises from the increase in the quantity of imports demanded by $(\Delta Q^M)_1$. Because, after the reform, the price of imported goods paid by consumers will drop from $(1 + CC_0^M + t + CC_e^M)$ to $(1 + CC_0^M + t)$, the ensuing additional volume of imports from the lower price charged to consumers would have a resource cost of only $(1 + CC_0^M)$. This gain in economic welfare is presented as the summation of areas BFGC and FIG in Figure 3.1, and its estimation can be via equation 4.

The area of BIGC in Figure 3.1 is depicted as the difference between the total willingness of customers to pay for the additional quantity demanded ($Q_4^M IGQ_3^M$) and the economic costs of the additional imports ($Q_4^M BCQ_3^M$).

$$\Delta G_2 = (\Delta Q^M)_1 * (t + 0.5CC_e^M) \tag{4}$$

Having replaced equation 2 into equation 4, ΔG_2 is as:

$$\Delta G_2 = \varepsilon^M * [(t * CC_e^M) + 0.5(CC_e^M)^2] * Q_4^M \tag{5}$$

The total gain in economic welfare that comes from trade facilitation to eradicate excessive compliance costs of the import process is stated in equation 6.

$$\Delta G_e^M = \Delta G_1 + \Delta G_2 \tag{6}$$

Within the case of imports, there is a long tradition of research on tariffs and their inefficiency costs. Assessing the economic welfare costs of a tariff can provide a comparison of the relative size of the economic inefficiency created by tariff and trade compliance costs.

The economic inefficiency of import tariffs can be seen in Figure 3.1, by the area of CGD. To quantify this familiar triangle of welfare cost, one should take into account the change in the quantity of imports demanded if the tariff has been withdrawn $(\Delta Q^M)_2$, which is expressed in equation 7.

$$(\Delta Q^M)_2 = t * \varepsilon^M * Q_4^M \quad (7)$$

$$\Delta G_t = 0.5 * t^2 * \varepsilon^M * Q_4^M \quad (8)$$

The economic welfare gain of eliminating tariffs, ΔG_t, can be measured by equation 8.

3.4 Export Compliance Costs and the Supply of Exportation

Figure 3.2 represents a similar framework that can be used to illustrate the effects of export compliance costs on the quantity of export and its impact on economic welfare. Where there is non-existence of compliance costs, the exporter would receive the free on board (FOB) price. The volume of exports can be expressed in foreign exchange units, with the FOB price defined as equal to one. Given the export supply function, S^oS^x, the level of export can be shown by Q_1^X.

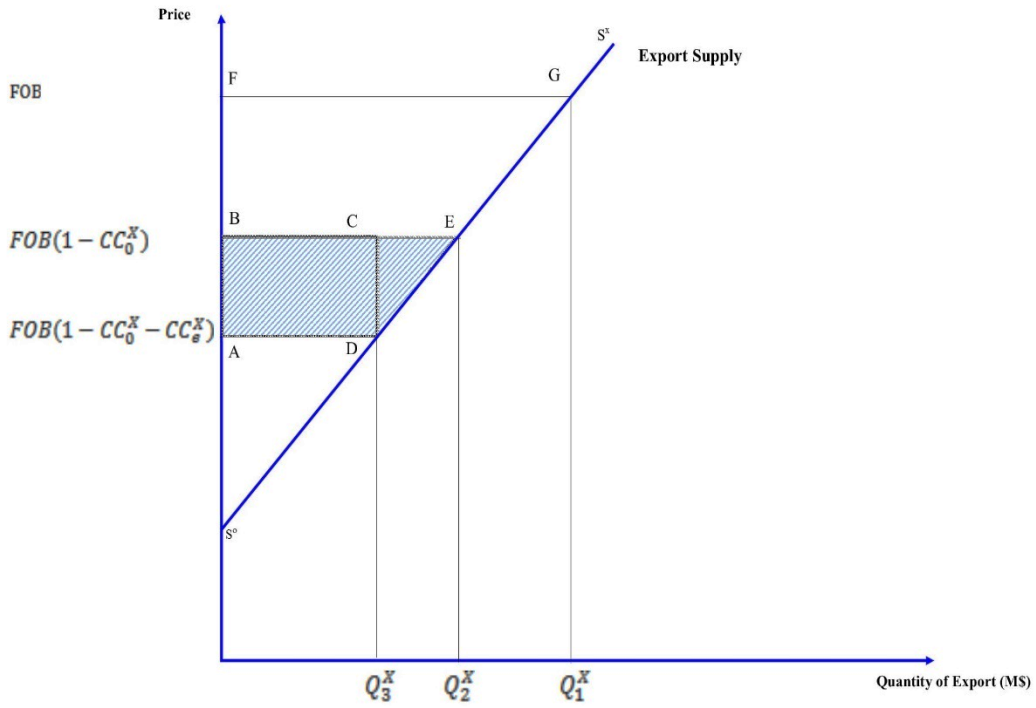

Figure 3.2: The Economic Effects of Compliance Costs to Export

In contrast, when a country imposes a rate of transaction costs on exports, CC^X, the exporters would receive the net remuneration that has fallen to FOB$(1-CC^X)$ and would export a lower quantity, Q_3^X. Presuming CC_0^X as an efficient rate of export compliance costs, the total quantity of exports would be Q_2^X, at this rate. The relationship between these rates of administrative compliance costs to export is identified in equation 9.

$$CC_0^X = CC^X - CC_e^X \tag{9}$$

CC_e^X is the excessive export transaction costs that can be eradicated from the trade administration procedures.

Since compliance costs of exportation are also calculated as a percentage of its dollar value, the remuneration received by the domestic producers of exportable goods, net of the export transaction costs, would be $(1-CC_0^X-CC_e^X)$. By implementing the

reforms to eliminate the CC_e^X, the remuneration received for a unit of export by the producer will rise to $(1 - CC_0^X)$. Therefore, the supply of exports would rise from Q_3^X to Q_2^X, that is indicated by $(\Delta Q^X)_1$. Equation 10 is the expression of this supply response.

$$(\Delta Q^X)_1 = Q_3^X * \varepsilon^X * CC_e^X \quad (10)$$

In which, $\mathcal{E}^X$ is the export supply elasticity and CC_e^X is the percentage of change in the price of exports from the elimination of the excess export compliance costs.

Economic welfare would be developed by eliminating the excessive compliance costs of export because fewer resources would be used for export of the current level of goods. This welfare gain from the alleviation of excessive compliance costs is depicted in Figure 3.2, by the rectangle ABCD that can be estimated via equation 11.

$$\Delta G_3 = Q_3^X * CC_e^X \quad (11)$$

A further welfare gain is achievable as a result of increase in the producers' prices for exports. The source of this economic welfare, shown in Figure 3.2, by the triangle area of DCE, is a rise in the quantity of exportation. The economic value received net of compliance costs from additional export sales (Q_3^XCEQ_2^X) is greater than the marginal cost of additional production (Q_3^XDEQ_2^X), which creates this economic gain of ΔG_4 that can be quantified by using Equation 12.

$$\Delta G_4 = 0.5 * Q_3^X * \varepsilon^X * (CC_e^X)^2 \quad (12)$$

Therefore, the total area of ABED, in Figure 3.2, represents the totality of economic welfare gained from the elimination of excessive export compliance costs. The expression of this gain, as shown in equation 13, is the summation of the results of equations 11 and 12.

$$\Delta G_e^X = \Delta G_3 + \Delta G_4 \quad (13)$$

In the current study, estimation of these economic welfare measurements is made for a trade administration reform by the coastal ECOWAS members and the SACU member countries.

Chapter 4

EMPIRICAL ANALYSIS AND RESULTS FOR ECOWAS

4.1 Introduction

The preceding chapter outlined the economic model and the estimation procedures that are applied in the empirical analysis of this chapter. The current chapter aims to explore the data on the coastal ECOWAS countries to empirically estimate the effects of a reduction of the country's import and export compliance costs to the level of a benchmark. It reports the subsequent impacts on the quantity of trade and the welfare gain of the countries. This magnitude value of change in the welfare gains is compared with the size of the economy and some other development indicators.

4.2 Data

To carry out the empirical estimates in this paper, the data on international trade for each coastal ECOWAS country is utilized. Data on merchandise imports and exports has been collected from the Direction of Trade Statistics issued by the IMF (2020). The time and monetary costs of compliance associated with import and export are compiled from the World Bank's Doing Business report (Doing Business, 2020a) and the rates of weighted average tariffs on imports have been gathered from the World Bank (2020b); see also Appendix A. Import elasticities of demand are acquired from the study by Ghodsi et al. (2016) which estimated elasticities for 167 countries using the semiflexible translog GDP function approach proposed by Kee et al. (2008). Export supply elasticities used in this analysis are the average elasticities of long-run export

supply for each country adjusted for including the general equilibrium impacts of price changes, which have been estimated by Tokarick (2014).

The Doing Business survey excluded gems, precious metals, and oil products in the process of calculating compliance costs of exports. The coastal ECOWAS countries' export data used in this study has also been adjusted to exclude the percentage share of these groups of goods according to the data extracted from the World Integrated Trade Solution database (WITS) (2020); see Appendix B for more details. The cross-border values for ECOWAS trade, which are subject to trade compliance costs (*CC*), are reported in Table 4.1, columns 1 and 3 (column 2 is a representation of the total value of exports before adjustment). The data indicate that Nigeria, Ghana, and Ivory Coast are respectively the three largest economies of the region, contributing more in merchandise trade as well. The weighted average rate of tariffs and the elasticities of import demand and export supply for each country are respectively presented in Table 4.1, columns 4, 5, and 6.

Table 4.1: The Value of Merchandise Imports, Exports, Tariff Rates, and Trade Elasticities

	Country	Q_4^M (millions 2019 USD)†	Q_3^X (millions 2019 USD)‡	Adjusted Q_3^X (millions 2019 USD)§	t ¶	ε^M ††	ε^X ‡‡
		1	2	3	4	5	6
1	Benin	2,697	1,024	981	15.25	-1.16	0.36
2	Cape Verde (Cabo Verde)	907	71	71	10.89	-0.95	0.36
3	Ivory Coast (Côte D'Ivoire)	11,759	11,366	9,184	10.17	-1.48	0.36
4	Gambia, The	476	23	23	18.08	-0.95	0.36
5	Ghana	11,649	17,759	6,914	10.34	-1.36	0.36
6	Guinea	2,605	4,535	2,705	11.29	-1.08	0.36
7	Guinea-Bissau	288	304	301	14.39	-0.94	0.36
8	Liberia	2,059	428	248	9.54	-0.94	0.36
9	Nigeria	43,326	66,401	3,904	8.52	-1.81	0.17
10	Senegal	8,147	4,347	2,982	11.52	-1.14	0.47
11	Sierra Leone	1,117	118	118	11.51	-1.00	0.36
12	Togo	1,135	1,860	1,737	12.85	-0.97	0.36
13	Total	86,164	108,235	29,168			
14	Average	7,180	9,020	2,431	12.03	-1.15	0.35

† Q_4^M: Total value of merchandise imports (IMF, 2020).
‡ Q_3^X: Total value of merchandise exports (IMF, 2020).
§ Adjusted Q_3^X: the value of merchandise exports (IMF, 2020), excluded from precious metals and fuels (WITS, 2020).
¶ t: Tariff rate (World Bank, 2020b).
†† ε^M: Demand elasticity of import (Ghodsi et al., 2016).
‡‡ ε^X: Supply elasticity of export (Tokarick, 2014).

In order to estimate the magnitude of excessive compliance costs of trade, the total import/export compliance costs of a shipment of goods should be measured for each of the ECOWAS countries and then compared with that of the benchmarks.

4.3 Trade Compliance Costs to Import

The present study is only focused on border and documentary compliance costs of trade. The total compliance time and cost to import are reported in Table 4.2. The first two columns are the hours and USD value of compliance time to import. The total time to import (Table 4.2, column1) is found by the summation of border and documentary compliance hours (Doing Business, 2020a). Taking into account the total time hours of delays for a shipment of imports, the average value of the shipment and the capital cost of waiting time are required to estimate the average monetary value of waiting time for a shipment of merchandise imports into a country. This relationship is expressed in equation 14, as follows:

$$Cost\ of\ waiting\ time\,(USD) = \left[Total\ time\ to\ trade\,(hours) * cost\ of\ capital * Shipment\ value\right] / 8760 \quad (14)$$

Based on the assessment of the World Bank on the cost of doing business, the average value of an import shipment is 50,000 USD (Doing Business, 2020c). The real cost of funds for the importer for a one-year period (8,760 hours) is assumed to be 12%, on average. The result of the estimation of the total cost of waiting time for each country is reported in Table 4.2, column 2. The total direct US dollar cost to import is the sum of border and documentary compliance costs, as of 2019, that is reported in column 3 (Doing Business, 2020a); see Appendix C for the details. Following this, the values of costs reported in columns 2 and 3 are added together to derive the total compliance cost to import as presented in column 4. These values for each ECOWAS country can be expressed as a percentage of a standard shipment value as specified by the World Bank's Doing Business Report of 50,000 USD (Table 4.2, column 5). These compliance cost rates, (CC^M), are what each of the countries imposes on a shipment of imports passing through official procedures of the ECOWAS countries ports. This research focuses only on the coastal members of the ECOWAS Commission.

Table 4.2: The Total Compliance Time and Cost to Import, as of 2019, and the Estimated Excess Cost to Import Compared to the Benchmark[§]

	Country	Total compliance time to import per shipment (hours)[†]	Cost of waiting time per shipment (USD)[‡]	Total direct compliance cost to import per shipment (USD)[†]	Total compliance cost to import per shipment (USD)	Total rate of compliance cost to import as a percentage value of a shipment $[CC^M]$	Total excess rate of cost to import $[CC_e^M]$, compared to Benin	Total excess rate of cost to import $[CC_e^M]$, compared to Singapore
		1	2	3	4 = 2+3	5	6	7
1	Gambia, The	119.00	81.51	478.00	559.51	1.12%	-	0.55%
2	Cape Verde	84.00	57.53	713.00	770.53	1.54%	-	0.97%
3	Benin	141.00	96.58	709.00	805.58	1.61%	Benchmark	1.04%
4	Guinea-Bissau	120.00	82.19	755.00	837.19	1.67%	0.06%	1.11%
5	Ivory Coast	214.00	146.58	723.00	869.58	1.74%	0.13%	1.17%
6	Togo	348.00	238.36	864.00	1102.36	2.20%	0.59%	1.64%
7	Ghana	116.00	79.45	1027.00	1106.45	2.21%	0.60%	1.64%
8	Guinea	235.00	160.96	989.00	1149.96	2.30%	0.69%	1.73%
9	Senegal	125.00	85.62	1247.00	1332.62	2.67%	1.05%	2.10%
10	Sierra Leone	202.00	138.36	1208.00	1346.36	2.69%	1.08%	2.12%
11	Liberia	361.00	247.26	1418.00	1665.26	3.33%	1.72%	2.76%
12	Nigeria	362.00	247.95	1641.00	1888.95	3.78%	2.17%	3.21%
13	Singapore	36.00	24.66	260.00	284.66	0.57%	-	Benchmark

[†] (Doing Business, 2020a).
[‡] According to equation 14.
§ Author's calculations

Some degree of compliance cost must accompany the process of cross-border trade of merchandise to ensure the health and security of residents. A variety of trade facilitation measures taken around the world could considerably decrease these costs while enhancing the quality of the services provided by customs and other government

trade organizations, that is a matter of the sustainable development goals (Peterson, 2017; Doing Business, 2020b; TFIG, 2020b, 2020c; United Nations, 2020b, 2020c). Based on Doing Business assessments, the majority of West African countries have also carried out some reforms towards simplification of the process of moving goods (Doing Business, 2020b), but there is still a long way to go to meet efficient conditions for international trade flows crossing borders. For instance, Nigeria has decreased the time needed to import and export via the implementation of joint inspections and electronic systems in 2019 and through the launch of e-payment of fees in 2020 (Doing Business, 2020b). However, it has the highest compliance cost rate amongst ECOWAS members that, on average, is 3.78% of the value of a shipment of goods (Table 4.2, row 12, and column 5).

Comparing the total rate of compliance costs to import for ECOWAS countries revealed that The Gambia, Cape Verde, and Benin have the lowest rate of compliance costs in comparison to others in the community (Doing Business, 2020a, 2020b). The Gambia and Cape Verde are the smallest countries of the territory with a surface area of only 11 and 4 thousand square kilometres respectively, which have very low levels of GDP and population. Benin is the country that has Cotonou, one of the six major port cities in ECOWAS that the trade corridors emanated from them (Torres & Van Seters, 2016). Benin has undertaken various reforms in the area of the management of imports and exports related to border and customs procedures (TFIG, 2020b).

These reforms consisted of the measures decreased the customs clearance time through the implementation of an electronic data interchange system in 2010, and customs integration via the implementation of an electronic single window system in 2013. Benin improved its port management system and enhanced its port infrastructure in

2014. Benin also imposed new rules for the transit of trucks in 2014 and reduced the required documents for importation in 2015. It undertook further development on its electronic single window system in 2016 to enhance cross border trade for both importers and exporters (Doing Business, 2020b). Hence, Benin is chosen as a benchmark country in the region with a lower level of compliance cost to import that is at 1.61% of the value of imported goods (Table 4.2; column 5, row 3) (Doing Business, 2020a, 2020b).

The other country that is considered as an appropriate performance target for ECOWAS members is Singapore, the successful forerunner of the Single Window system to facilitate international trade. A total compliance cost of import to Singapore is US$284.66, which is only 0.57% of the value of a shipment of imported goods (Table 4.2, row 13).

Columns 6 and 7 represent the amounts of inefficiency existing in ECOWAS countries in comparison to the benchmark countries. By subtracting the rates of compliance costs of the benchmark countries from the current rate of compliance costs of ECOWAS countries, the excess rate of compliance cost to import, (CC_e^M), is realized. This can be removed through the implementation of trade facilitation reforms in the Commission. Using Benin as the benchmark for the normal value of compliance cost to import, the potential saving in the importation costs for ECOWAS countries would be between 0.06% and 2.17% of the value of imports, and where Singapore is a benchmark, trade facilitation reforms result in a wider savings range of 0.55% to 3.21% of the importation value. Figure 4.1 presents both the rates of compliance costs as a percentage of the value of a standard import shipment and the estimated excessive rate of compliance costs to import using the benchmark efficiency levels of Benin and

Singapore. These three estimated parameter values are critical in determining the economic welfare gains from trade facilitation initiatives as they apply to the administration of imports.

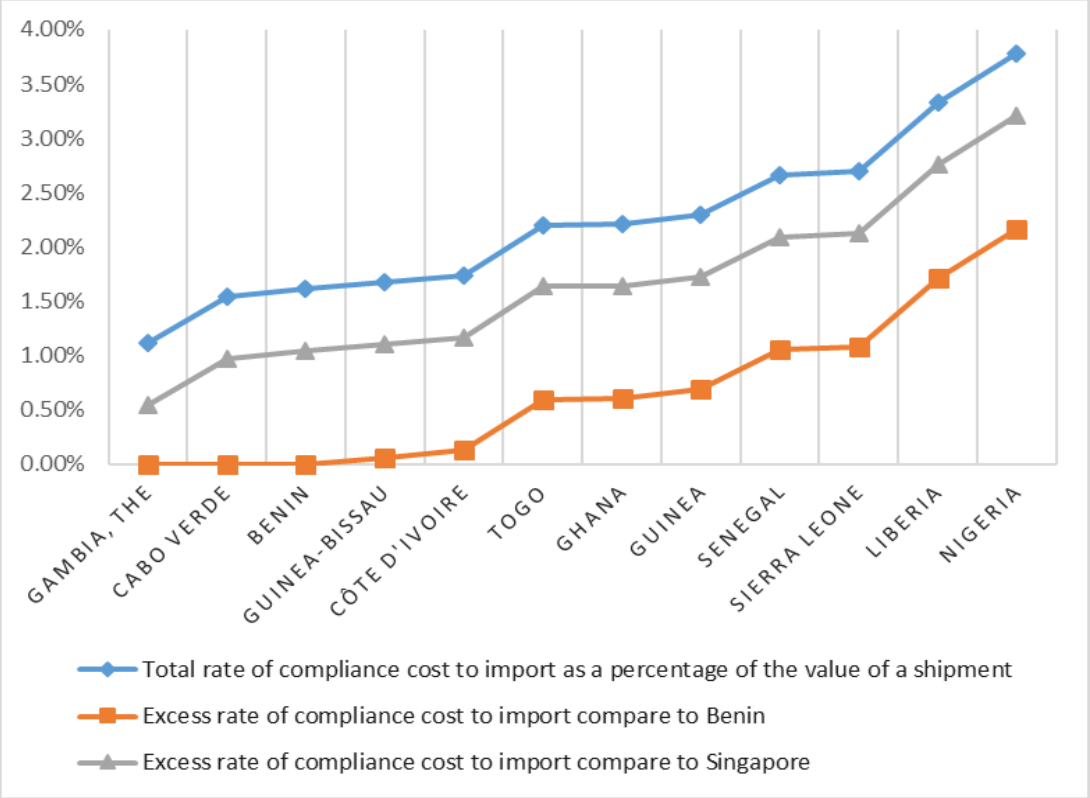

Figure 4.1: Total Rate of Compliance Cost to Import as a Percentage Value of a Shipment, and the Estimated Excess Rate of Cost Compare to the Benchmarks

By knowing the excess rate of compliance cost to import, tariff rates, the value of merchandise traded, and the demand elasticities of imports, the impacts on the economic welfare of ECOWAS countries can be estimated for changes in the price of imports brought about by the elimination of trade distortions. Further computations details are elaborated in Appendix D. The economic efficiency effects of reforms on import administration, expressed in equations 3, 5, 6, and 8 for imports, are presented in Tables 4.3 and 4.4, columns 2, 3, 4, and 6, respectively. Table 4.3 presents the

economic welfare impacts of using Benin as a benchmark. Table 4.4 presents the estimated welfare impacts when Singapore is used as a benchmark.

Table 4.3: The Economic Welfare Impacts of the Excess Compliance Cost to Import and Tariff, Using Benin as a Benchmark

	Country	$[(\Delta \boldsymbol{Q^M})_1 / \boldsymbol{Q_4^M}]$	$[\Delta G_1]$ (millions 2019 USD)	$[\Delta G_2]$ (millions 2019 USD)	$[\Delta G_e]$ (millions 2019 USD)	$[(\Delta \boldsymbol{Q^M})_2 / \boldsymbol{Q_4^M}]$	$[\Delta G_t]$ (millions 2019 USD)	$[\Delta G_e / \Delta G_t]$
		1	2	3	4 = 2+3	5	6	7= 4/6
1	Gambia, The	-	-	-	-	17.25%	7	-
2	Cape Verde	-	-	-	-	10.39%	5	-
3	Benin	-	-	-	-	17.72%	36	Benchmark
4	Guinea-Bissau	0.06%	0.18	0.02	0.21	13.47%	3	0.07
5	Ivory Coast	0.19%	15	2	17	15.00%	90	0.19
6	Togo	0.58%	7	1	8	12.49%	9	0.83
7	Ghana	0.82%	70	10	80	14.06%	85	0.95
8	Guinea	0.74%	18	2	20	12.15%	18	1.13
9	Senegal	1.20%	86	12	98	13.13%	62	1.58
10	Sierra Leone	1.08%	12	1	14	11.54%	7	1.82
11	Liberia	1.61%	35	3	39	8.93%	9	4.43
12	Nigeria	3.91%	939	163	1101	15.38%	284	3.88
13	ECOWAS (compared to Benin)	2.30%	1,182	195	1,377	14.62%	615	2.24

$[\Delta Q^M)_1 / Q_4^M]$, Percentage change in the quantity of imports from removing the excess cost of import.
$[\Delta G_1]$, Direct welfare gain from elimination of excessive economic resources used to import.
$[\Delta G_2]$, Welfare gain of removing CC_e^M , (whereas there is tariff), caused by the increase in importation.
$[\Delta G_e]$, Total economic welfare gain by removing CC_e^M .
$[(\Delta Q^M)_2 / Q_4^M]$, Percentage change in import quantity from elimination of tariffs.
$[\Delta G_t]$, Welfare gain of eliminating tariff.
$[\Delta G_e / \Delta G_t]$, Ratio of the total welfare gain of removing CC_e^M to that of tariffs elimination.

Table 4.4: The Economic Welfare Impacts of the Excess Compliance Cost to Import and Tariff, Using Singapore as a Benchmark

	Country	$[(\Delta \boldsymbol{Q^M})_1 / \boldsymbol{Q_4^M}]$	$[\Delta G_1]$ (millions 2019 USD)	$[\Delta G_2]$ (millions 2019 USD)	$[\Delta G_e]$ (millions 2019 USD)	$[(\Delta \boldsymbol{Q^M})_2 / \boldsymbol{Q_4^M}]$	$[\Delta G_t]$ (millions 2019 USD)	$[\Delta G_e / \Delta G_t]$
		1	2	3	4 = 2+3	5	6	7= 4/6
1	Gambia, The	0.52%	3	0	3	17.25%	7	0.41
2	Cape Verde	0.93%	9	1	10	10.39%	5	1.90
3	Benin	1.21%	28	5	33	17.72%	36	0.91
4	Guinea-Bissau	1.03%	3	0	4	13.47%	3	1.30
5	Ivory Coast	1.73%	138	22	159	15.00%	90	1.78
6	Togo	1.59%	19	2	21	12.49%	9	2.31
7	Ghana	2.24%	191	29	221	14.06%	85	2.60
8	Guinea	1.86%	45	6	51	12.15%	18	2.85
9	Senegal	2.39%	171	24	195	13.13%	62	3.17
10	Sierra Leone	2.13%	24	3	27	11.54%	7	3.60
11	Liberia	2.58%	57	6	63	8.93%	9	7.15
12	Nigeria	5.79%	1390	254	1644	15.38%	284	5.79
13	ECOWAS (compared to Singapore)	3.90%	2,077	354	2,430	14.62%	615	3.95

$[\Delta Q^M)_1 / Q_4^M]$, Percentage change in the quantity of imports from removing the excess cost of import.
$[\Delta G_1]$, Direct welfare gain from elimination of excessive economic resources used to import.
$[\Delta G_2]$, Welfare gain of removing CC_e^M , (whereas there is tariff), caused by the increase in importation.
$[\Delta G_e]$, Total economic welfare gain by removing CC_e^M .
$[(\Delta Q^M)_2 / Q_4^M]$, Percentage change in import quantity from elimination of tariffs.
$[\Delta G_t]$, Welfare gain of eliminating tariff.
$[\Delta G_e / \Delta G_t]$, Ratio of the total welfare gain of removing CC_e^M to that of tariffs elimination.

The first column in the tables presents the increase of between 2.30% (Table 4.3) and 3.90% (Table 4.4) of the quantity demanded of imports in the ECOWAS as a result of

reducing import compliance costs, with the biggest increase in the region being seen in Nigeria.

The economic welfare gain from removing the excessive compliance costs of importing is shown in column 2 of Tables 4.3 and 4.4. The cumulated gain of saving of resources for ECOWAS countries is between US$1182 million and US$2077 million annually for the existing quantity of imports (column 2). An additional gain to the welfare of the economy comes about with an increase in the quantity of imports. This incremental economic welfare gain ranged from US$195 to US$354 million per year (Tables 4.3 and 4.4, column 3). Column 4 of the above mentioned tables represents the summation of these estimated annual gains in the economic welfare of the Commission, which amount to between US$1377 million and US$2430 million. Around 70% of these economic benefits would occur for Nigeria. The share of economic gains among the coastal ECOWAS countries is depicted in Appendix E.

A perspective of the relative magnitude of the economic gains from trade administration reforms can be revealed when these values compare to the welfare gains occurring after elimination of all import tariffs. The weighted average rate of tariffs (Table 4.1, column 4) is large relative to the potential decrease in the rate of import compliance costs (Table 4.2, columns 6 and 7). Hence, the impact of eliminating import tariffs on the quantity of imports demanded is bigger, 14.62% versus 2.30% to 3.90% (Tables 4.3 and 4.4, columns 1 and 5). Nonetheless, the economic gain from the complete removal of all import tariffs (equation 8), annually US$615 million, is much less than the economic gain resulting from the reform of import administration (Tables 4.3 and 4.4, column 7).

The fundamental reason for this different economic welfare impact is that tariffs only create the traditional triangle deadweight loss of inefficiency as a result of a decrease in the consumer demand for importables and stimulation of producer supply of importables. Most of the price impact of tariffs is borne by consumers through the payment of increased tariff revenues to the government. Rather than being an economic welfare cost, this tariff revenue is a fiscal transfer to governments. In contrast, the compliance cost of trade administration is an economic resource cost for the ECOWAS community members.

4.4 Trade Compliance Costs to Export

Equations 9 to 13 are utilized to estimate the economic gains that would result from administrative reforms in the ECOWAS countries to reduce export compliance costs. In this regard, data is used on the quantity of export and supply elasticity of exports (Table 4.1), along with the estimated compliance cost to export (Table 4.5) of each country.

According to Table 4.1, the export level of coastal ECOWAS countries has been adjusted to consider only non-fuel and non-precious metal goods, as Doing Business measured the compliance costs of only these product groups (Doing Business, 2020c; WITS, 2020). For Nigeria, oil and gas account for more than 94% of its export values, which have been excluded from this study. Fuel export values are around 25%, 16%, 15%, and 13% for Ghana, Senegal, Liberia, and Ivory Coast, respectively. Diamonds and precious metals amount to approximately 40%, 36%, 28%, and 16% of exports of Guinea, Ghana, Liberia, and Senegal, respectively (WITS, 2020). Thus, the focus of investigation in this thesis on the export side is to estimate the potential economic gains

from trade facilitation reforms in the administration system of exportation for the remaining items.

Table 4.5: Total Compliance Time and Cost to Export (2019), and Estimated Rate of Excess Cost Compared to Benchmark Costs[§]

	Country	Total compliance time to export per shipment (hours) [†]	Cost of capital's locked time per shipment (USD) [‡]	Total direct compliance cost to export per shipment (USD) [†]	Total compliance cost to export per shipment (USD)	Total rate of compliance cost to export as a percentage value of a shipment $[CC^X]$	Total excess rate of cost to export $[CC_e^X]$ compared to Benin	Total excess rate of cost to export $[CC_e^X]$ compared to Singapore
		1	2	3	4 = 2+3	5	6	7
1	Togo	78	53.42	188	241.42	0.48%	-	-
2	Benin	126	86.30	434	520.30	1.04%	Benchmark	0.28%
3	Gambia, The	157	107.53	514	621.53	1.24%	0.20%	0.48%
4	Senegal	87	59.59	643	702.59	1.41%	0.36%	0.64%
5	Ghana	197	134.93	645	779.93	1.56%	0.52%	0.80%
6	Ivory Coast	323	221.23	559	780.23	1.56%	0.52%	0.80%
7	Cape Verde	96	65.75	766	831.75	1.66%	0.62%	0.90%
8	Sierra Leone	127	86.99	779	865.99	1.73%	0.69%	0.97%
9	Guinea-Bissau	178	121.92	745	866.92	1.73%	0.69%	0.97%
10	Guinea	211	144.52	906	1050.52	2.10%	1.06%	1.34%
11	Nigeria	202	138.36	1036	1174.36	2.35%	1.31%	1.59%
12	Liberia	337	230.82	1443	1673.82	3.35%	2.31%	2.59%
13	Singapore	12	8.22	372	380.22	0.76%	-	Benchmark

[†] (Doing Business, 2020a).
[‡] According to equation 14.
§ Author's calculations.

By adding the direct compliance cost of export to the cost of the time spent to export, the average total compliance cost per shipment for merchandise exportation was calculated and ranged between US$241 to US$1674 (Table 4.5, columns 1 to 4); see Appendix C for the details. The total compliance cost to export as a percentage of the given value of US$50000 for a shipment of goods, CC^X, which varies between 0.48% and 3.35%, is presented in Table 4.5, column 5.

In order to estimate the impact of trade facilitation efforts that could improve the efficiency of international trade administration, a benchmark is required to estimate the practical range of possibilities. Togo and Benin have the lowest rate of export compliance costs among ECOWAS countries. Due to various reforms carried out by Benin, it is one of the countries with the lowest rate of costs associated with the importation as well, while Togo stands in the sixth place. Hence, again Benin and Singapore are considered to be export compliance cost benchmarks for coastal ECOWAS countries, with corresponding rates of 1.04% and 0.76% per shipment value, respectively. By subtracting these benchmark rates of normal compliance costs to export from the current compliance costs rates of ECOWAS members, the excessive rates of compliance costs, CC_e^X, (Table 4.5, columns 6 and 7) will be obtained as the objective for trade facilitation reforms. The range of CC_e^X is from 0.20% to 2.31% in comparison with Benin and from 0.28% to 2.59% in comparison with Singapore. These potential cost savings, similar to an exportation tax, can be utilized to finance the reforms on administrative inefficiency of the administration procedures of merchandise exportation. Figure 4.2 presents both the rates of compliance costs as a percentage of the value of a standard export shipment and the estimated excessive rate of compliance costs to export using the benchmark efficiency levels of Benin and

Singapore. These three estimated parameter values are critical in determining the economic welfare gains from trade facilitation initiatives as they apply to the administration of exports.

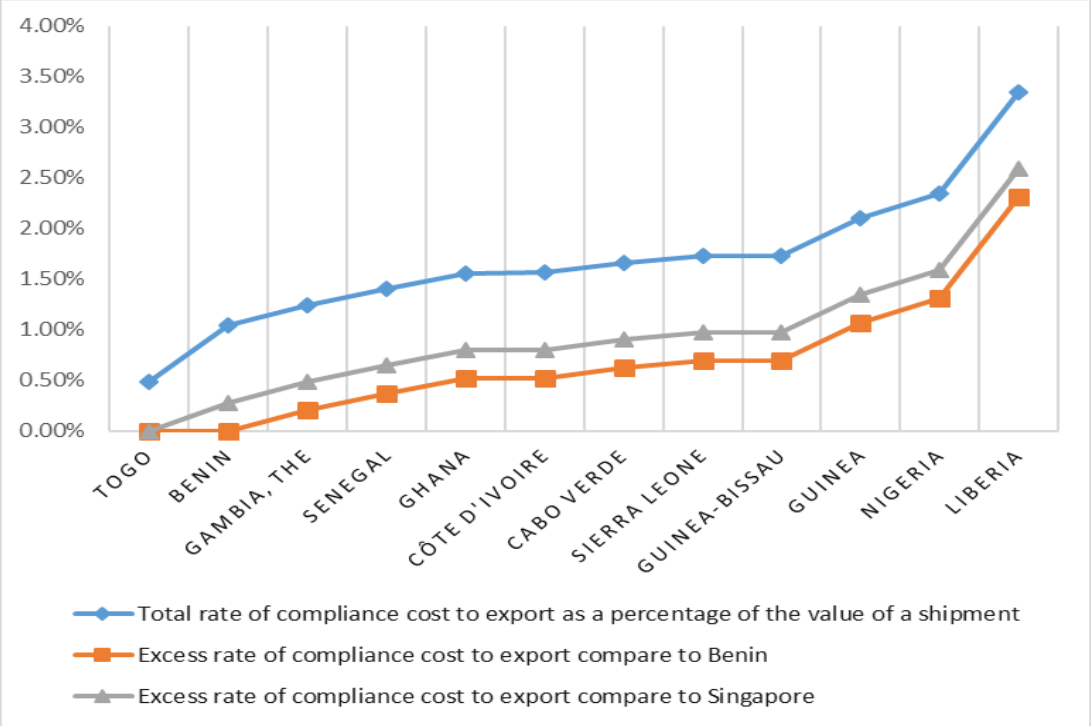

Figure 4.2: Total Rate of Compliance Cost to Export as a Percentage Value of a Shipment, and the Estimated Excess Rate of Cost Compare to the Benchmarks

Tables 4.6 and 4.7 report on how the presence of export facilitation can impact the economy of ECOWAS members. Table 4.6 presents the economic welfare impacts of using Benin as a benchmark. Table 4.7 represents the economic impacts when Singapore is used as a benchmark. Further computations details are elaborated in Appendix D.

The percentage change in each country's export levels can be derived from equation 10 accompanied by data on current merchandise export quantities, and the supply elasticity of export (Table 4.1). The estimates show that the average change in export

volumes is an increase of 0.20% to 0.29%. However, for Liberia, it is between 0.83% and 0.93% (Tables 4.6 and 4.7, column 1). Equations 11 to 13 are used to measure the economic gains that result from the reduction in export compliance costs.

Table 4.6: The Economic Impacts of the Excess Compliance Cost of Export, Using Benin as a Benchmark

	Country	$[(\Delta \boldsymbol{Q^X})_1 / \boldsymbol{Q_3^X}]$	$[\Delta G_3]$ (millions 2019 USD)	$[\Delta G_4]$ (millions 2019 USD)	$[\Delta G^X]$ (millions 2019 USD)
		1	2	3	4 = 2+3
1	Togo	-	-	-	-
2	Benin	Benchmark	-	-	-
3	Gambia, The	0.07%	0.05	0.00	0.05
4	Senegal	0.17%	10.87	0.01	10.88
5	Ghana	0.19%	35.90	0.03	35.93
6	Ivory Coast	0.19%	47.74	0.04	47.79
7	Cape Verde	0.22%	0.44	0.00	0.45
8	Sierra Leone	0.25%	0.81	0.00	0.81
9	Guinea-Bissau	0.25%	2.09	0.00	2.09
10	Guinea	0.38%	28.69	0.05	28.74
11	Nigeria	0.22%	51.07	0.06	51.13
12	Liberia	0.83%	5.72	0.02	5.74
13	ECOWAS (compared to Benin)	0.20%	183.39	0.23	183.62

$[(\Delta Q^X)_1 / Q_3^X]$, the percentage change in quantity of export from removing the excess compliance costs of export.
$[\Delta G_3]$, direct welfare gain from reducing export excess transactions costs.
$[\Delta G_4]$, welfare gain caused by removing excessive compliance costs and export expansion.
$[\Delta G^X]$, the total economic welfare gain from reducing export excess compliance costs.

Table 4.7: The Economic Impacts of the Excess Compliance Cost of Export, Using Singapore as a Benchmark

	Country	$[(\Delta \boldsymbol{Q}^{\boldsymbol{X}})_1 / \boldsymbol{Q}_{\boldsymbol{3}}^{\boldsymbol{X}}]$	$[\Delta G_3]$ (millions 2019 USD)	$[\Delta G_4]$ (millions 2019 USD)	$[\Delta G^X]$ (millions 2019 USD)
		1	2	3	4 = 2+3
1	Togo	-	-	-	-
2	Benin	0.10%	2.75	0.00	2.75
3	Gambia, The	0.17%	0.11	0.00	0.11
4	Senegal	0.30%	19.22	0.03	19.25
5	Ghana	0.29%	55.27	0.08	55.35
6	Ivory Coast	0.29%	73.47	0.11	73.58
7	Cape Verde	0.33%	0.64	0.00	0.65
8	Sierra Leone	0.35%	1.14	0.00	1.15
9	Guinea-Bissau	0.35%	2.93	0.01	2.94
10	Guinea	0.48%	36.27	0.09	36.36
11	Nigeria	0.27%	62.01	0.08	62.10
12	Liberia	0.93%	6.41	0.03	6.44
13	ECOWAS (compared to Singapore)	0.29%	260.24	0.43	260.67

$[(\Delta Q^X)_1 / Q_3^X]$, the percentage change in quantity of export from removing the excess compliance costs of export.
$[\Delta G_3]$, direct welfare gain from reducing export excess transactions costs.
$[\Delta G_4]$, welfare gain caused by removing excessive compliance costs and export expansion.
$[\Delta G^X]$, the total economic welfare gain from reducing export excess compliance costs.

The cumulative value of these welfare economic gains, for the exportation of non-oil and non-gold groups of goods, is between US$183.62 million to US$260.67 million annually (Tables 4.6 and 4.7, column 4, row 13). Ivory Coast, Nigeria and Ghana gain the most from the export facilitation measures. The share of economic gains among the coastal ECOWAS countries is depicted in Appendix E.

4.5 Overall Results

As reported in Tables 4.8 and 4.9, the facilitation of both imports and exports and reduction of compliance costs to the levels of Benin and Singapore would result in an annual economic welfare gain of approximately US$1.6 billion to US$2.7 billion (2019 prices) for ECOWAS, respectively (column 1).

While the main concern of the economists about the imposition of import tariffs in ECOWAS has been the magnitude of their economic inefficiency costs (Zouhon-Bi & Nielsen, 2007), the results of this study demonstrate that the economic welfare cost of the inefficient administration of cross-border trade is much larger. As shown in Tables 4.8 and 4.9, column 2, for the ECOWAS Commission, the estimated economic welfare benefits of removing the excessive compliance costs of trade (ΔG_e) is 2.5 to 4.4 times greater than the economic welfare gain of a complete removal of the import tariffs (ΔG_t).

At the present time, there are very few studies that have attempted to estimate the actual or potential economic welfare gains from trade facilitation. Most studies only assess the impact of the expansion of trade facilitation on the expansion of the flows of imports and exports (Olayiwola et al., 2015; Turkson, Adjei & Barimah, 2020).

Table 4.8: The Economic Impacts of Tariff and Total Excess Compliance Cost to Trade, Using Benin as a Benchmark

	Country	[ΔG_e] (millions 2019 USD)	[ΔG_e / ΔG_t]	[ΔG_e/ GDP] †	[ΔG_e/ EDU] ‡	[ΔG_e/ HLH] §	[ΔG_e/ Ass] ¶
		1	2	3	4	5	6
1	Benin	0	-	-	-	-	-
2	Cape Verde	0.45	0.09	0.02%	0.43%	0.72%	0.53%
3	Ivory Coast	65.11	0.73	0.11%	2.54%	8.74%	6.70%
4	Gambia, The	0.05	0.01	0.00%	0.11%	0.35%	0.02%
5	Ghana	116.17	1.37	0.17%	4.35%	15.88%	10.65%
6	Guinea	48.93	2.74	0.36%	0.14%	50.83%	7.44%
7	Guinea-Bissau	2.30	0.82	0.17%	8.05%	28.90%	1.64%
8	Liberia	44.59	5.08	1.45%	56.20%	103.50%	8.31%
9	Nigeria	1,152.61	4.06	0.26%	6.36%	48.29%	31.02%
10	Senegal	108.55	1.76	0.46%	9.90%	53.09%	10.79%
11	Sierra Leone	14.36	1.93	0.36%	5.10%	19.76%	2.94%
12	Togo	7.60	0.83	0.14%	2.56%	12.71%	2.51%
13	ECOWAS (compared to Benin)	1,560.72	2.54	0.24%	5.94%	33.42%	15.34%

[ΔG_e], the total economic gain from elimination of excess trade compliance costs, (while there is tariff).
[ΔG_e/ ΔG_t], Ratio of total gain from reduction of excess trade compliance costs to that of removing duty.
[ΔG_e/ GDP], Total economic welfare gain from reduced excessive trade compliance costs as a percentage of GDP.
[ΔG_e/ EDU], Ratio of ΔG_e/ GDP to EDU/GDP.
[ΔG_e/ HLH], Ratio of ΔG_e/ GDP to HLH/GDP.
[ΔG_e/ Ass], Ratio of ΔG_e/ GDP to Ass/GDP.
† The current aggregation of coastal ECOWAS countries' GDP (2019) is US$643 billion (World Bank, 2020b).
‡ EDU; total government expenditure on education (2018) as a ratio of its GDP (World Bank, 2020b). It is 4.09% as a weighted average for coastal ECOWAS countries.
§ HLH; total government expenditure on health (2017) as a ratio of its GDP (World Bank, 2020b). It is 0.73% for coastal ECOWAS countries, on average.
¶ Ass; net official development assistance received by each country (2018) (World Bank, 2020a) as a ratio of its GDP. The aggregated assistance received by coastal ECOWAS countries was US$9316 million.

Table 4.9: The Economic Impacts of Tariff and Total Excess Compliance Cost to Trade, Using Singapore as a Benchmark

	Country	[ΔG_e] (millions 2019 USD)	[ΔG_e / ΔG_t]	[ΔG_e/ GDP] †	[ΔG_e/ EDU] ‡	[ΔG_e/ HLH] §	[ΔG_e/ Ass] ¶
		1	2	3	4	5	6
1	Benin	36.00	0.99	0.25%	6.20%	22.44%	6.25%
2	Cape Verde	10.42	2.03	0.53%	10.16%	16.89%	12.43%
3	Ivory Coast	232.96	2.60	0.40%	9.07%	31.27%	23.98%
4	Gambia, The	3.18	0.43	0.18%	7.42%	24.01%	1.26%
5	Ghana	275.87	3.26	0.41%	10.32%	37.72%	25.30%
6	Guinea	87.33	4.89	0.64%	24.98%	90.72%	13.28%
7	Guinea-Bissau	6.57	2.35	0.49%	23.00%	82.60%	4.69%
8	Liberia	69.11	7.88	2.25%	87.10%	160.41%	12.87%
9	Nigeria	1,706.27	6.01	0.38%	9.41%	71.48%	45.92%
10	Senegal	214.48	3.48	0.91%	19.55%	104.89%	21.32%
11	Sierra Leone	27.87	3.75	0.71%	9.90%	38.35%	5.71%
12	Togo	21.02	2.31	0.39%	7.09%	35.17%	6.96%
13	ECOWAS (compared to Singapore)	2,691.07	4.38	0.42%	10.24%	57.62%	26.45%

[ΔG_e], the total economic gain from elimination of excess trade compliance costs, (while there is tariff).
[ΔG_e/ ΔG_t], Ratio of total gain from reduction of excess trade compliance costs to that of removing duty.
[ΔG_e/ GDP], Total economic welfare gain from reduced excessive trade compliance costs as a percentage of GDP.
[ΔG_e/ EDU], Ratio of ΔG_e/ GDP to EDU/GDP.
[ΔG_e/ HLH], Ratio of ΔG_e/ GDP to HLH/GDP.
[ΔG_e/ Ass], Ratio of ΔG_e/ GDP to Ass/GDP.
† The current aggregation of coastal ECOWAS countries' GDP (2019) is US$643 billion (World Bank, 2020b).
‡ EDU; total government expenditure on education (2018) as a ratio of its GDP (World Bank, 2020b). It is 4.09% as a weighted average for coastal ECOWAS countries.
§ HLH; total government expenditure on health (2017) as a ratio of its GDP (World Bank, 2020b). It is 0.73% for coastal ECOWAS countries, on average.
¶ Ass; net official development assistance received by each country (2018) (World Bank, 2020a) as a ratio of its GDP. The aggregated assistance received by coastal ECOWAS countries was US$9316 million.

The results of this study are focused on the potential cost savings from trade facilitation initiatives. These initiatives are comparable to what was implemented by Singapore. In 1986, Singapore introduced a series of trade facilitation reforms that greatly decreased the costs of what was an inefficient system of trade administration. By 2010, the estimated annual savings from the TradeNet system introduced in Singapore in 1986 amounted to US$1 billion a year (UNECE (United Nations Economic Commission for Europe), 2010). The success of Singapore has caused a number of countries, such as Benin, Togo, Kenya, and Mozambique to introduce a Single Window system similar to the TradeNet system. In all cases, very substantial savings in costs have been realized (UNECE, 2019; Doing Business, 2020b).

In comparing the worth of resources saved in an efficient system of goods clearance with other macroeconomic indicators, the annual economic gain achieved through the reforms would amount to 0.24% to 0.42% of the total GDP for the coastal ECOWAS members (column 3). In Liberia, the waste of resources is as high as 1.45% to 2.25% of the value of its GDP. This is the economic loss that residents would lose annually if the proposed reforms are not undertaken.

Health and education are of sustainable development goals (SDGs 3 & 4). The percentages of GDP governments spend on health and education is one of the indicators for evaluating government performance in partnership with the goals for sustainable development (SDG 17). The economic welfare gained from trade facilitation for these West African countries if they could reach the target system of Singapore, is about 10% and 58% of their budgets which is allocated for education and health, respectively (Table 4.9, row 13, columns 4 and 5). The potential economic gain of decreasing Liberia's compliance costs, only to Benin's level, is more than the

government's total health expenditure. These place great emphasis on the importance of trade facilitation measures to help the countries reach their sustainable development goals faster.

The total potential welfare gain for the ECOWAS economic community can also be compared to the total "net official development assistance received" (US$9316 million) in 2018. This comparison indicates more than 15% to 26% of the value of loans and grants received by coastal ECOWAS members could be achieved through the reforms that facilitate the trade across borders (Column 6). This ratio is even higher for Nigeria, around 31% to 46% of net official assistance.

Chapter 5

EMPIRICAL ANALYSIS AND RESULTS FOR SACU

5.1 Introduction

This chapter is devoted to the analysis of the economic effects of excessive trade compliance costs for the member countries of SACU. In this regard, the economic impacts on the level of imports and exports and the welfare gain are estimated through the expressions introduced in the methodology chapter. It concludes by reporting the overall results and make a comparison of the magnitude of the welfare gain with some economic indicators.

5.2 Data

To estimate the change in the level of imports and exports and the associated changes in economic welfare arising from the proposed reforms, international import and export data for each of the SACU countries is utilized from IMF (2019). Actual values of the rates of trade compliance time and costs for both imports and exports are obtained from Doing Business (2020a) and weighted average import tariff rates are available from the World Bank (2019a). Import demand and export supply elasticities are estimated by Ghodsi et al. (2016) and Tokarick (2014), respectively, as it has been explained with more details in chapter 4.

The data on quantities of imports to the SACU countries are adjusted to avoid double counting the imports arriving to South Africa or Namibia that are transhipped to other SACU countries and counted as imports of the second country (more details are

provided in Appendix I). Similarly, export values of the interior SACU countries are adjusted to reflect the fact that not all of their exports will be shipped via South Africa or Namibia to third countries by sea. The exports of diamonds and precious metals are cases in point. The values of the border-crossing intra-SACU trade flows that are subject to the trade compliance costs are presented in Table 5.1, columns 2 and 4 (columns 1 and 3 are representation of the total value of exports before adjustment). The weighted average values for tariffs and the import demand and export supply elasticities by country are reported in Table 5.1, columns 5, 6, and 7, respectively.

Table 5.1: Value of Merchandise Imports, Exports, Tariff Rates, and Trade Elasticities

	Country	Q_4^M (millions 2018 US$)†	Adjusted Q_4^M (millions 2018 US$)†	Q_3^X (millions 2018 US$)†	Adjusted Q_3^X (millions 2018 US$)	t ‡	ε^M §	ε^X ¶
		1	2	3	4	5	6	7
1	Botswana	6211	6,211	5,969	-	3.40%	−1.14	0.84
2	Namibia	6410	5,742	6,959	4,330	2.99%	−1.08	1.07
3	Eswatini	1978	1,978	2,015	-	4.61%	−0.97	1.07
4	Lesotho	1301	1,301	1,502	-	4.61%	−0.95	1.07
5	South Africa	127254	116,844	100,139	100,139	4.61%	−1.28	0.88

Sources:
† IMF (2019).
‡ Based on the SACU agreement, the goods are duty-free while moving inside the customs union (SACU 2002). The weighted average of the tariff rates that each member charges on the goods when they import directly from non-SACU countries is extracted from World Bank (2019a). The effective tariff rate has used in the calculations of this study is the weighted average of the tariff rates of a SACU country based on the tariff rate of the initial importing country with the weights determined by the percentage of imports entering via each of the initial country of import.
§ Ghodsi et al. (2016).
¶ Tokarick (2014).
$\boldsymbol{Q_4^M}$, The total CIF value of merchandise imports, shipped across country's border
$\boldsymbol{Q_3^X}$, The total FOB value of merchandise exports, shipped by SACU countries via coastal ports
t, Effective tariff rate; ε^M, Import demand elasticity; ε^X, Export supply elasticity

To estimate the potential magnitude of the excessive trade compliance costs, the total compliance costs within the process of the import/export of a shipment of goods must be measured for each of the SACU member countries and compared with that of the benchmark countries.

5.3 Trade Compliance Costs to Import

For the estimation of the gains from the reduction of trade transactions costs, again this part of study focuses only on the reduction of border and documentary compliance times and costs. The total compliance time and compliance cost to import are presented in Table 5.2. The total time to import as the summation of border and documentary compliance hours is presented in column 1 (Doing Business 2020a); see Appendix G for the details. The total monetary cost of time delays is estimated using equation 14 and represented in column 2. Then, the sum of US dollar value of border and documentary compliance cost (Doing Business 2020a) (Table 5.2, column 3) is added to the capital cost of waiting time for each shipment to give the total compliance cost to import (TCCM) (column 4). The values of TCCM for each of the SACU countries expressed as a percentage of the World Bank standard shipment value for imports (US$50,000) is reported in Table 5.2, column 5. These rates of compliance costs are what each of the countries imposes on a shipment of imports as it moves from the port of South Africa through the official procedures of the internal SACU countries.

Table 5.2: Total Compliance Time and Cost to Import, as of 2018

	Country	Total compliance time to import (hours)†	Cost of waiting time per shipment (US$)‡	Total direct compliance cost to import (US$)†	Total compliance cost to import (US$)	Total rate of compliance cost to import as a percentage of shipment value
		1	2	3	4 = 2+3	5
1	Botswana	6.8	4.66	164.7	169.36	0.34%
2	Namibia	8.8	6.03	207.5	213.53	0.43%
3	Eswatini	6.7	4.59	210	214.59	0.43%
4	Lesotho	5.5	3.77	240	243.77	0.49%
5	South Africa	123	84.25	749	833.25	1.67%
6	Mozambique	25	17.12	459	476.12	0.95%
7	Singapore	36	24.66	260	284.66	0.57%

Source: † Doing Business (2020a).
‡ According to equation 14.

The importation of goods through South Africa imposes a rate of trade compliance costs equivalent to 1.67% of the value of the imported goods, this is shown in Table 5.2, row 5, column 5. After passing through these importing formalities a further compliance cost is imposed by the inland countries as the goods are imported into the individual countries. For Botswana, the additional compliance costs are equal to 0.34% of the value of the goods. Due to recent trade facilitation reforms, Botswana has the lowest second-stage importation costs of any of SACU inland countries (World Bank, 2018a; Doing Business, 2020a, 2020b). Namibia, Eswatini and Lesotho have additional customs compliance costs that amount to 0.43%, 0.43%, and 0.49%, respectively. The combined rates of the compliance costs to imports imposed on South Africa and the ultimate country of importation are reported in Table 5.3, column 2.

Table 5.3: The Estimates of the Actual Rate of Cost to Import and the Estimated Rate of Excess Cost to Import †

	Country	[CC^M]		[CC_e^M], **compared to BWA & MOZ**		[CC_e^M], **compared to BWA & SNG**	
		Individual country's borders cost	Total cost, (passing through ZAF)	Individual country's borders cost	Total cost, (passing through ZAF)	Individual country's borders cost	Total cost, (passing through ZAF)
		1	2	3	4	5	6
1	Botswana	0.34%	2.01%	0.00%	0.71%	0.00%	1.10%
2	Namibia	0.43%	2.09%	0.09%	0.80%	0.09%	1.19%
3	Eswatini	0.43%	2.10%	0.09%	0.80%	0.09%	1.19%
4	Lesotho	0.49%	2.15%	0.15%	0.86%	0.15%	1.25%
5	South Africa	1.67%	1.67%	0.71%	0.71%	1.10%	1.10%

† Author's calculations
Note: Some of Botswana's imports come via the ports of Namibia. The total rate of cost to import before reform is 0.77%, which can be decreased by 0.09% with any reform, as the Namibian trade costs are assumed to be reduced to that of Botswana.
[CC^M], Total rate of cost to import, before reforms
[CC_e^M], Total excess rate of cost to import
BWA, Botswana; MOZ, Mozambique; SNG, Singapore; ZAF, South Africa.

As it is shown in Table 5.3, the combined rates of compliance costs are lowest at 1.67%, for goods imported by South Africa and remaining in South Africa. For goods that are ultimately used in the inland countries, the rate of compliance costs ranges from 2.01% in Botswana to 2.15% in Lesotho.

A small amount of goods is imported via the port in Namibia. This port is mainly used to export raw materials. However, it is relatively efficient, with custom compliance costs for Botswana of 0.77% and only 0.43% for Namibia. However, the shipping costs to Namibia, with its small amounts of cargo, will generally be higher than shipping via South Africa, except for a selected number of high-volume raw materials.

In summary, there are three different possible avenues for importing goods into a SACU country. First, goods may come directly into the country. This may be either air shipments or direct imports by South Africa and Namibia. The rates of compliance costs for these importations are shown in Table 5.3, column 1. Second, goods can first be imported into South Africa and then shipped to a second country. The rates of compliance costs associated with the administration of these imports are reported in Table 5.3, column 2. Finally, a small amount of goods is imported into Botswana via ports or airports in Namibia. The last two avenues can be depicted as shown in Appendix H to illustrate the further compliance costs of two-stage importation and its economic impacts, with more details.

For all countries, a degree of customs compliance costs is necessary. Hence, as mentioned in the previous chapter, for the estimation of the impact of trade facilitation efforts that could bring about improvements in the efficiency of the administration of international trade, a benchmark is required to estimate what is the practical range of possibilities. The two countries in the region that have been most successful in implementing trade facilitation reforms to reduce the compliance time and cost to trade are Mozambique and Botswana.

Some countries in the region such as Mozambique have undertaken reforms in the area of the management of import and exports related to border and customs administration (TFIG, 2020a, 2020b). These reforms consisted of a reform of the administrative system for customs in 2010, implemented an electronic single window system in 2014, improved the infrastructure at the Maputo-Matola port complex in 2018, and streamlined the submission of documents for imports and simplified export documentary compliance in 2019. As a result of these reforms, Mozambique has the

lowest cost of trading across borders of any coastal country in region, with the exception of Mauritius (World Bank, 2018b, 2019; Doing Business, 2020b).

Botswana, Lesotho, and Eswatini implemented an automated system of customs management. In the Customs of Botswana and Eswatini, an electronic interchange system was implemented. Botswana introduced a scanner, and speeded up the customs clearance on its border with South Africa (Doing Business, 2020b).

In the analysis that follows, Mozambique (MOZ) and Singapore (SNG) are chosen as appropriate targets that could be reached by South Africa, while the actual performance of Botswana is used as the benchmark that could be reached through reform by Namibia and the inland countries of Lesotho and Eswatini.

As reported in Table 5.2, row 6, Mozambique has a total compliance cost for imports of US$476.12, which on average is 0.95% of the value of a shipment of imported goods. It is clearly much more efficient than South Africa, with a total compliance cost to import of US$833.25 per shipment, which in turn is a rate of compliance costs of 1.67% of the value of imported goods. The second case selected for comparison is Singapore, a pioneer in trade facilitation reform, has total compliance costs for imports of only US$284.66 per shipment, equivalent to only 0.57% of the value of each shipment (Table 5.2, row 7). South Africa, with its advanced information technology industry, sophisticated banking organisations and highly educated public sector, should be able to achieve either one of these benchmarks. The same logic applies to the development of a benchmark of costs associated with the second importation of the goods from South Africa to Namibia and the landlocked countries of Lesotho, Eswatini and Botswana. In this case, the actual performance of Botswana, with a rate

of customs compliance costs of only 0.34% of the value of the imported goods, is considered as the benchmark for the compliance costs associated with the importation from South Africa.

The rates of compliance costs of these benchmark countries are subtracted from the current compliance costs of the SACU countries to estimate the excessive rate of compliance costs to import that can be removed to reach the potential efficiency gains of trade facilitation reforms. These are presented in Table 5.3, columns 3 and 4, using Mozambique and Botswana as benchmarks. Where the actual performance of Singapore and Botswana are used as the benchmark rates for "normal" rates of trade compliance costs, the potential efficiency improvements are reported in Table 5.3, columns 5 and 6. The savings in the cost of imports for SACU that would be realized through a trade facilitation reform would range from 0.71% to 0.86% of the value of imports when using Mozambique as the benchmark value for "normal" compliance costs (Column 4), and it would be between 1.10% and 1.25% when Singapore is used (Column 6). More details are provided in Appendix I (case of Mozambique) and Appendix K (case of Singapore).

Figure 5.1 shows both the rates of compliance costs as a percentage of the value of a standard shipment of import and the estimated excessive rate of compliance costs using the benchmark efficiency levels of Botswana, Mozambique and Singapore.

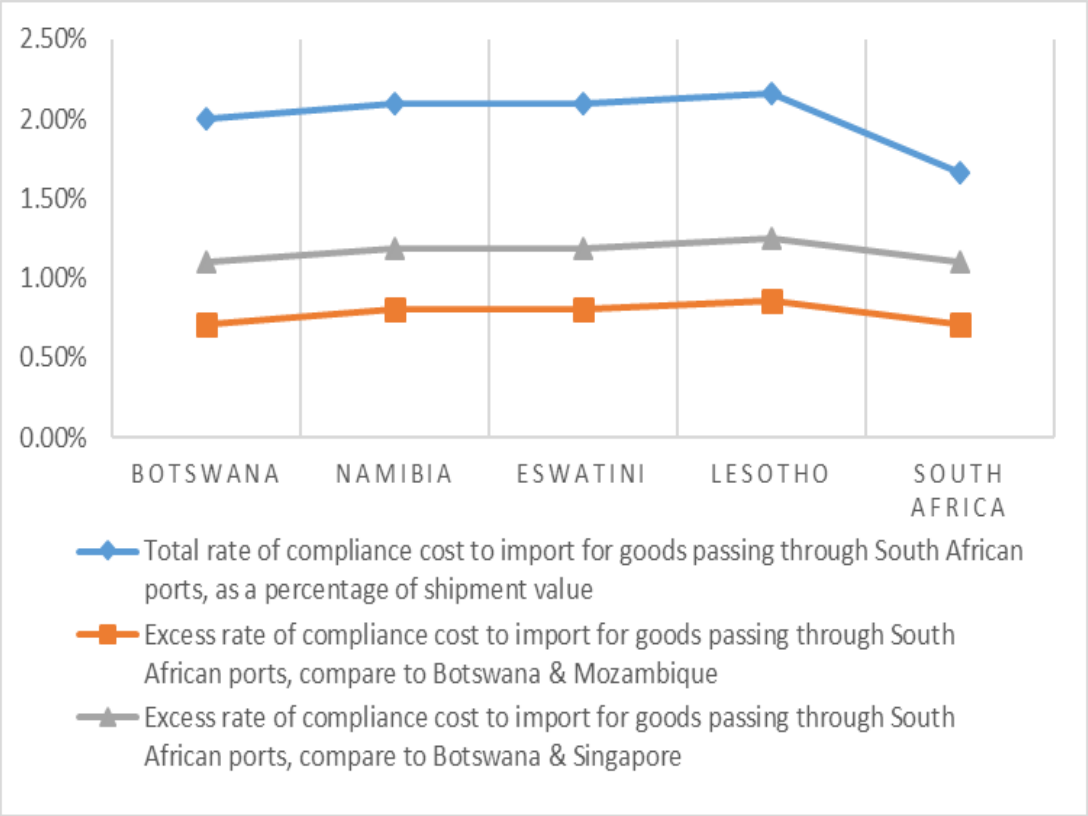

Figure 5.1: SACU, Total Rate of Compliance Cost to Import as a Percentage Value of a Shipment, and the Estimated Excess Rate of Cost Compare to the Benchmarks

By considering the excessive rate of compliance cost to import, rate of tariff, the value of import merchandise, and the demand elasticity of import, therefore, the impacts of changes in the price of imports arising from the elimination of trade distortions can be estimated for the economic welfare of SACU member countries. The economic efficiency welfare gains achievable from the trade administration reforms as expressed by equations 3, 5, 6, and 8 for imports are presented in Table 5.4, columns 2, 3, 4, and 6, respectively. The first 6 rows of the table shows that the economic impacts of using Botswana and Mozambique as of benchmarks, and the following rows of section b represent the impacts when Botswana and Singapore are used as of benchmarks. Further computations details are comprehensively elaborated in Appendices I and K.

Table 5.4: The Economic Welfare Effects of the Total Excessive Compliance Cost of Import and Tariff

	Country	$[(\Delta \boldsymbol{Q^M})_1 / \boldsymbol{Q_4^M}]$	$[\Delta G_1]$ (millions 2018 USD)	$[\Delta G_2]$ (millions 2018 USD)	$[\Delta G_e]$ (millions 2018 USD)	$[(\Delta \boldsymbol{Q^M})_2 / \boldsymbol{Q_4^M}]$	$[\Delta G_t]$ (millions 2018 USD)	$[\Delta G_e / \Delta G_t]$
		1	2	3	4 = 2+3	5	6	7= 4/6
1a	Botswana	0.55%	29.9	1.3	31.2	3.88%	4.1	7.6
2a	Namibia	0.53%	28.1	1.0	29.1	3.22%	2.8	10.5
3a	Eswatini	0.78%	15.9	0.8	16.7	4.48%	2.0	8.2
4a	Lesotho	0.82%	11.2	0.5	11.8	4.39%	1.3	8.9
5a	South Africa	0.91%	834.6	52.9	887.4	5.88%	158.3	5.6
6a	**SACU** (compared to BWA & MOZ)	**0.87%**	**919.7**	**56.5**	**976.1**	**5.63%**	**168.5**	**5.8**
1b	Botswana	0.84%	45.6	2.1	47.7	3.88%	4.1	11.6
2b	Namibia	0.76%	40.4	1.6	42.0	3.22%	2.8	15.2
3b	Eswatini	1.15%	23.5	1.2	24.7	4.48%	2.0	12.1
4b	Lesotho	1.19%	16.2	0.8	17.0	4.39%	1.3	12.9
5b	South Africa	1.40%	1282.0	84.3	1366.3	5.88%	158.3	8.6
6b	**SACU** (compared to BWA & SNG)	**1.34%**	**1,407.7**	**89.9**	**1,497.6**	**5.63%**	**168.5**	**8.9**

$[\Delta Q^M)_1 / Q_4^M]$, Percentage change in import volume from removing excessive cost to import.
$[\Delta G_1]$, Direct economic gain from removing excessive economic resources used for importation.
$[\Delta G_2]$, Economic gain from removing CC_e^M, (while there is a tariff), due to the increase in import.
$[\Delta G_e]$, Total economic gain from removing CC_e^M.
$[(\Delta Q^M)_2 / Q_4^M]$, Percentage change in import volume by eliminating tariff.
$[\Delta G_t]$, Economic gain from removing tariff, from increase in import.
$[\Delta G_e / \Delta G_t]$, Ratio of total economic gain of removing CC_e^M to that of eliminating tariffs.

As shown in Table 5.4, column 1, it is found that removing the excess compliance costs would lead to an increase in the quantity of imports demanded across the SACU countries of between 0.87% and 1.34%. For South Africa, the change in the quantity demanded of imports would be a raise of between 0.91% and 1.40%. In terms of the percentage response, the biggest impact in the custom union is on the imports of South Africa.

The estimated gain to SACU countries in economic welfare from reducing the transactions cost of importing is shown in Table 5.4, column 2, rows 6a and 6b. The range in the present value of the gain in economic welfare is between US$919.7 million and US$1,407.7 million annually for the existing level of imports (estimated using equation 3). An additional gain in economic welfare (Table 5.4, column 3) occurs with the increase in the level of imports. The incremental gain in economic welfare is between US$56.5 million and US$89.9 million annually (Using equation 4). Combining these two, the annual gain in economic welfare (Table 5.4, column 4, rows 6a and 6b) is estimated to be at between US$976.2 million and US$1497.6 million.

For South Africa alone the estimated annual gain in economic welfare would be between US$887.4 million and US$1,366.3 million. As the results in table 5.4 revealed, more than 90% of the total economic gains to SACU would accrue to South Africa, which is depicted in Appendix N. That indicates the need for critical attention to trade facilitation in South African trade border procedures. The results also revealed that the BELN countries (Botswana, Eswatini, Lesotho, and Namibia) of SACU would achieve much more economic welfare gains from the proposed implemented reforms on reducing compliance costs to import in South Africa than the welfare benefits that can be achievable in the case of doing so in their own countries. Details on further measurements are presented in Appendices J and L.

A perspective of the relative size of the benefits of reforming the trade administration can be gained by comparing these values with the gain in welfare if all import tariffs were eliminated. Because the weighted average tariff rates of SACU countries (Table 5.1, column 5) are larger than the size of the potential rates of proposed reductions of

trade transactions costs (Table 5.3, columns 3 to 6), the impact on the quantity of imports demanded is larger, at 5.63% (Table 5.4, column 5) versus 0.87% to 1.34% (Table 5.4, column 1). However, the estimated value of the traditional measure of the deadweight loss reduction from the complete elimination of the import tariffs (equation 8) is reported in Table 5.4, column 6. The annual economic welfare gain amounts to only US$168.5 million. Of this total (US$168.5), approximately 94% of the economic gain or US$158 million would accrue to South Africa. This estimate is consistent with that of Guei et al. (2017) who found that the economic welfare gain from the FTA between South Africa and the EU would be approximately US$134 million per year. The reform of the import administration would yield the countries of SACU a potential welfare gain between 5.8 and 8.9 times as much economic gain achieving from the removal of tariffs (Table 5.4, column 7).

The fundamental cause of the huge difference in current level of economic efficiency losses is that the tariff only creates a triangle of economic inefficiency due to the reduction in consumer demand for importables and the stimulation of the supply of importables. Most of the price impact of tariffs is borne by consumers through the payment of increased tariff revenues to the government. These tax revenues are not an economic welfare cost but represent a fiscal transfer. This is in contrast to the excess trade compliance costs that in their entirety reflect an economic resource cost to the country.

5.4 Trade Compliance Costs to Export

In this part of the dissertation, analysis turns to the estimation of the economic benefits from a reform to reduce the compliance costs of the administration system for exports from the SACU countries. To carry out these estimations, equations 9 to 13 with the

data on the level of exports and supply elasticities of exports that presented in Table 5.1 are employed with the estimated rate of compliance costs to export that has reported in Table 5.5.

In the case of exports for the custom union of SACU, the suggestion of this study is that there is little potential for reform in Eswatini, Lesotho and Botswana. More than 90% of Botswana's exports and 37.78% of Namibia's exports are diamonds (World Integrated Trade Solutions, 2020). For the remaining 10% of Botswana's exports, this study is assumed that they could be exported via South African ports to third countries and will be included in South Africa's exports. If these exports are simply sold in South Africa as regionally traded goods, this study excludes any potential benefits from reforming Botswana's export administration system. The exports of Eswatini and Lesotho are almost all in the first instance exported to South Africa (Sacolo, Mohammed & Dlamini, 2018). Hence, they are treated in the same manner as non-diamond exports from Botswana. Namibia has its own ports, which are mainly used for shipping its non-diamond exports. Hence, it is assumed that all Namibia's non-diamond exports are shipped from its own ports. It is the export compliance costs of non-diamond exports that are measured by the Doing Business surveys, and thus, it is these costs that the current study has applied to Namibia's non-diamond exports (Doing Business, 2020c). This analysis will therefore focus on the potential economic benefits that could be realised from trade facilitation reform of the export administration systems of Namibia and South Africa.

Table 5.5, columns 1 represents the sum of border and documentary compliance time to export and column 3 is the summation of border and documentary compliance costs; see Appendix G for the details. The total compliance cost to export that is the

aggregation of the total monetary value of the time (column 2) and the direct costs (column 3) associated with merchandise exportation from SACU member countries is reported in Table 5.5, column 4. The compliance costs associated with the administration of exports expressed as a percentage of a standard shipment of US$50,000 value, CC^X, is reported in column 5. This rate is 2.47% for Namibia and 2.84% for South Africa. The corresponding benchmark rates of export compliance costs, for Mozambique and Singapore, are reported in Table 5.5, rows 3 and 4. They are 1.66% and 0.76%, respectively, of the shipment value of the export.

Table 5.5: Total Compliance Time and Cost to Export (2019), and Estimated Rate of Excess Cost Compared to Benchmark Costs§

	Country	Total compliance time to export (hours)†	Cost of capital's locked time (US$)‡	Total direct compliance cost to export (US$)†	Total compliance cost to export (US$)	$[CC^X]$	$[CC_e^X]$, compared to **MOZ**	$[CC_e^X]$, compared to **SNG**
		1	2	3	4=2+3	5	6	7
1	Namibia	210	143.84	1092.5	1,236.34	2.47%	0.81%	1.71%
2	South Africa	160	109.59	1312	1,421.59	2.84%	1.18%	2.08%
3	Mozambique	102	69.86	761.7	831.56	1.66%	Benchmark	Benchmark
4	Singapore	12	8.22	372	380.22	0.76%	Benchmark	Benchmark

Source: † (Doing Business, 2020a).
‡ According to equation 14.
§ Author's calculations.
[CC^X], Total rate of compliance cost to export as a percentage of shipment value
[CC_e^X], Total excessive rate of cost to export compared to Mozambique (MOZ)/ Singapore (SNG)

Subtracting these benchmark rates for the normal compliance costs of exporting from the current rates of compliance costs for Namibia and South Africa gives the rates of excess compliance costs (CC_e^X), which are shown in Table 5.5, columns 6 and 7. These are the target of the proposed trade facilitation reforms. The potential reform savings

for Namibia are between 0.81% and 1.71% and for South Africa are between 1.18% and 2.08% of the value of their exports. These rates can be considered a tax on exports from the SACU countries that finances the administrative inefficiency of processing the paperwork to facilitate the administration of export of commodities. In analysing the impact of the reform, one should first see how exports would increase if the compliance costs of exporting were reduced to the level of those exporting through Mozambique and Singapore. This is estimated by using equation 10 along with the export supply elasticities and the volumes of exports of Namibia and South Africa as reported in Table 5.1. The results are presented in Table 5.6, column 1. The estimation shows that the reform of the administration of the export process would increase the volume of exports by between 1.03% and 1.83%. The economic welfare gains are measured by equations 11, 12, and 13 with the estimated values reported in Table 5.6, columns 2, 3, and 4. More details are given in Appendix M.

Table 5.6: The Economic Effects of the Excess Compliance Cost to Export

	Country	$[(\Delta \boldsymbol{Q^X})_1 / \boldsymbol{Q_3^X}]$	$[\Delta G_3]$ (millions 2018 US$)	$[\Delta G_4]$ (millions 2018 US$)	$[\Delta G^X]$ (millions 2018 US$)
		1	2	3	4 = 2+3
1	Namibia	0.87%	35.05	0.15	35.21
2	South Africa	1.04%	1181.69	6.14	1187.83
3	**SACU (compared to MOZ)**	**1.03%**	**1216.75**	**6.29**	**1223.03**
4	Namibia	1.83%	74.14	0.68	74.82
5	South Africa	1.83%	2085.63	19.11	2104.75
6	**SACU (compared to SNG)**	**1.83%**	**2159.77**	**19.79**	**2179.57**

$[(\Delta Q^X)_1 / Q_3^X]$, the percentage change in export volume from removing the excessive export compliance costs
$[\Delta G_3]$, direct economic welfare gain from reducing export excessive transactions costs for exportation.
$[\Delta G_4]$, the welfare gain caused by removing excessive compliance costs and export expansion.
$[\Delta G^X]$, the total economic gain from reducing excessive compliance costs of export.

In total, the estimated economic savings in compliance costs imposed by the trade administration are between US$1,223.0 million and US$2,179.6 million annually (Table 5.6, column 4, rows 3 and 6). These estimates are based on the benchmark costs of Mozambique and Singapore, respectively. The contribution of Namibia to these overall efficiency gains is relatively small, making up only 3% of the total gain in economic welfare, which is depicted in Appendix N.

5.5 Overall Results for SACU

The economic efficiency gained from a reduction of trade compliance costs of both imports and exports to the level of that of Mozambique would amount annually to approximately US$2.2 billion, which is reported in Table 5.7, column 1, and row 2. If Singapore was used as the benchmark for efficiency, the annual gains would amount to about US$3.7 billion, 2018 prices (Table 5.7, column 1, and row 4). In terms of the relative magnitude to other macroeconomic variables, the annual gain that could be made through this reform would be between 0.54% and 0.90% of the combined GDP of the SACU countries (Column 3). South Africa and the other countries of SACU are wasting resources of more than half a percent of their combined GDP each year from an unnecessarily inefficient system for the administration of imports and export clearances. This imposes a cost on consumers. Without the proposed reforms, the economic welfare gain of the region is reduced annually by these amounts.

The governments of the SACU countries are strongly committed to the education of their young populations and spend approximately 6.2% of their GDP on the supply of public education services. This rather simple reform of customs and port procedures would yield a benefit to these countries of between 8.7% and 14.6% of their total current expenditures on education (Table 5.7, column 4). Comparing the annual gain

from this reform to the South African government's average expenditure on health of 4.35% revealed this single reform would save the country an amount of between 12.36% and 20.67% of government health expenditure (Column 5). These are indication that how substantive are the achievable economic welfare gains from trade facilitation reforms.

Table 5.7: The Economic Impacts of Tariff and Total Excess Compliance Cost to Trade

		[ΔG_e] (millions 2018 USD)	[ΔG_e / ΔG_t]	[ΔG_e/ GDP] †	[ΔG_e/ EDU_{ZAF}] ‡	[ΔG_e/ HLH_{ZAF}] §	[ΔG_e/ Ass] ¶
		1	2	3	4	5	6
1	South Africa (compared to MOZ)	2075.24	13.11	0.56%	9.15%	12.95%	2.27
2	**Total sum in SACU** (compared to MOZ)	**2,199.18**	**13.05**	**0.54%**	**8.73%**	**12.36%**	**1.55**
3	South Africa (compared to SNG)	3471.06	21.93	0.94%	15.30%	21.67%	3.79
4	**Total sum in SACU** (compared to SNG)	**3,677.21**	**21.82**	**0.90%**	**14.60%**	**20.67%**	**2.59**

† Current cumulative of SACU countries' GDP (2018) US$408,921 million (World Bank, 2019a).
‡ EDU_{ZAF}, South African government expenditure on education (2018) is 6.16% of its GDP (World Bank, 2019a).
§ HLH_{ZAF}, South African government expenditure on health (2017) is 4.35% of its GDP (World Bank, 2019a).
[ΔG_e], Total economic gain from elimination of excess trade compliance costs, (while there is tariff).
[ΔG_e/ GDP], Total economic gain from reduced excess trade compliance costs as a percentage of GDP.
[ΔG_e/ ΔW_t], Ratio of total economic gain from reduced excessive trade compliance costs to that of eliminating duty [ΔG_e/ EDUZAF], Ratio of ΔWe/ GDP to EDU_{ZAF}
[ΔG_e/ HLH_{ZAF}], Ratio of ΔWe/ GDP to HLH_{ZAF}
¶ Ass; Net official development assistance received by each country (2018) (World Bank, 2020a) as a ratio of its GDP. The assistance received by South Africa amounted US$915 million and the aggregated assistance received by SACU countries was US$1419 million.
[ΔG_e/ Ass], Ratio of ΔG_e/ GDP to Ass/GDP.
MOZ, Mozambique; SNG, Singapore

The total potential welfare gain for the SACU economic community can also be compared to the total "net official development assistance received" by SACU countries (US$1419 million) in 2018. This comparison indicates that the economic welfare gain could be achieved through the reforms on facilitation of the trade across borders is 1.6 to 2.6 times greater than the value of loans and grants received by SACU member countries (Table 5.7, column 6). This ratio is even higher for South Africa that is around 2.3 to 3.8 times greater than the net official development assistance.

A major concern with the imposition of import tariffs among economists and policymakers discussing SACU's tariff policies has been the magnitude of the efficiency costs they create (Edwards & Lawrence, 2008). Table 5.7, column 5, shows a comparison is made of the relative values of the economic efficiency that could be gained from reforming the management of international trade flows (ΔW_e) to the economic efficiency gained from a complete elimination of all import tariffs (ΔW_t) (Table 5.4, column 6). The result is that the economic inefficiency cost of the excess compliance costs are between 13 and 22 times the estimated economic inefficiency cost of SACU's tariff regime.

Chapter 6

SUMMARY, DISCUSSION, AND POLICY IMPLICATIONS

6.1 Introduction

This study aimed to estimate the annual economic welfare gains for the SACU member countries and the coastal countries of ECOWAS that could be realized by the implementation of potential reforms to eliminate the excessive trade transaction compliance costs. It also investigated the contribution of regional integration and trade facilitation reforms to achieve the realization of their sustainable development goals.

The current chapter summarises the results found for each region of ECOWAS and SACU. Further, policy implications are discussed. It concludes the dissertation by presenting the challenges and future direction for researches.

6.2 Summary of the Results

6.2.1 ECOWAS

This study shows the economic welfare benefits resulting from a reduction in excessive import and export border and documentary compliance costs are considerable for ECOWAS countries, amounting to 0.24% to 0.42% annually of their GDP. This gain for these West African countries would be between US$1561 million and US$2691 million. Nigeria would provide its residents with around 63% to 73% of these economic gains.

6.2.2 SACU

The economic gains from reducing the excess border compliance and documentary compliance costs for imports and exports are very substantial, amounting to 0.54% to 0.90% annually of the GDP of SACU countries. Reforming these administrative practices would provide South African residents with about 95% of these benefits. For South Africa alone, the gain from reducing these excess compliance costs would be worth between US$2,075 million and US$3,471 million.

6.3 Discussion and Policy Implications

Trade facilitation speeds up the clearance of goods moving across borders, boosts trade, particularly for time sensitive perishable agricultural goods and intermediate manufactured goods. About 35% of the SSA population are inhabitants of ECOWAS, whose members are net food importers. This indicates how time to import matter. For improving the economies of the region and enhance the welfare of the countries' residents, there is a need to improve current infrastructure, remove excessive formalities and inefficient procedures. Trade facilitation through a reduction in economic waste contributes to fostering the integration of the economies of ECOWAS and SACU into the global economy. It will expand international trade to contribute towards partnerships in attaining the sustainable development goals (tackling poverty and hunger, bringing economic growth, sufficient consumption and production, allowing peace, and so on).

The principal reforms that are required to realize these cost savings tend to be first and foremost a Single Window administrative system. In such a system all customs, health, security, controls as well as payment of any duties, taxes and licenses are carried out by a single administrative office. This should be combined with risk-based customs

inspections, upgrading trade logistics infrastructure, deepening regional administrative cooperation, training, and communications with trade stakeholders. If such measures fail to proceed quickly, it will impose costs on the wellbeing of the residents of the ECOWAS and SACU countries.

Compared to the benefit gained from reducing the compliance costs, for many trade facilitation reforms, the implementation cost is trivial. For instance, setting up the "Single Window" in Kenya incurred a cost of US$14.7 million. Singapore's cost to launch its Trade Net system was significantly less than US$50 million in 2019 prices. This is while the annual operating costs are between US$195,000 and US$1.2 million. The annual benefits that Singapore has received from this reform is in excess of US$500 million (Yeow, 1996; Jenkins, 1996; Valensisi, Lisinge & Karingi, 2016).

Given the worldwide experience in both developing and developed countries of implementing such trade facilitation measures, there is little risk of failure. Few reforms are available to any country that would yield such widespread economic benefits, from significantly reducing the costs of intermediate inputs and consumer goods to stimulating international trade flows of exports and imports. Failure to proceed quickly with such reforms inflicts costs that SACU and ECOWAS countries can ill afford.

The immediate implication and strong recommendation resulted from this analysis is that public sector investments in improving the physical and administrative facilities of the international trade infrastructure should be a very high priority for both governments and international donors. There are probably no other reforms or public investments that countries can implement where they can to attain such widespread net

economic benefits. The benefits arising from reducing unnecessary trade transaction costs are going to be distributed to the countries of ECOWAS and SACU areas as well as to the countries trading with these regions. While the member countries of ECOWAS and SACU will benefit directly from the lower consumer prices for imports and higher producer prices for exports, the increases in the demand for imports, between 0.87% and 1.34% for SACU and between 2.3% and 3.9% for ECOWAS, annually will create an indirect benefit to those countries both developing and developed who will be supplying these additional imports.

A vigorous trade facilitation policy is the correct priority to reduce barriers to deepen the implementation of regional trade agreements in ECOWAS and SACU regions and to support the SDGs. Its benefits are expandable in the context of the single wide continent market of Africa, AfCFTA. By attaining administrative efficiencies for international trade, ECOWAS and SACU areas would not only improve the chances of achieving its sustainable development goals but may also lead to a better economic integration of the member countries of ECOWAS and SACU. This is of major importance for Nigeria as it has the largest population and is the dominant economy of West Africa, and similarly for South Africa in the Southern of Africa.

6.4 Challenges and Future Direction of Researches

A major challenge in bringing about trade facilitation reforms has been the reluctance of the stakeholders of the current system to make changes that will reduce costs and their influence. Customs administrations have been notoriously difficult to reform. Corruption that is a characteristic of such institutions and the strong unions representing port workers have often resisted the kinds of administrative changes required to implement new systems. Often the reforms require the application of

advanced information technology that the current managers and workers might not be comfortable using. With the potential benefits, being so large, future research should focus on the analysis of the implementation of these proposed changes. How such reforms might take place so that the special interest groups that benefit from the current inefficient practices come to accept such changes. A series of countries have successfully implemented such reforms. The implementation strategies of the successful reforms in the countries should be studied so that a better understanding can be developed of the political economy of trade facilitation reform.

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APPENDICES

Appendix A: Sources of Data Used in the Thesis

Variable	Definition	Source
Q_3^X	Exports, FOB (US Dollars, Millions)	IMF Database, Direction of Trade Statistics
Q_4^M	Imports, CIF (US Dollars, Millions)	IMF Database, Direction of Trade Statistics
GDP	Gross Domestic Production (Current US Dollars, Millions)	World Bank, World Development Indicators
t	Weighted average import tariff rates, all products (%)	World Bank, World Development Indicators
EDU_{ZAF}	Government expenditure on education, total (% of GDP)	World Bank, World Development Indicators
HLH_{ZAF}	Government expenditure on health, total (% of GDP)	World Bank, World Development Indicators
Ass	Net official development assistance	World Bank, World Development Indicators
TIMB/ TEXB	Time to import/ export: Border compliance (hours)	World Bank, Doing Business: Trading Across Borders Indicators
TIMD/ TEXD	Time to import/ export: Documentary compliance (hours)	World Bank, Doing Business: Trading Across Borders Indicators
CIMB/ CEXB	Cost to import/ export: Border compliance (USD)	World Bank, Doing Business: Trading Across Borders Indicators
CIMD/ CEXD	Cost to import/ export: Documentary compliance (USD)	World Bank, Doing Business: Trading Across Borders Indicators
ε^X	Import demand elasticity	Ghodsi et al. (2016)
ε^M	Export supply elasticity	Tokarick (2014)

Appendix B: Characteristics of ECOWAS Countries

Table B1: Some development indicators

	Country	Code	Population, total (2018)	GDP per Capita	Income Group	surface area (sq. km, thousands)
		1	2	3	4	5
1	Benin	BEN	11,485,048	901.54	Low income	114.8
2	Burkina Faso	BFA	19,751,535	715.12	Low income	274.2
3	Cabo Verde	CPV	543,767	3,635.41	Lower middle income	4.0
4	Côte d'Ivoire	CIV	25,069,229	1,715.53	Lower middle income	322.5
5	Gambia, The	GMB	2,280,102	716.12	Low income	11.3
6	Ghana	GHA	29,767,108	2,202.31	Lower middle income	238.5
7	Guinea	GIN	12,414,318	878.60	Low income	245.9
8	Guinea-Bissau	GNB	1,874,309	777.97	Low income	36.1
9	Liberia	LBR	4,818,977	677.32	Low income	111.4
10	Mali	MLI	19,077,690	899.66	Low income	1240.2
11	Niger	NER	22,442,948	413.98	Low income	1267.0
12	Nigeria	NGA	195,874,740	2,028.18	Lower middle income	923.8
13	Senegal	SEN	15,854,360	1,521.95	Lower middle income	196.7
14	Sierra Leone	SLE	7,650,154	533.99	Low income	72.3
15	Togo	TGO	7,889,094	679.26	Low income	56.8
	ECOWAS	**SUM**	**376,793,379**			**2,339.1**
		AVG	**25,119,559**	**1220**		

Source: WB, 2020

Landlocked Country

Table B2: Comparison of Nigeria and ECOWAS to Sub-Saharan Africa

	World bank (2020)			IMF (2020)	
	Population, total	**GDP (current US$)**	**GDP per capita (current US$)**	**Imports, CIF, US Dollars, Millions**	**Exports, FOB, US Dollars, Millions**
Nigeria	195,874,740	448,120,428,859	2,028.18	43326	66,409
ECOWAS, SUM	**376,793,379**	**689,211,577,583**		**94,467**	**116,970**
ECOWAS, AVG	**25,119,559**	**45,947,438,506**	**1,220**		
Sub-Saharan Africa	1,078,306,520	1,755,011,419,751	1,586	382,060	361,977
Ratio (ECOWAS/SSA)	**35%**	**39%**		**25%**	**32%**
Ration (Nigeria / SSA)	**18%**	**26%**		**11%**	**18%**

Source: (World Bank, 2020), (IMF, 2020)

Table B3: GDP, and share of government expenditures on education and health, the percentage of oil and gems exportation, and the official net development assistance

	Country	GDP (2019 current US$)	Government expenditure on education, total (% of GDP),2018	Domestic general government health expenditure (% of GDP),2017	% Oil products	% Gems & precious metals	Ass (2018 US$)
		1	2	3	4	5	6
1	Benin	14,390,709,095	4.04	1.11	2.72%	1.44%	570,270,020
2	Cabo Verde	1,981,845,741	5.17	3.11	0.00%	0.00%	83,190,002
3	Côte d'Ivoire	58,792,205,642	4.37	1.27	12.51%	6.69%	953,700,012
4	Gambia, The	1,763,819,048	2.43	0.75	0.00%	0.33%	232,630,005
5	Ghana	66,983,634,224	3.99	1.09	25.35%	35.72%	1,067,250,000
6	Guinea	13,590,281,809	2.57	0.71	0.21%	40.13%	590,599,976
7	Guinea-Bissau	1,340,389,411	2.13	0.59	0.81%	0.00%	152,369,995
8	Liberia	3,070,518,100	2.58	1.40	14.60%	27.50%	570,750,000
9	Nigeria	448,120,428,859	4.05	0.53	94.11%	0.01%	3,301,520,020
10	Senegal	23,578,084,052	4.65	0.87	15.77%	15.64%	991,590,027
11	Sierra Leone	3,941,474,311	7.14	1.84	0.03%	0.02%	505,899,994
12	Togo	5,459,979,417	5.43	1.09	1.89%	4.73%	296,420,013
13	ECOWAS, Coastal (SUM)	**643,013,369,707**					9,316,190,063
14	ECOWAS, Coastal (AVG)	**53,584,447,476**	4.09%	0.73%			

Source: World Bank, 2020

Appendix C: ECOWAS, Trading Across borders Rank, Compliance Time and Cost to trade (Tables and Graphs)

Table C1: ECOWAS, Trading across Border Rank of Coastal Countries, 2019

Location	Trading across Borders rank
Benin	110
Cabo Verde	109
Côte d'Ivoire	163
Gambia, The	115
Ghana	158
Guinea	167
Guinea-Bissau	146
Liberia	184
Nigeria	179
Senegal	142
Sierra Leone	165
Togo	131

Source: Doing Business, 2020

Graph C1: Trading across Border Rank of ECOWAS Coastal Countries, 2019

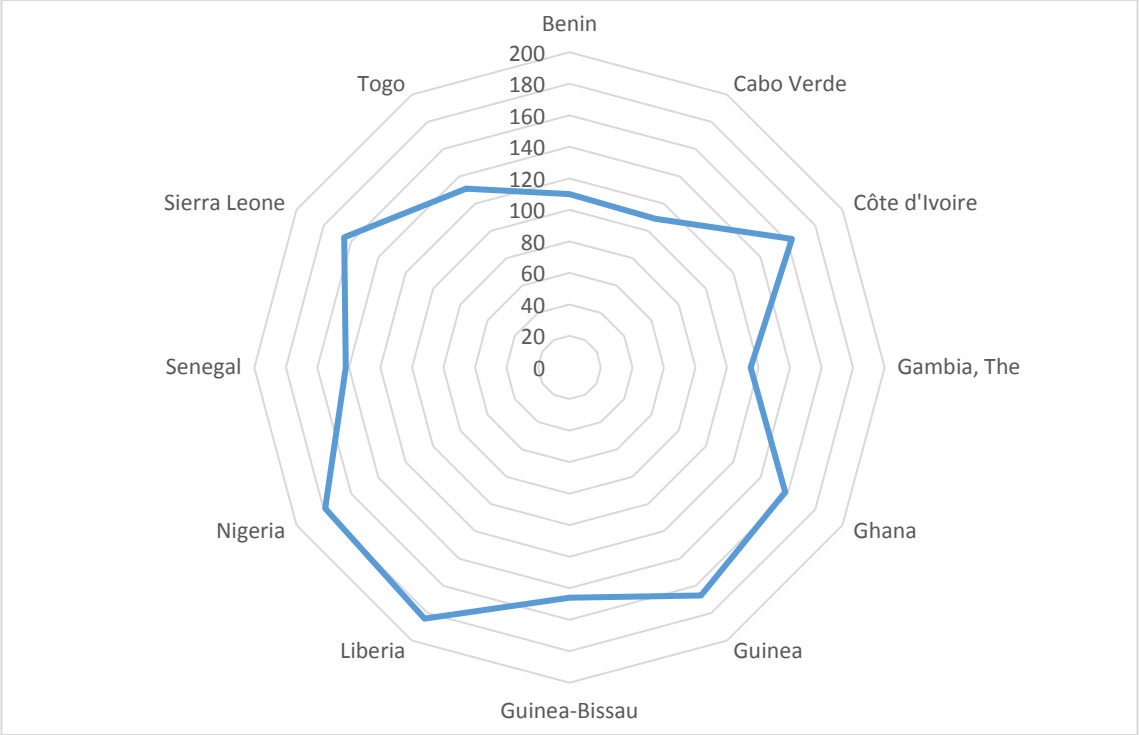


Table C2: ECOWAS, Documentary and Border Compliance Time and Cost to Import, as of 2019

	Time to import: Border compliance (hours)	Time to import: Documentary compliance (hours)	Cost to import: Border compliance (USD)	Cost to import: Documentary compliance (USD)
Economy	**TIMB**	**TIMD**	**CIMB**	**CIMD**
Benin	82	59	599	110
Cabo Verde	60	24	588	125
Côte d'Ivoire	125	89	456	267
Gambia, The	87	32	326	152
Ghana	80	36	553	474
Guinea	79	156	809	180
Guinea-Bissau	84	36	550	205
Liberia	217	144	1013	405
Nigeria	242	120	1077	564
Senegal	53	72	702	545
Sierra Leone	120	82	821	387
Togo	168	180	612	252
Sub-Saharan Africa	112	91	625	282
Singapore	33	3	220	40

Source: (Doing Business, 2020)

Graph C2: ECOWAS, Documentary and Border Compliance Time and Cost to Import, 2019

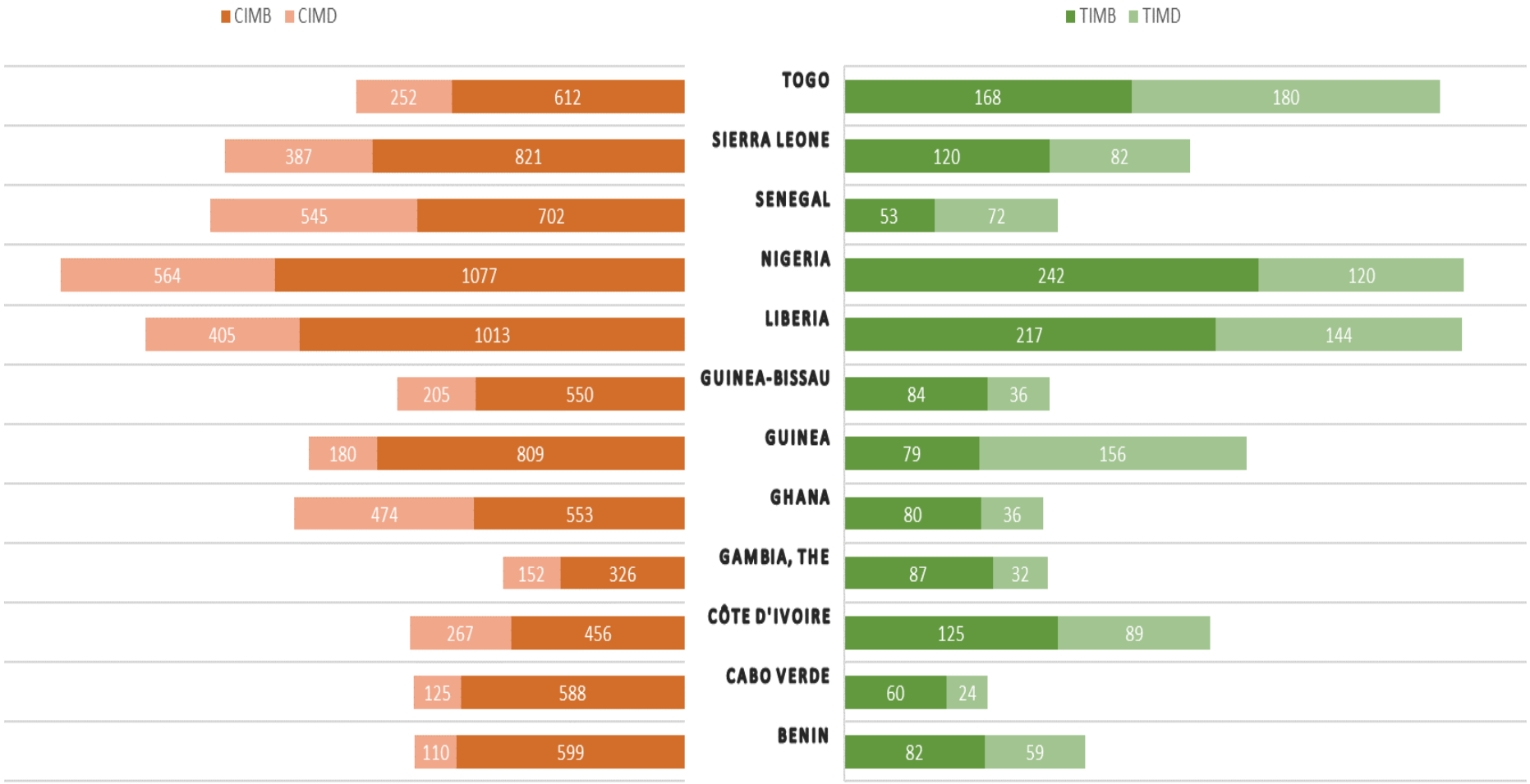
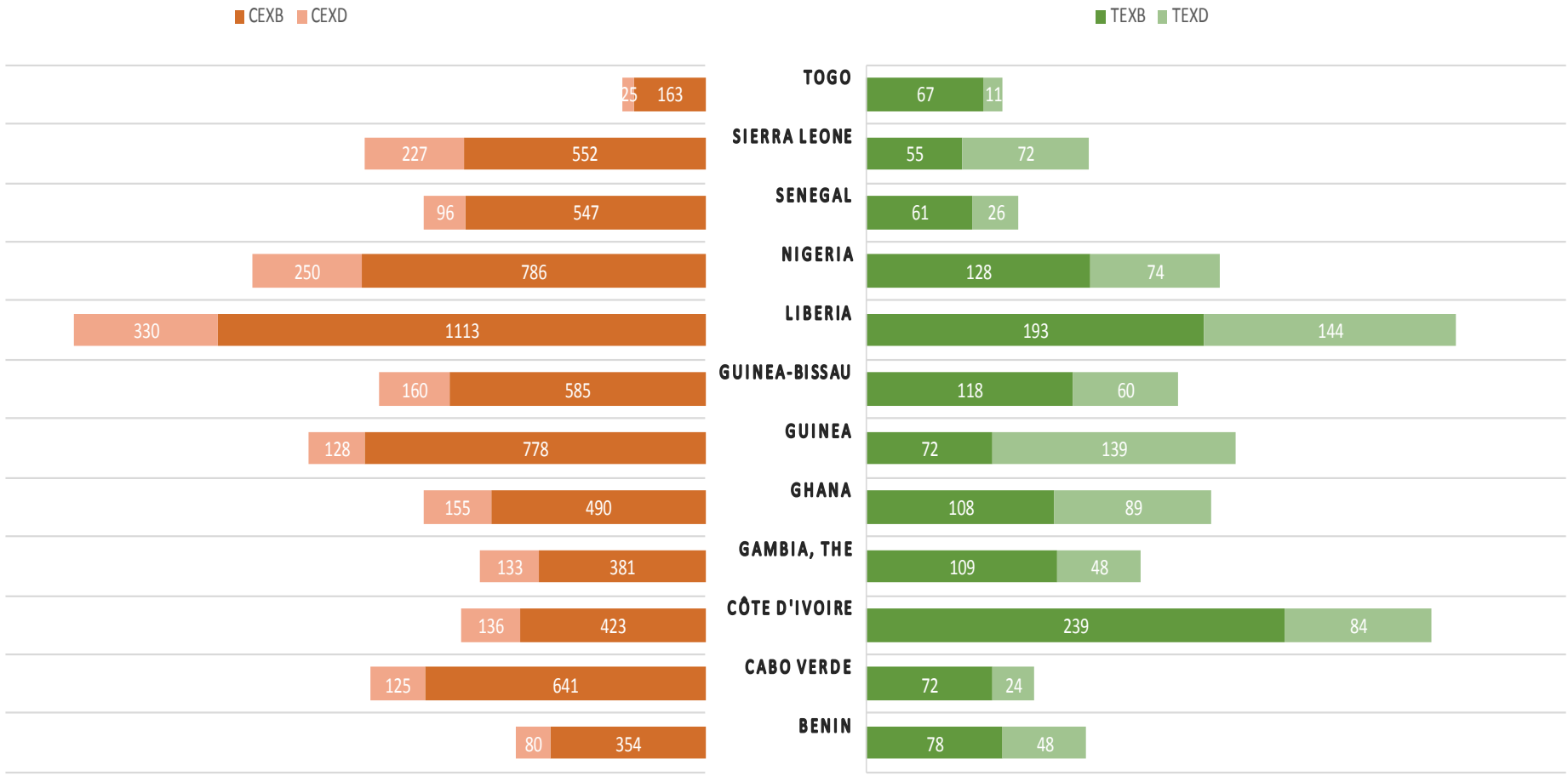


Table C3: ECOWAS, Documentary and Border Compliance Time and Cost to Export, as of 2019

		Time to export: Border compliance (hours)	Time to export: Documentary compliance (hours)	Cost to export: Border compliance (USD)	Cost to export: Documentary compliance (USD)
#	**Economy**	**TEXB**	**TEXD**	**CEXB**	**CEXD**
1	Togo	67	11	163	25
2	Benin	78	48	354	80
3	Gambia, The	109	48	381	133
4	Senegal	61	26	547	96
5	Ghana	108	89	490	155
6	Côte d'Ivoire	239	84	423	136
7	Cabo Verde	72	24	641	125
8	Sierra Leone	55	72	552	227
9	Guinea-Bissau	118	60	585	160
10	Guinea	72	139	778	128
11	Nigeria	128	74	786	250
12	Liberia	193	144	1113	330
	Sub-Saharan Africa	98	67	514	134
	Singapore	10	2	335	37

Graph C2: ECOWAS, Documentary and Border Compliance Time and Cost to Export, 2019



Appendix D: ECOWAS, Analyses of Compliance Costs to Trade

Part D1: ECOWAS, Import, Using Benin as a Benchmark

Table D1a: Cost to import per shipment, as a % value of a shipment, Value (Before Reform, After Reform, and Excess)

		Total cost to import, $						m$			Ratio of Total value of excess cost to import to total value of import
#	Economy	TCIM,BR	TCIM,AR (Bench)	Excess CIM	TCIM,BR%	AR% (Bench %)	Excess CIM%	V CIM, BR	V CIM, AR	V CIM, Excess	V CIM/IMP
1	Gambia, The	559.51	-		1.12%			5	-	-	0.00%
2	Cabo Verde	770.53	-		1.54%			14	-	-	0.00%
3	Benin	805.58	805.58	-	1.61%	1.61%	0.00%	43	43	-	0.00%
4	Guinea-Bissau	837.19	805.58	31.62	1.67%	1.61%	0.06%	5	5	0	0.06%
5	Côte d'Ivoire	869.58	805.58	64.00	1.74%	1.61%	0.13%	205	189	15	0.13%
6	Togo	1,102.36	805.58	296.78	2.20%	1.61%	0.59%	25	18	7	0.59%
7	Ghana	1,106.45	805.58	300.88	2.21%	1.61%	0.60%	258	188	70	0.60%
8	Guinea	1,149.96	805.58	344.38	2.30%	1.61%	0.69%	60	42	18	0.69%
9	Senegal	1,332.62	805.58	527.04	2.67%	1.61%	1.05%	217	131	86	1.05%
10	Sierra Leone	1,346.36	805.58	540.78	2.69%	1.61%	1.08%	30	18	12	1.08%
11	Liberia	1,665.26	805.58	859.68	3.33%	1.61%	1.72%	69	33	35	1.72%
12	Nigeria	1,888.95	805.58	1,083.37	3.78%	1.61%	2.17%	1,637	698	939	2.17%
	Total							**2,567**	**1,366**	**1,182**	
	TAvg				2.24%		0.81%				1.37%

Table D1b: Price of import per shipment value due to tariff and the compliance costs and the % change on price of imports

		total rate of trade distortion			$				% change in price(because of Excess CIM)
#	Economy	t%	Excess CIM%	dist bar E	P cif	P cif+norm(bench),(AR)	P cif+nor+t(AR+t)	P BR (cif+dist bar)(current)	%^IMP/TIM
1	Gambia, The	18.08%		19.20% (0.954)	1	1.0000	1.1808	1.1808	0.00%
2	Cabo Verde	10.89%		12.43% (0.954)	1	1.0000	1.1089	1.1089	0.00%
3	Benin	15.25%	0.00%	16.86% (1.162)	1	1.0161	1.1686	1.1686	0.00%
4	Guinea-Bissau	14.39%	0.06%	16.06% (0.936)	1	1.0161	1.1600	1.1606	0.05%
5	Côte d'Ivoire	10.17%	0.13%	11.91% (1.475)	1	1.0161	1.1178	1.1191	0.11%
6	Togo	12.85%	0.59%	15.05% (0.972)	1	1.0161	1.1446	1.1505	0.52%
7	Ghana	10.34%	0.60%	12.55% (1.360)	1	1.0161	1.1195	1.1255	0.53%
8	Guinea	11.29%	0.69%	13.59% (1.076)	1	1.0161	1.1290	1.1359	0.61%
9	Senegal	11.52%	1.05%	14.19% (1.140)	1	1.0161	1.1313	1.1419	0.92%
10	Sierra Leone	11.51%	1.08%	14.20% (1.003)	1	1.0161	1.1312	1.1420	0.95%
11	Liberia	9.54%	1.72%	12.87% (0.936)	1	1.0161	1.1115	1.1287	1.52%
12	Nigeria	8.52%	2.17%	12.30% (1.805)	1	1.0161	1.1013	1.1230	1.93%
	Total								
	Avg	12%	0.81%						

Table D1c: Level of import due to tariff and the compliance costs and the change on the level of imports

		m$		Change in Im (BR - ARt), due to excess ccim	Change in Im (AR-ARt), due to tariff	**m$**	% Change in import(BR-ARt), due to exess ccim	% Change in Im (AR-ARt), due to tariff	m$			
#	**Economy**	**IM BR-cif**	**IM BR-AR (norm)**	**IM BR-ARt**	**IM AR-ARt**	**TR**	**IM BR- ARt/ IMP**	**IM AR-ARt / IMP**	**IM BR**	**IM cif**	**IM nor**	**IM AR**
1	**Gambia, The**	87	82	-	82	86	0.00%	17.25%	476	563	558	476
2	**Cabo Verde**	108	94	-	94	99	0.00%	10.39%	907	1,015	1,001	907
3	**Benin**	528	478	-	478	411	0.00%	17.72%	2,697	3,226	3,175	2,697
4	**Guinea-Bissau**	43	39	0	39	41	0.06%	13.47%	288	331	327	288
5	**Côte d'Ivoire**	2,066	1,786	22	1,764	1,196	0.19%	15.00%	11,759	13,824	13,545	11,781
6	**Togo**	166	148	7	142	146	0.58%	12.49%	1,135	1,301	1,283	1,141
7	**Ghana**	1,989	1,733	95	1,638	1,204	0.82%	14.06%	11,649	13,637	13,382	11,744
8	**Guinea**	381	336	19	316	294	0.74%	12.15%	2,605	2,986	2,940	2,624
9	**Senegal**	1,318	1,168	98	1,070	939	1.20%	13.13%	8,147	9,465	9,315	8,245
10	**Sierra Leone**	159	141	12	129	129	1.08%	11.54%	1,117	1,277	1,259	1,130
11	**Liberia**	248	217	33	184	196	1.61%	8.93%	2,059	2,307	2,276	2,092
12	**Nigeria**	9,617	8,357	1,694	6,663	3,691	3.91%	15.38%	43,326	52,943	51,683	45,020
	Total	**16,710**	**14,580**	**1,981**	**12,599**	**8,433**			**86,164**			
	TAvg						**2.30%**	**14.62%**				

Part D2: ECOWAS, Import, Using Singapore as a Benchmark

Table D2a: Cost to import per shipment, as a % value of a shipment, Value (Before Reform, After Reform, and Excess)

		$						m$			Ratio of value of excess cost to IM to total value of import
#	Economy	TCIM,BR	TCIM,AR (Bench)	Excess CIM	TCIM,BR%	AR% (Bench%)	Excess CIM%	V CIM, BR	V CIM, AR	V CIM, Excess	V CIM/IMP
1	Gambia, The	559.51	284.66	274.85	1.12%	0.57%	0.55%	5	3	3	0.55%
2	Cabo Verde	770.53	284.66	485.88	1.54%	0.57%	0.97%	14	5	9	0.97%
3	Benin	805.58	284.66	520.92	1.61%	0.57%	1.04%	43	15	28	1.04%
4	Guinea-Bissau	837.19	284.66	552.53	1.67%	0.57%	1.11%	5	2	3	1.11%
5	Côte d'Ivoire	869.58	284.66	584.92	1.74%	0.57%	1.17%	205	67	138	1.17%
6	Togo	1,102.36	284.66	817.70	2.20%	0.57%	1.64%	25	6	19	1.64%
7	Ghana	1,106.45	284.66	821.79	2.21%	0.57%	1.64%	258	66	191	1.64%
8	Guinea	1,149.96	284.66	865.30	2.30%	0.57%	1.73%	60	15	45	1.73%
9	Senegal	1,332.62	284.66	1,047.96	2.67%	0.57%	2.10%	217	46	171	2.10%
10	Sierra Leone	1,346.36	284.66	1,061.70	2.69%	0.57%	2.12%	30	6	24	2.12%
11	Liberia	1,665.26	284.66	1,380.60	3.33%	0.57%	2.76%	69	12	57	2.76%
12	Nigeria	1,888.95	284.66	1,604.29	3.78%	0.57%	3.21%	1,637	247	1,390	3.21%
	Total							2,567	491	2,077	
	TAvg				2.24%		1.67%				2.41%

Table D2b: Price of import per shipment value due to tariff and the compliance costs and the % change on the price

				total rate of trade distortion		$				% change in price(because of Excess CIM)
#	Economy	t%	Excess CIM%	dist bar	E	P cif	P cif+norm(bench),(AR)	P cif+nor+t(AR+t)	P BR (cif+dist bar)(current)	%^IMP/TIM
1	Gambia, The	18.08%	0.55%	19.20%	(0.954)	1	1.0057	1.1865	1.1920	0.46%
2	Cabo Verde	10.89%	0.97%	12.43%	(0.954)	1	1.0057	1.1146	1.1243	0.86%
3	Benin	15.25%	1.04%	16.86%	(1.162)	1	1.0057	1.1582	1.1686	0.89%
4	Guinea-Bissau	14.39%	1.11%	16.06%	(0.936)	1	1.0057	1.1496	1.1606	0.95%
5	Côte d'Ivoire	10.17%	1.17%	11.91%	(1.475)	1	1.0057	1.1074	1.1191	1.05%
6	Togo	12.85%	1.64%	15.05%	(0.972)	1	1.0057	1.1342	1.1505	1.42%
7	Ghana	10.34%	1.64%	12.55%	(1.360)	1	1.0057	1.1091	1.1255	1.46%
8	Guinea	11.29%	1.73%	13.59%	(1.076)	1	1.0057	1.1186	1.1359	1.52%
9	Senegal	11.52%	2.10%	14.19%	(1.140)	1	1.0057	1.1209	1.1419	1.84%
10	Sierra Leone	11.51%	2.12%	14.20%	(1.003)	1	1.0057	1.1208	1.1420	1.86%
11	Liberia	9.54%	2.76%	12.87%	(0.936)	1	1.0057	1.1011	1.1287	2.45%
12	Nigeria	8.52%	3.21%	12.30%	(1.805)	1	1.0057	1.0909	1.1230	2.86%
	Total									
	TAvg	12%	1.67%							

Table D2c: Level of import due to tariff and the compliance costs and the change in quantity of imports

		m$		Change in Im (BR - ARt), due to excess ccim	Change in Im (AR-ARt), due to tariff	**m$**	% Change in import(BR-ARt), due to exess ccim	% Change in Im (AR-ARt), due to tariff	m$			
#	**Economy**	**IM BR-cif**	**IM BR-AR (norm)**	**IM BR-ARt**	**IM AR-ARt**	**TR**	**IM BR-ARt/ IMP**	**IM AR-ARt / IMP**	**IM BR**	**IM cif**	**IM nor**	**IM AR**
1	**Gambia, The**	87	85	2	82	86	0.52%	17.25%	476	563	560	478
2	**Cabo Verde**	108	103	8	94	99	0.93%	10.39%	907	1,015	1,010	915
3	**Benin**	528	511	33	478	411	1.21%	17.72%	2,697	3,226	3,208	2,730
4	**Guinea-Bissau**	43	42	3	39	41	1.03%	13.47%	288	331	330	291
5	**Côte d'Ivoire**	2,066	1,967	203	1,764	1,196	1.73%	15.00%	11,759	13,824	13,725	11,962
6	**Togo**	166	160	18	142	146	1.59%	12.49%	1,135	1,301	1,294	1,153
7	**Ghana**	1,989	1,898	260	1,638	1,204	2.24%	14.06%	11,649	13,637	13,547	11,909
8	**Guinea**	381	365	49	316	294	1.86%	12.15%	2,605	2,986	2,970	2,653
9	**Senegal**	1,318	1,265	195	1,070	939	2.39%	13.13%	8,147	9,465	9,412	8,342
10	**Sierra Leone**	159	153	24	129	129	2.13%	11.54%	1,117	1,277	1,270	1,141
11	**Liberia**	248	237	53	184	196	2.58%	8.93%	2,059	2,307	2,296	2,112
12	**Nigeria**	9,617	9,172	2,509	6,663	3,691	5.79%	15.38%	43,326	52,943	52,498	45,835
	Total	**16,710**	**15,956**	**3,357**	**12,599**	**8,433**			**86,164**			
	TAvg						3.90%	14.62%				

Part D3: ECOWAS, Export, Using Benin as a Benchmark

Table D3a: Cost to export per shipment, as a % value of a shipment, Value (Before Reform, After Reform, and Excess)

		$						m$			Ratio of value of excess cost to import to total value of import
#	Economy	TCEX,BR	TCEX,AR (Bench)	Excess CEX	TCEX,BR%	AR% (Bench%)	Excess CEX%	V CIM, BR	V CIM, AR	V CIM, Excess	V CIM/IMP
1	**Togo**	241.42	-		0.48%			8	-	-	0.00%
2	**Benin**	520.30	520.30	-	1.04%	1.04%	0.00%	10	10	-	0.00%
3	**Gambia, The**	621.53	520.30	101.23	1.24%	1.04%	0.20%	0	0	0	0.20%
4	**Senegal**	702.59	520.30	182.29	1.41%	1.04%	0.36%	42	31	11	0.36%
5	**Ghana**	779.93	520.30	259.63	1.56%	1.04%	0.52%	108	72	36	0.52%
6	**Côte d'Ivoire**	780.23	520.30	259.93	1.56%	1.04%	0.52%	143	96	48	0.52%
7	**Cabo Verde**	831.75	520.30	311.45	1.66%	1.04%	0.62%	1	1	0	0.62%
8	**Sierra Leone**	865.99	520.30	345.68	1.73%	1.04%	0.69%	2	1	1	0.69%
9	**Guinea-Bissau**	866.92	520.30	346.62	1.73%	1.04%	0.69%	5	3	2	0.69%
10	**Guinea**	1,050.52	520.30	530.22	2.10%	1.04%	1.06%	57	28	29	1.06%
11	**Nigeria**	1,174.36	520.30	654.05	2.35%	1.04%	1.31%	92	41	51	1.31%
12	**Liberia**	1,673.82	520.30	1,153.52	3.35%	1.04%	2.31%	8	3	6	2.31%
	Total							**477**	**285**	**183**	
	TAvg				1.68%		0.75%				0.63%

Table D3b: Price of export per shipment value, Level of export due to the compliance costs and the % change of price and level of exports

	P fob	P AR (fob-nor)	P BR (fob-norm-exc)	%^EXP/TEX	EX BR-fob	EX BR-AR	EX BR-AR / TEXP	EX BR	EX AR	EX fob
Togo	1	1.0000	1.0000	0.00%	3	-	0.00%	1,737	1,737	1,740
Benin	1	0.9896	0.9896	0.00%	4	-	0.00%	981	981	985
Gambia, The	1	0.9896	0.9876	0.21%	0	0	0.07%	23	23	23
Senegal	1	0.9896	0.9859	0.37%	20	5	0.17%	2,982	2,987	3,001
Ghana	1	0.9896	0.9844	0.53%	39	13	0.19%	6,914	6,927	6,952
Côte d'Ivoire	1	0.9896	0.9844	0.53%	52	17	0.19%	9,184	9,201	9,235
Cabo Verde	1	0.9896	0.9834	0.63%	0	0	0.22%	71	72	72
Sierra Leone	1	0.9896	0.9827	0.70%	1	0	0.25%	118	118	118
Guinea-Bissau	1	0.9896	0.9827	0.71%	2	1	0.25%	301	302	303
Guinea	1	0.9896	0.9790	1.08%	20	10	0.38%	2,705	2,716	2,726
Nigeria	1	0.9896	0.9765	1.34%	16	9	0.22%	3,904	3,913	3,920
Liberia	1	0.9896	0.9665	2.39%	3	2	0.83%	248	250	251
Sum					**159**	**58**		**29,168**		
AVG							0.20%			

Part D4: ECOWAS, Export, Using Singapore as a Benchmark

Table D4a: Cost to export per shipment, as a % value of a shipment, Value (Before Reform, After Reform, and Excess)

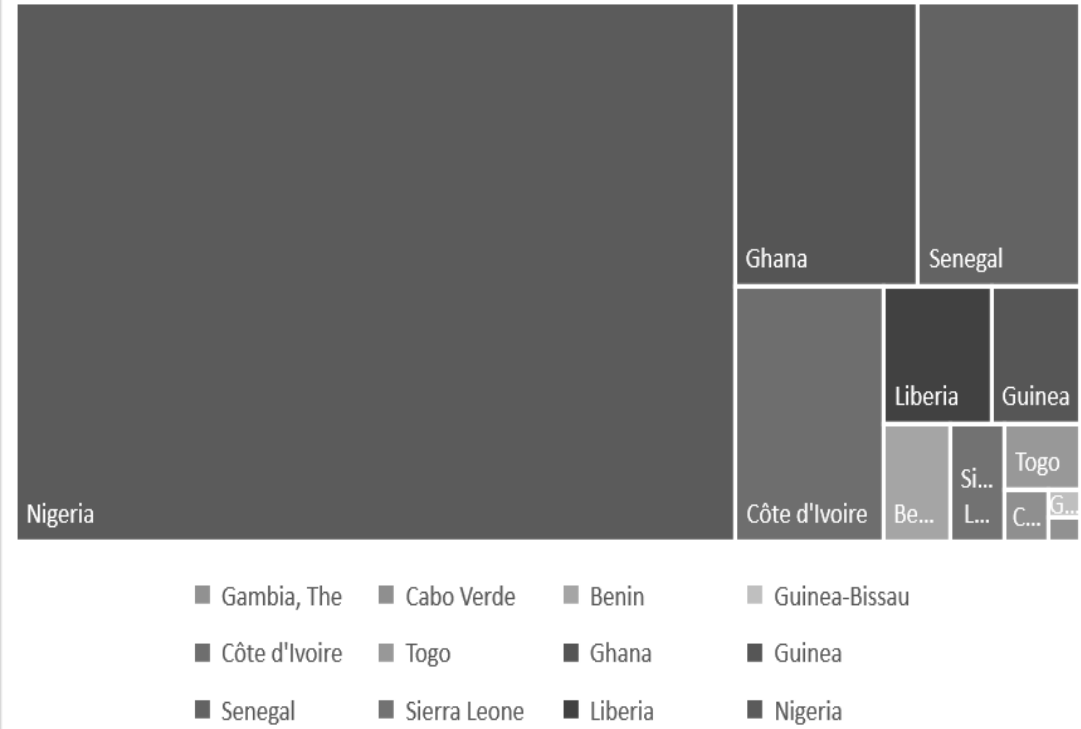
		$						m$			Ratio of value of excess cost to import to total value of import
#	Economy	TCEX,BR	TCEX,AR (Bench)	Excess CEX	TCEX,BR%	AR% (Bench%)	Excess CEX%	V CIM, BR	V CIM, AR	V CIM, Excess	V CIM/IMP
1	Togo	241.42	-		0.48%			8	-	-	0.00%
2	Benin	520.30	380.22	140.08	1.04%	0.76%	0.28%	10	7	3	0.28%
3	Gambia, The	621.53	380.22	241.32	1.24%	0.76%	0.48%	0	0	0	0.48%
4	Senegal	702.59	380.22	322.37	1.41%	0.76%	0.64%	42	23	19	0.64%
5	Ghana	779.93	380.22	399.71	1.56%	0.76%	0.80%	108	53	55	0.80%
6	Côte d'Ivoire	780.23	380.22	400.01	1.56%	0.76%	0.80%	143	70	73	0.80%
7	Cabo Verde	831.75	380.22	451.53	1.66%	0.76%	0.90%	1	1	1	0.90%
8	Sierra Leone	865.99	380.22	485.77	1.73%	0.76%	0.97%	2	1	1	0.97%
9	Guinea-Bissau	866.92	380.22	486.70	1.73%	0.76%	0.97%	5	2	3	0.97%
10	Guinea	1,050.52	380.22	670.30	2.10%	0.76%	1.34%	57	21	36	1.34%
11	Nigeria	1,174.36	380.22	794.14	2.35%	0.76%	1.59%	92	30	62	1.59%
12	Liberia	1,673.82	380.22	1,293.60	3.35%	0.76%	2.59%	8	2	6	2.59%
	Total							**477**	**209**	**260**	
	TAvg				1.68%		1.03%				0.89%

Table D4b: Price of export per shipment value, Level of export due to the compliance costs and the % change of the price and level of exports

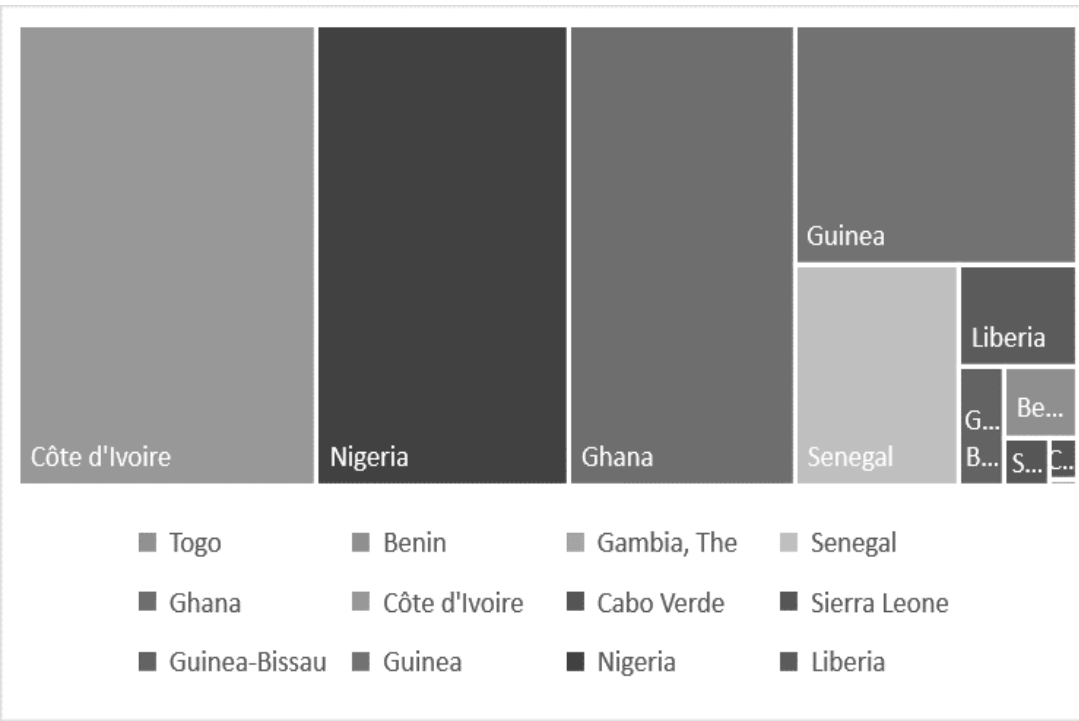
	$			%change in price(due to Excess Ccex)	m$		%Change in export(BR & AR)	m$		
	P fob	**P AR (fob-nor)**	**P BR (fob-norm-exc)**	**%^EXP/TEX**	**EX BR-fob**	**EX BR-AR**	**EX BR-AR / TEXP**	**EX BR**	**EX AR**	**EX fob**
Togo	1	1.0000	1.0000	0.00%	3	-	0.00%	1,737	1,737	1,740
Benin	1	0.9924	0.9896	0.28%	4	1	0.10%	981	982	985
Gambia, The	1	0.9924	0.9876	0.49%	0	0	0.17%	23	23	23
Senegal	1	0.9924	0.9859	0.65%	20	9	0.30%	2,982	2,991	3,001
Ghana	1	0.9924	0.9844	0.81%	39	20	0.29%	6,914	6,933	6,952
Côte d'Ivoire	1	0.9924	0.9844	0.81%	52	26	0.29%	9,184	9,210	9,235
Cabo Verde	1	0.9924	0.9834	0.92%	0	0	0.33%	71	72	72
Sierra Leone	1	0.9924	0.9827	0.99%	1	0	0.35%	118	118	118
Guinea-Bissau	1	0.9924	0.9827	0.99%	2	1	0.35%	301	302	303
Guinea	1	0.9924	0.9790	1.37%	20	13	0.48%	2,705	2,719	2,726
Nigeria	1	0.9924	0.9765	1.63%	16	11	0.27%	3,904	3,915	3,920
Liberia	1	0.9924	0.9665	2.68%	3	2	0.93%	248	250	251
SUM					**159**	**84**		**29,168**		
AVG							0.29%			

Appendix E: Graphs on the Economic Gains Share among ECOWAS Countries

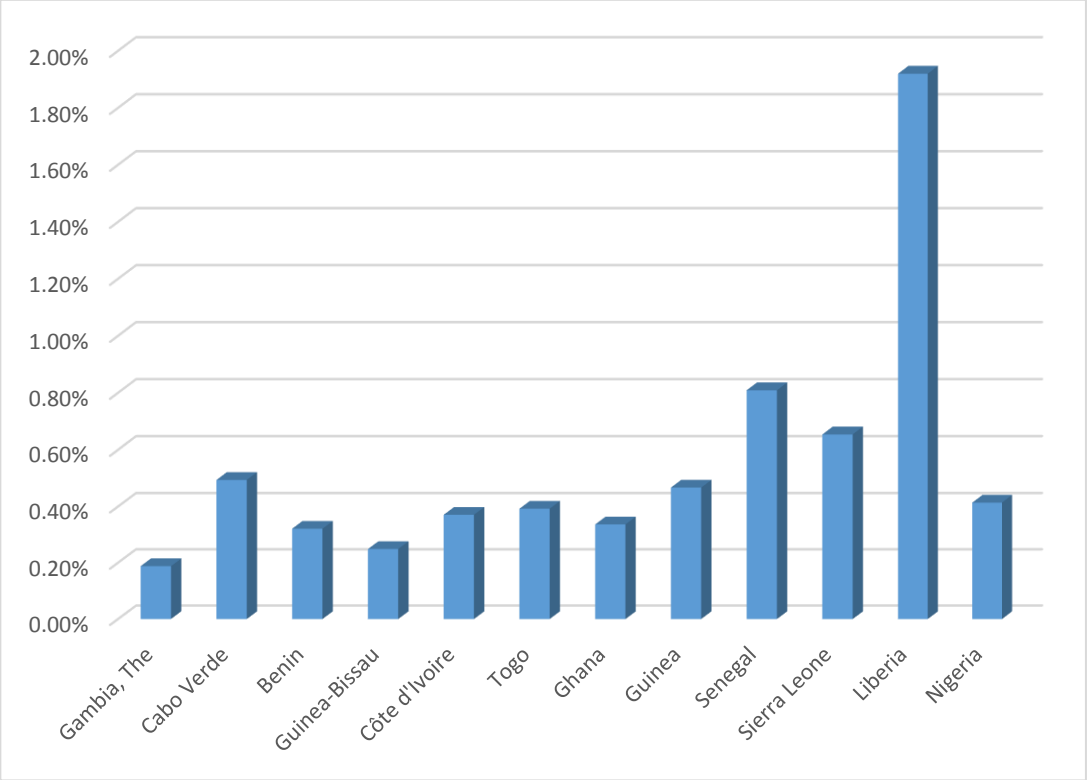
Graph E1: The Share of Total Economic Gain among the ECOWAS Countries, Import, Case of Singapore



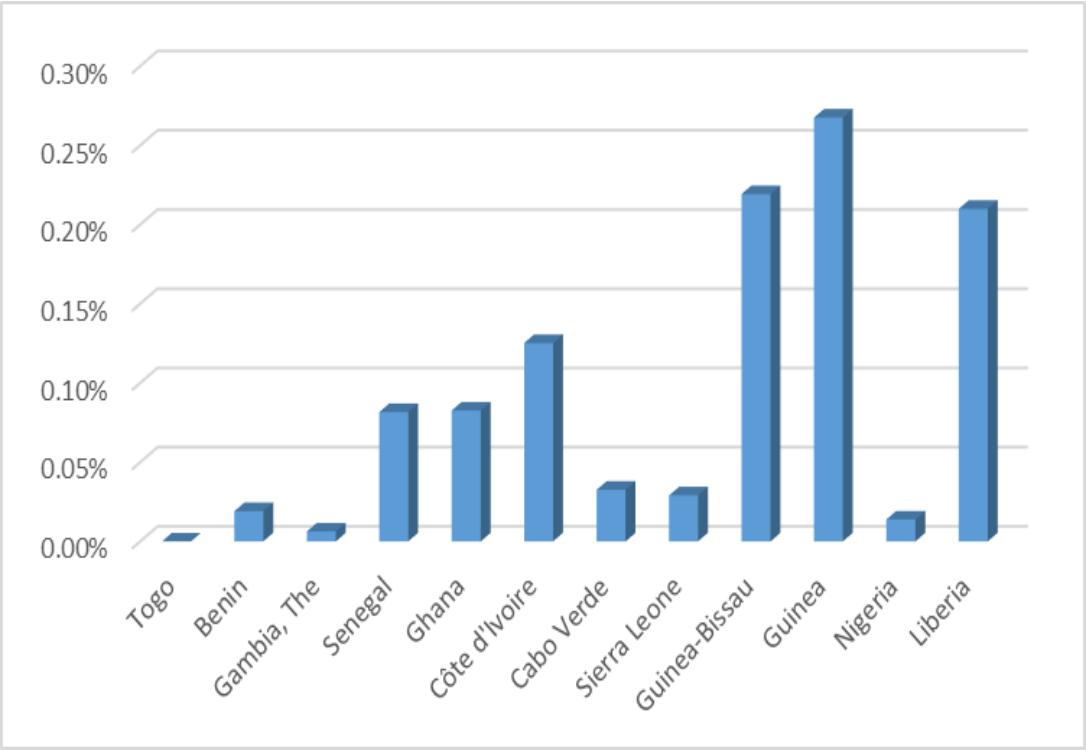
Graph E2: The Share of Total Economic Gain among the ECOWAS Countries, Export, Case of Singapore



Graph E3: The Percentage of Economic Gain to GDP, for ECOWAS Countries, Import, Case of Singapore



Graph E4: The Percentage of Economic Gain to GDP, for ECOWAS Countries, Export, Case of Singapore



Appendix F: Characteristics of SACU Countries

Table F1: Some development indicators, as of 2018

	Country	Code	Population, total	GDP (current US$)	GDP per Capita	Income Group	surface area (sq. km, thousands)
		1	2	3	4	5	6
1	Botswana	BWA	2,254,126	18,616,018,903	8,259	Upper middle income	581,730
2	Eswatini (Swaziland)	SWZ	1,136,191	4,703,787,507	4,140	Lower middle income	17,360
3	Lesotho	LSO	2,108,132	2,791,762,880	1,324	Lower middle income	30,360
4	Namibia	NAM	2,448,255	14,521,711,630	5,931	Upper middle income	824,290
5	South Africa	ZAF	57,779,622	368,288,203,087	6,374	Upper middle income	1,219,090
	SACU	**SUM**	65,726,326	408,921,484,007			
	SACU	**AVG**	13,145,265	81,784,296,801	5,206		

Source: WB, 2019

Table F2: Comparison of South Africa and SACU to Sub-Saharan Africa

	GDP † (current US Dollars, Millions)	Imports, CIF, (US Dollars, Millions)‡	Exports, FOB, (US Dollars, Millions)‡	IM/GDP	EX/GDP
South Africa	368,288	127,254	100,139	35%	27%
SACU, SUM	408,921	143,154	116,585	35%	29%
Sub-Saharan Africa	1,699,462	398,670	362,187	23%	21%
Ratio (South Africa/ SACU)	**90%**	**89%**	**86%**		
Ratio (SACU/SSA)	**24%**	**36%**	**32%**		

Sources: † World Bank, 2019, ‡ IMF, 2019

Appendix G: SACU, Trading Across borders Rank, Compliance Time and Cost to trade (Tables and Graphs)

Table G1: SACU, Trading across Border Rank of Countries

Location	Trading across Borders rank
Botswana	55
Eswatini (Swaziland)	35
Lesotho	40
Namibia	138
South Africa	145
SSA	140
MOZ	94
SNG	47

Source: Doing Business, 2020

Graph G1: Trading across Border Rank of SACU Countries

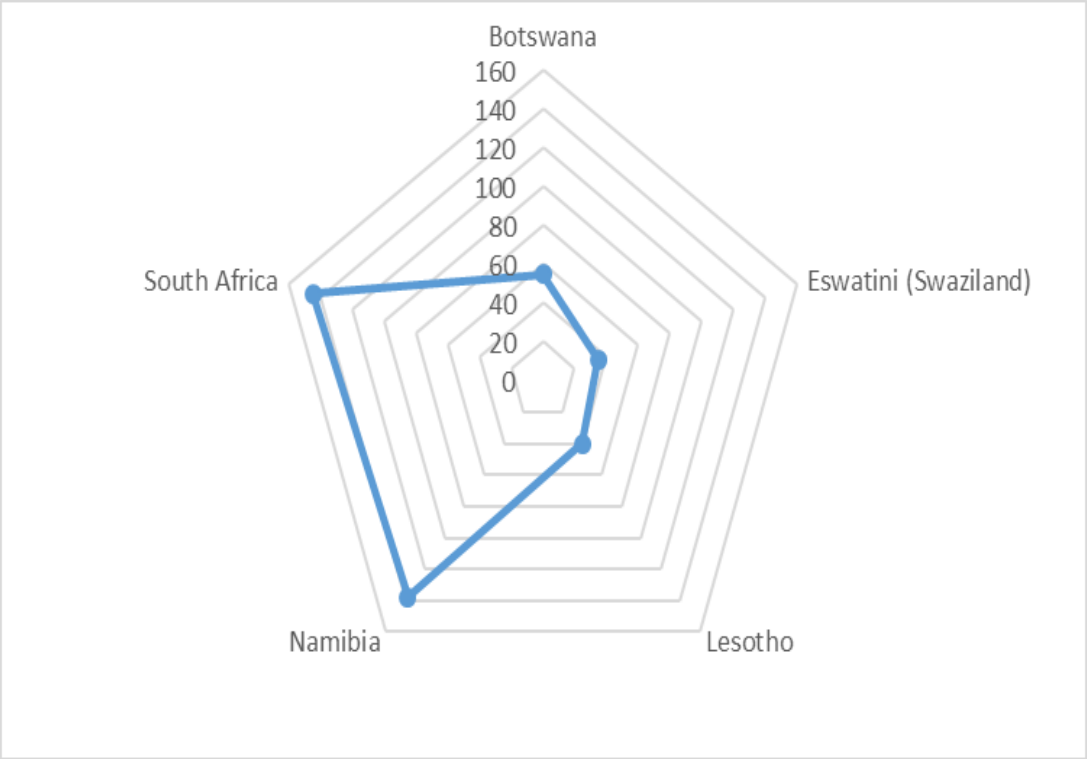
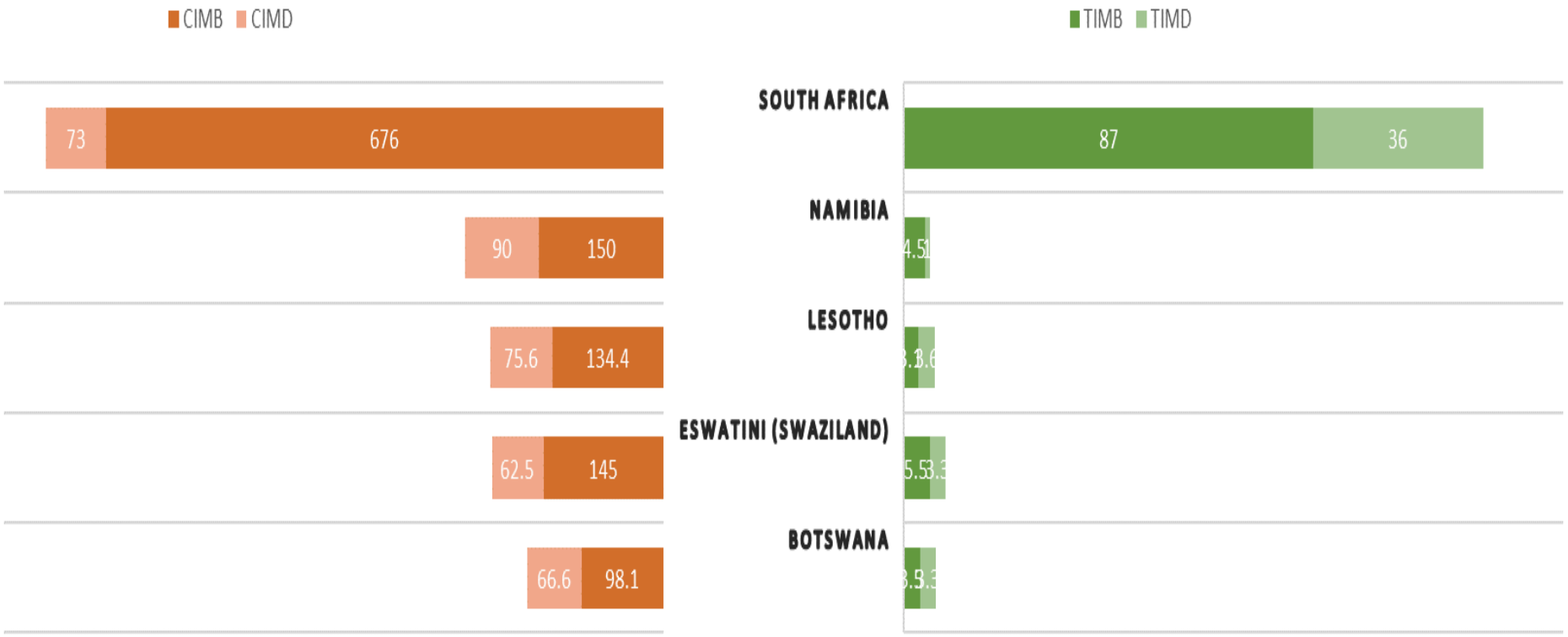


Table G2: SACU, Documentary and Border Compliance Time and Cost to Import, as of 2018

	Time to import: Border compliance (hours)	Time to import: Documentary compliance (hours)	Cost to import: Border compliance (USD)	Cost to import: Documentary compliance (USD)
Economy	TIMB	TIMD	CIMB	CIMD
Botswana	3.5	3.3	98.1	66.6
Eswatini (Swaziland)	5.5	3.3	145	62.5
Lesotho	3.1	3.6	134.4	75.6
Namibia	4.5	1	150	90
South Africa	87	36	676	73
Sub-Saharan Africa	126	96	676	287
Mozambique	9	16	399	60
Singapore	33	3	220	40

Source: DB, 2019

Graph G2: SACU, Documentary and Border Compliance Time and Cost to Import, 2018

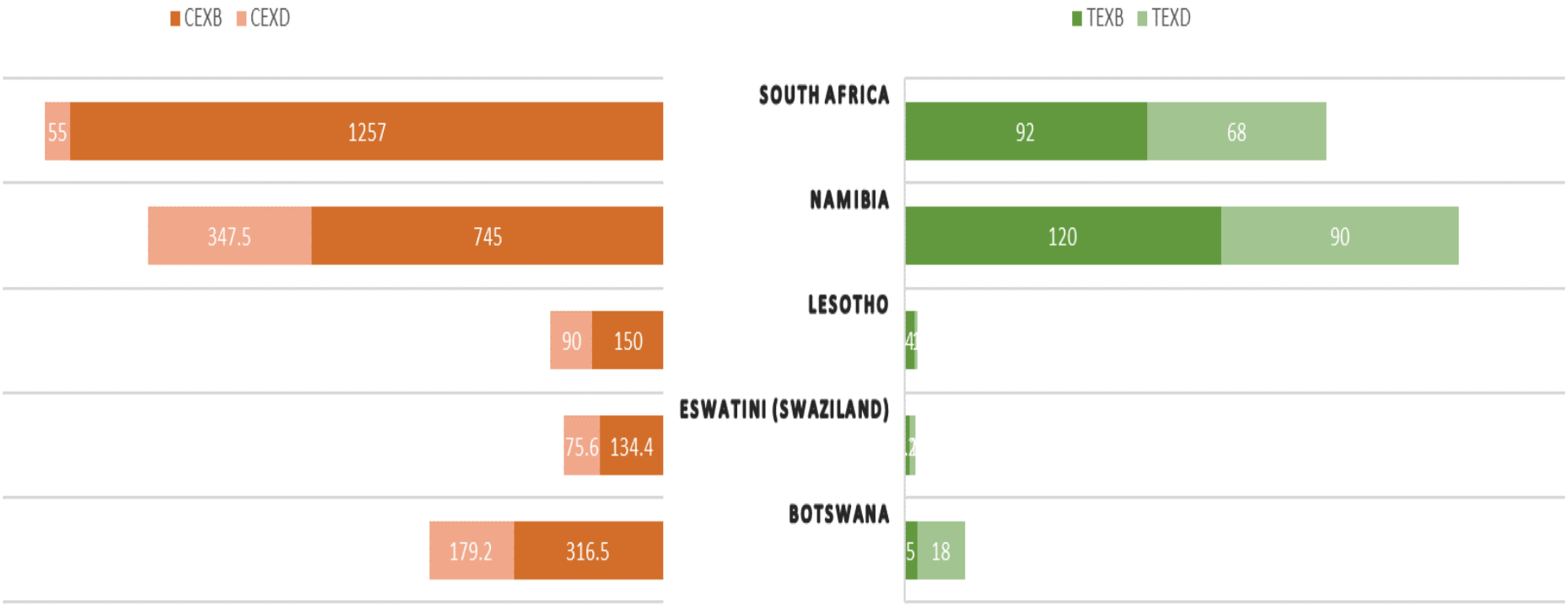


Appendix G3: SACU, Documentary and Border Compliance Time and Cost to Export, as of 2018

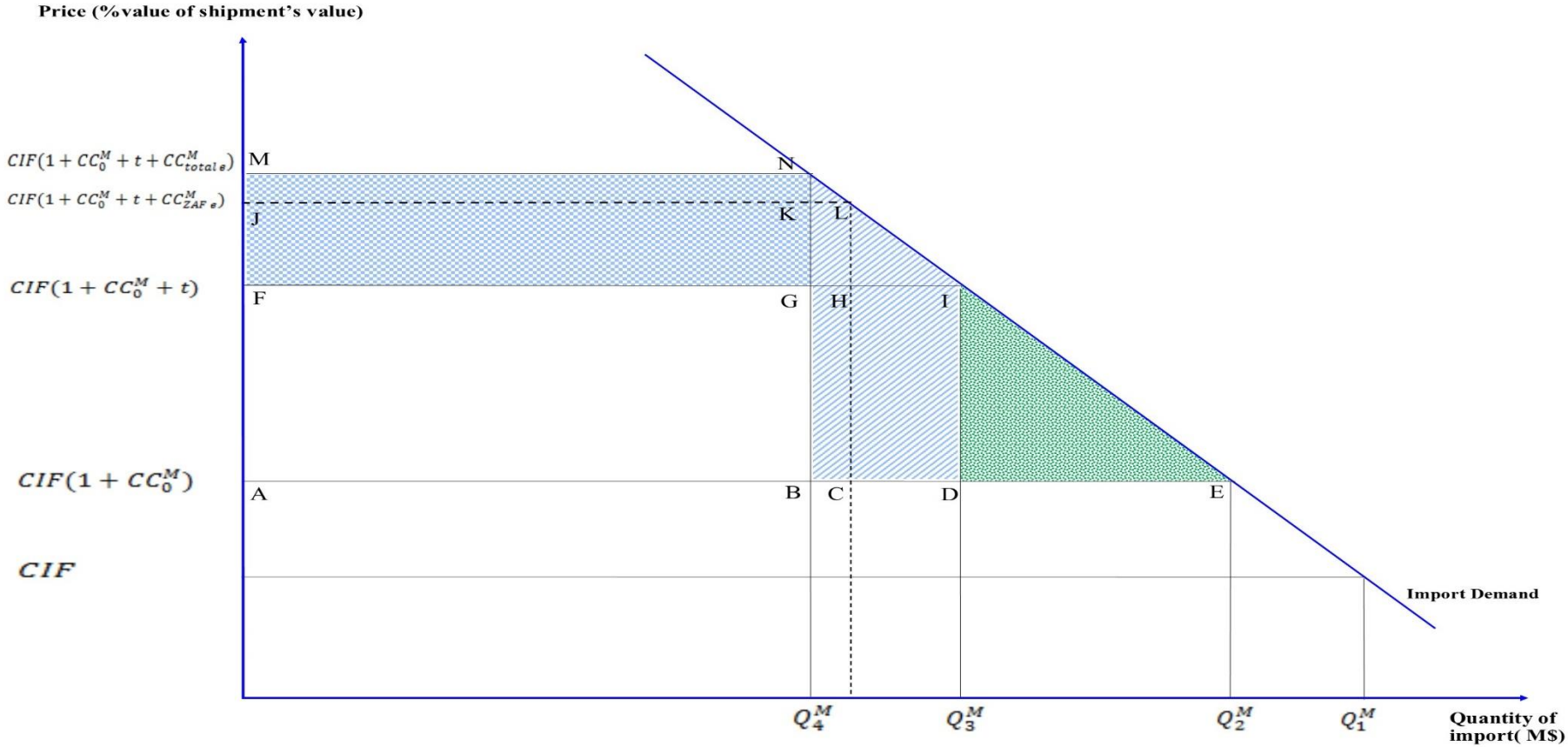
		Time to export: Border compliance (hours)	Time to export: Documentary compliance (hours)	Cost to export: Border compliance (USD)	Cost to export: Documentary compliance (USD)
#	Economy	TEXB	TEXD	CEXB	CEXD
1	Botswana	5	18	316.5	179.2
2	Eswatini (Swaziland)	2.1	2	134.4	75.6
3	Lesotho	4	1	150	90
4	Namibia	120	90	745	347.5
5	South Africa	92	68	1257	55
6	Sub-Saharan Africa	92	72	603	173
7	Mozambique	66	36	602	160
8	Singapore	10	2	335	37

Source: DB, 2019

Graph G3: SACU, Documentary and Border Compliance Time and Cost to Export, 2018



Appendix H: Graph on the Economic Impact of Tariff, and Import Compliance Costs to import, SACU


Price (%value of shipment's value)
$CIF(1+CC_0^M+t+CC_{total\,e}^M)$
$CIF(1+CC_0^M+t+CC_{ZAF\,e}^M)$
$CIF(1+CC_0^M+t)$
$CIF(1+CC_0^M)$
CIF
M
N
J
K
L
F
G
H
I
A
B
C
D
E
Import Demand
Q_4^M
Q_3^M
Q_2^M
Q_1^M
Quantity of import(M$)

Appendix I: SACU, Analyses on Compliance Costs to Import (Benchmarks: Botswana and Mozambique)

This appendix is comprised up from the following parts:

- Part I0: Origin of Imports, Import less Re-export, and Effective Duty Rate
- Part I1: SACU, Benchmarking (Botswana (BWA) and Mozambique (MOZ))
- Part I2: SACU, Costs to Import (Benchmarks: BWA & MOZ)
- Part I3: SACU, Scenario A; Goods Directly Coming to the Country, (Benchmarks: BWA & MOZ)
- Part I4: SACU, Scenario B; Goods Coming to the Country through South Africa (ZAF), (Benchmarks: BWA & MOZ)
- Part I5: SACU, Scenario C; Goods Coming to the Country through Namibia (NAM), (Benchmarks: BWA & MOZ)
- Part I6: SACU, Overall Result of Scenarios (A+B+C), (Benchmarks: BWA & MOZ)

Part I0: Origin of Imports, Import less Re-export, and Effective Duty Rate

	Country	Imports, CIF from Partner Countries (US Dollars, Millions)	% of import coming directly	Export from ZAF(m$)	the proportion of import coming from ZAF	Export from NAM (m$)m$	% of import coming from NAM	Imports, CIF from Partner Countries(US Dollars, Millions)	Tariff rate, applied, mean, all products	effective Duty rate
	.	**T IMP0**	**%directly**	ZAF EX	**% ZAF Im**	NAM EX	**% NAM Im**	**IMP less reEx(M$)**	Duty/Mrch	effective tariff
1	Botswana	6,211	**0.23**	4,103	**0.66**	668	**0.11**	6,211	0.011	0.034
2	Namibia	6,410	**0.44**	3,598	**0.56**	-	**-**	5,742	0.009	0.030
3	Eswatini	1,978	**-**	1,392	**1.00**	-	**-**	1,978	0.007	0.046
4	Lesotho	1,301	**-**	1,317	**1.00**	-	**-**	1,301	0.014	0.046
5	South Africa	127,254	**1.00**	-	**-**	-	**-**	116,844	0.046	0.046
	sum			**10,410**		**668**				

Landlocked country

Part I1: SACU, Benchmarking (Botswana (BWA) and Mozambique (MOZ))

1	2	3	4	5	6	7	8	9
Country	Total cost to import (USD)	Benchmark total cost to import (USD)	Excess tCIM copmare by BWA	Excess tCIM copmare by SING	tCIM as a %of Shipment's value	Benchmark tCIM as a %of Shipment's value	% of Excess tCIM copmare by BWA	% of Excess tCIM copmare by SING
.	tCIM	Bench mark	excess tCIM	excess tCIM2	tCIM /50000	normal cost/50000	exc/50000-	exc/50000--
Botswana	169.36	169.36	-	-	0.0034	0.0034	-	-
Namibia	213.53	169.36	44.17	-	0.0043	0.0034	0.0009	-
Eswatini	214.59	169.36	45.23	-	0.0043	0.0034	0.0009	-
Lesotho	243.77	169.36	74.41	-	0.0049	0.0034	0.0015	-
South Africa	833.25	476.12	-	357.12	0.0167	0.0095	-	0.0071

Part I2: SACU, Costs to Import (Benchmarks: BWA & MOZ)

Table I2a: Cost to import per shipment, as a % value of a shipment, and Value of cost to import (Before Reform)

1	2	3	4	5	6	7	8	9	10	11	12
Country	Total cost to import (USD)	Total cost to import, come through ZAF($)	Total cost to import, come through NAM($)	tCIM as a %of Shipment's value	tCIM%, come through ZAF	tCIM%, come through NAM	Value of cost to import, come directly(M$)	Value of cost to import come through ZAF(M$)	Value of cost to import come through NAM(M$)	Total Value of cost to import(M$)	**Total Value of cost to import(as a % of TIM-)**
	tCIM	tCIM own+ZAF	tCIM own+NAM	tCIM /50000	tCIM own+ZAF/ 50000	tCIM own+NAM /50000	vCIM directly	vCIM ZAF	vCIM NAM	Total vCIM	**TvCIM/TIMP**
Botswana	169.36	1002.60	382.88	0.34%	2.01%	0.77%	5	82	5	92	0.015
Namibia	213.53	1046.77	-	0.43%	2.09%	2.09%	11	67	-	78	0.014
Eswatini	214.59	1047.84	-	0.43%	2.10%	0.00%	-	41	-	41	0.021
Lesotho	243.77	1077.01	-	0.49%	2.15%	0.00%	-	28	-	28	0.022
South Africa	833.25	-	-	1.67%	1.67%	0.00%	1,947	-	-	1,947	0.017

Table I2b: Cost to import per shipment, as a % value of a shipment, and Value of cost to import (After Reform)

1	2	3	4	5	6	7	8	9	10	11	12
Country	AR, Total cost to import, come directly($)	AR, Total cost to import, come through ZAF($)	AR, Total cost to import, come through NAM($)	AR, tCIM%, come directly	AR, tCIM%, come through ZAF	AR, tCIM%, come through NAM	AR,Value of cost to import, come directly(M$)	AR, Value of cost to import come through ZAF(M$)	AR, Value of cost to import come through NAM(M$)	AR, Total Value of cost to import	**AR, Total Value of cost to import**
.	AR tCIM own	AR tCIM own+ ZAF	AR tCIM own+NAM	AR tCIM own/50000	AR tCIM own+ZAF/50000	AR tCIM own+NAM/50000	vCIM other AR	vCIM ZAF AR	vCIM NAM AR	Total vCIM AR	**TvCIM AR/TIMP**
Botswana	169.36	645.48	338.72	0.34%	1.29%	0.68%	5	53	5	62	0.010
Namibia	169.36	645.48	-	0.34%	1.29%	1.29%	9	42	-	50	0.009
Eswatini	169.36	645.48	-	0.34%	1.29%	0.00%	-	26	-	26	0.013
Lesotho	169.36	645.48	-	0.34%	1.29%	0.00%	-	17	-	17	0.013
South Africa	476.12	-	-	0.95%	0.95%	0.00%	1,113	-	-	1,113	0.010

Table I2c: Cost to import per shipment, as a % value of a shipment, and Value of cost to import (due to Excess compliance costs)

1	2	3	4	5	6	7	8	9	10	11	12
	Excess, Total cost to import, come directly($)	Excess, Total cost to import, come through ZAF($)	Excess, Total cost to import, come through NAM($)	Excess tCIM%, come directly	Excess tCIM%, come through ZAF	Excess tCIM%, come through NAM	Excess Value of cost to import, come directly(M$)	Excess Value of cost to import come through ZAF(M$)	Excess Value of cost to import come through NAM(M$)	Total Excess Value of cost to import(M$)	**Total Excess Value of cost to import(as a % of TIM-)**
.	Excess tCIM own	Exc tCIM own+ZAF	Exc tCIM own+NAM	Exc tCIM own/50000	Exc tCIM own+ZAF/50000	Exc tCIM own+NAM/50000	Vexcss others	Vexcss ZAF	Vexcss NAM	Total Vexss	**T Vexss/TIMP**
Botswana	0.00	357.12	44.17	0.00%	0.71%	0.09%	0	29	1	30	0.48%
Namibia	44.17	401.29	-	0.09%	0.80%	0.80%	2	26	0	28	0.49%
Eswatini	45.23	402.35	-	0.09%	0.80%	0.00%	0	16	0	16	0.80%
Lesotho	74.41	431.53	-	0.15%	0.86%	0.00%	0	11	0	11	0.86%
South Africa	357.12	-	-	0.71%	0.71%	0.00%	835	0	0	835	0.71%
sum										**920**	**-**
avg										**-**	**0.0070**

Part I3: SACU, Scenario A; Goods Directly Coming to the Country, (Benchmarks: BWA & MOZ)

Table I3a: Cost to import as a % value of a shipment, (Before Reform, and Excess) & The Price of import per shipment value due to tariff and the compliance costs

1	2	3	4	5	6	7	8	9	10	11	12
Country	Official exchange rate (LCU per US$, period average)	% of import coimg directly	Import,come Directly(M$)	tCIM as %of Shipment's value	% of Excess tCIM	Total rate of trade distortion ($), before reform	Total rate of extra CC & duty	CIF	CIF+ normal TCC	CIF+ normal CC+duty (AR)	CIF+ normal CC+duty+ Execess CC (BR)
	ER	%directly	TIMP Directly	tCIM /50000-	exc/50000-2	Tdis BR-	Texcess tCIM rate + eff tariff-	Pcif-	P norm-	P du norm-	P BR,Texces-
Botswana	10.347	0.23	1,439	0.0034	-	0.0374	0.0340	1.0000	1.0034	1.0374	1.0374
Namibia	13.313	0.44	2,520	0.0043	0.0009	0.0341	0.0307	1.0000	1.0034	1.0333	1.0341
Eswatini	13.334	0.00	-	0.0043	0.0009	0.0504	0.0470	1.0000	1.0034	1.0495	1.0504
Lesotho	13.334	0.00	-	0.0049	0.0015	0.0510	0.0476	1.0000	1.0034	1.0495	1.0510
South Africa	13.334	1.00	116,844	0.0167	0.0071	0.0628	0.0532	1.0000	1.0095	1.0556	1.0628

Table I3b: Change in the Level of Import due to tariff and the compliance costs

1	2	3	4	5	6	7	8	9
Country	Import Demand Elasticity	change in IM(BR-CIF)	change in IM(BR-normal)	change in IM(BR-AR)	Im BR	im cif	im normal	im AR
.	E	^Im BR-cif-	^Im BR-norm-	^im BR- dun(AR)-	Im BR-	im cif-	im norm-	im dun (AR)-
Botswana	-1.14	61.40	55.84	-	1,439.36	1,500.75	1,495.20	1,439.36
Namibia	-1.08	92.80	83.59	2.40	2,519.53	2,612.33	2,603.12	2,521.93
Eswatini	-0.97	-	-	-	-	-	-	-
Lesotho	-0.95	-	-	-	-	-	-	-
South Africa	-1.28	9,350.47	7,931.85	1,064.06	116,844.00	126,194.47	124,775.85	117,908.05

Table I3c: The welfare gain (Before Reform, the Change After Reform)

1	2	3	4	7	8	9	10	11	12	13	14
	TR	**C**	**D**	**A+B**	**A+B+C**	**A+B+D**	**d**	**a+b**	**a+b+c**	**a+b+d**	**-**
Country	Total revenue of import duty, M$	Economic loss caused by duty (M$)	Before Reform	Before Reform	Before Reform	Before Reform	direct EL(benefit) of excess CC,itself	Economic loss caused by excess CC (M$)	Economic loss due to duty and Excess CC (M$)	Total econoimc costs of excessive trade transaction costs (M$)	Total economic loss of excess cc (while there is tariff)as % of GDP
.	TR23	(C)DW traiff-	(D)tCC own-	(A+B) tDWCC br, duty there is-	(A+B+C) DWs, CC&tariff -br-	(A+B+D)DWs, CC-	(d)exc CC own-	(a+b) tDW excessCC, duty there is-	(a+b+c) DWs, excessCC&tariff -2	(a+b+d) tEL of excessCC-	tEL/GDP-
Botswana	49	0.9501	4.8753	0.1985	1.1486	5.0739	-	-	0.9501	-	-
Namibia	75	1.2124	10.7598	0.3715	1.5839	11.1313	2.2257	0.0728	1.2851	2.2985	0.0002
Eswatini	-	-	-	-	-	-	-	-	-	-	-
Lesotho	-	-	-	-	-	-	-	-	-	-	-
South Africa	5,387	158.3027	1,947.1972	135.1382	293.4409	2,082.3354	834.5542	52.8530	211.1558	887.4072	0.0024

Note: a,b, and d in the tables refer to the changes in the economic welfare gain after reforms, while columns named A, B, and D in the tables refer to the size of economic welfare gain before implementing the reforms.

- a: [ΔG_1], Direct welfare gain from elimination of excessive economic resources used to import.
- b: [ΔG_2], Welfare gain of removing excessive compliance costs to import (whereas there is tariff), caused by the increase in importation.
- d: [ΔG_e], Total economic welfare gain by removing excessive compliance costs to import. .

Part I4: SACU, Scenario B; Goods Coming to the Country through South Africa (ZAF), (Benchmarks: BWA & MOZ)

Table I4a: Cost to import as a % value of a shipment, (Before Reform, and Excess) & The Price of import per shipment value due to tariff and the compliance costs

1	2	3	4	7	8	9	10	11	12	13	14	15	16	17
Country	the proportion of import coimg from ZAF	Import value,come through ZAF(M$)	tCIM as %of Shipment's value	Total tCIM as %of Shipment's value	% of Excess tCIM	% of Total Excess tCIM	Total rate of trade distortion ($), before reform	Total rate of extra CC & duty	CIF	cif+ normal CC	cif+ normal CC+duty (ATR)	cif+ normal CC+duty + Execess CC own(AR zaf)	cif+ normal CC+duty + Execess CC zaf(AR own)	cif+ normal CC+duty + T excess CC(BR)
.	% ZAF Im	TIMP * ZAF%	tCIM /50000--	TtCIM /50000--	exc/50000--2	T exc/50000--	Tdis BR--	Texcess tCIM rate + eff tariff--	Pcif--	P norm--	P dunorm(ATR)--	P BR own(AR ZAF)--	P BR zaf(AR OWN)--	P BRs,T exce--
Botswana	0.66	4,103	0.0034	0.0201	-	0.0071	0.0541	0.0412	1.0000	1.0129	1.0469	1.0469	1.0541	1.0541
Namibia	0.56	3,222	0.0043	0.0209	0.0009	0.0080	0.0508	0.0379	1.0000	1.0129	1.0428	1.0437	1.0499	1.0508
Eswatini	1.00	1,978	0.0043	0.0210	0.0009	0.0080	0.0671	0.0541	1.0000	1.0129	1.0590	1.0599	1.0662	1.0671
Lesotho	1.00	1,301	0.0049	0.0215	0.0015	0.0086	0.0676	0.0547	1.0000	1.0129	1.0590	1.0605	1.0662	1.0676
South Africa	0.00	-	0.0167	**0.0167**	**0.0071**	-	0.0628	0.0461	-	-	-	-	-	-

Table I4b: Change in the Level of Import due to tariff and the compliance costs

1	2	3	4	5	6	7	8	9	10	11	12	13
Country	Import Demand Elasticity	Change in IM (BR-CIF)	Change in IM (BR-normal)	Change in IM (BR-ATR)	Change in IM (BR-AR zaf)	Change in IM (BR-AR own)	Im BR	im cif	im norm	Im dun(ATR)	Im Br own(AR ZAF)	Im Br zaf(AR OWN)
.	E	^Im BR-cif--	^Im BR-norm--	^im BR- dun(ATR)--	^im BR-BRown(AF ZAF)--	^im BR-Brzaf(AR OWN)--	Im BR--	im cif--	im norm--	Im dun(ATR)--	Im Brown(AR ZAF)--	Im Brzaf(AR OWN)--
Botswana	-1.14	252.96	192.58	33.41	31.69415	-	4,102.99	4,355.95	4,295.57	4,136.40	4,134.68	4,103.0
Namibia	-1.08	176.63	131.75	27.91	23.63	2.92	3,222.46	3,399.10	3,354.21	3,250.37	3,246.10	3,225.4
Eswatini	-0.97	128.80	104.00	15.46	12.85699	1.63	1,978.15	2,106.95	2,082.16	1,993.61	1,991.01	1,979.8
Lesotho	-0.95	83.77	67.78	10.69	8.285496	1.73	1,300.94	1,384.72	1,368.73	1,311.63	1,309.23	1,302.7
South Africa	-1.28	-	-	-	-	-	-	-	-	-	-	-

Table I4c: The welfare gain (Before Reform)

1	2	3	4	5	6	7	8	9	10	11
	TR	**C**	**-**	**-**	**D**	**-**	**-**	**A+B**	**A+B+C**	**A+B+D**
Country	Total revenue of import duty, M$	Economic loss caused by duty (M$)	-	-	Before Reform	-	Before Reform	-	-	-
.	TR24	(C)DW traiff--	(D own) Tcc own --	(D zaf) tCC ZA--	(D total) TtCCs--	TA--	TB--	(A+B) tDWCC br, duty there is--	(A+B+C) DWs, CC&tariff-br--	(A+B+D) DWs, excessCC--
Botswana	139.62	2.7082	13.8974	68.3760	82.2735	0.9404	3.1917	4.1321	6.8403	86.4055
Namibia	96.24	1.5506	13.7617	53.7021	67.4638	0.7620	2.1740	2.9359	4.4865	70.3998
Eswatini	91.19	2.0410	8.4898	32.9657	41.4555	0.4218	1.8557	2.2775	4.3185	43.7330
Lesotho	59.97	1.3160	6.3425	21.6801	28.0227	0.2873	1.2298	1.5172	2.8332	29.5398
South Africa	-	-	-	-	-	-	-	-	-	-

Table I4d: The welfare gain (The Change After Reform)

1	2	3	4	5	6	7	8	9
	C	**-**	**-**	**d**	**a+b**	**a+b+c**	**a+b+d**	**-**
Country	Economic loss caused by duty (M$)	direct EL of itself excess CC	direct EL of zaf excess C	Total Direct Economic loss, as excessive economic resources used up (M$)	Economic loss caused by excess CC (M$)	Economic loss due to duty and Excess CC (M$)	Total econoimc costs of excessive trade transaction cost (M$)	Total economic loss of excess cc (while there is tariff) as % of GDP
.	(C)DW traiff--	(d own) exc CC own--	(d zaf) exc CC ZAF--	(T d) Texc CCs (tDEL)--	(a+b) tDW excessCC, duty there is--	(a+b+c) DWs, excessCC&tariff--2	(a+b+d) tEL of excessCC--	tEL/GDP--
Botswana	2.7082	-	29.3055	29.3055	1.2562	3.9644	30.5616	0.0016
Namibia	1.5506	2.8467	23.0163	25.8631	0.9454	2.4960	26.8084	0.0018
Eswatini	2.0410	1.7895	14.1289	15.9184	0.7747	2.8158	16.6931	0.0035
Lesotho	1.3160	1.9361	9.2919	11.2280	0.5389	1.8549	11.7669	0.0042
South Africa	-	-	-	-	-	-	-	-

Part I5: SACU, Scenario C; Goods Coming to the Country through Namibia (NAM), (Benchmarks: BWA & MOZ)

Table I5a: Cost to import as a % value of a shipment, (Before Reform, and Excess) & The Price of import per shipment value due to tariff and the compliance costs

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Country	% of import coimg fromNAM	Import, come through NAM(M $)	tCIM as %of Shipment 's value	Total tCIM as %of Shipment 's value	% of Excess tCIM	% of Total Excess tCIM	Total rate of trade distortion ($), before reform	Total rate of extra CC & duty	CIF	cif+ normal TRADE COMPLIANCE COSTS	cif+ normal CC+duty (ATR)	cif+ normal CC+duty + Execess CC own (AR NAM)	cif+ normal CC+duty + Execess CC zaf (AR Own)	cif+ normal CC+duty + T Execess CC(ATR)
.	% NAM Im	TIMP * NAM%2	tCIM /50000---	TTtCIM /50000---	exc/50000---2	T exc/50000---	Tdis BR---	Texcess tCIM rate + eff tariff---	Pcif---	P norm---	P du norm(ATR)---	P BR own(AR NAM)---	P BRnam(AF OWN)---	P BRs,T exce---
Botswana	0.11	668	0.0034	0.0077	-	0.0009	0.042	0.04	1.000	1.0068	1.0408	1.041	1.0417	1.042
Namibia	0.00	-	0.0043	0.0085	0.0009	0.0018	-	-	-	-	-	-	-	-
Eswatini	0.00	-	0.0043	0.0086	0.0009	0.0018	-	-	-	-	-	-	-	-
Lesotho	0.00	-	0.0049	0.0091	0.0015	0.0024	-	-	-	-	-	-	-	-
South Africa	0.00	-	0.0167	0.0209	-	0.0080	-	-	-	-	-	-	-	-

Table I5b: Change in the Level of Import due to tariff and the compliance costs

1	2	3	4	5	6	7	8	9	10	11	12	13
Country	Import Demand Elasticity	Change in IM (BR-CIF)	Change in IM (BR-normal)	Change in IM (BR-ATR)	Change in IM (BR-ARnam)	Change in IM (BR-ARown)	Im BR	im cif	im norm	Im du n (ATR)	Im BRown(AR NAM)	Im BRnam(AR OWN)
.	E	^Im BR-cif---	^Im BR-norm---	^im BR-dun(ATR)---	^im BR-BRown(AR NAM)	^im BR-BRnam(AR OWN)	Im BR---	im cif---	im norm---	Im du n (ATR)---	Im BRown(AR NAM)	Im BRnam(AR OWN)
Botswana	-1.14	31.77	26.61	0.67	0.65	-	668.48	700.24	695.08	669.15	669.12	668.48
Namibia	-1.08	-	-	-	-	-	-	-	-	-	-	-
Eswatini	-0.97	-	-	-	-	-	-	-	-	-	-	-
Lesotho	-0.95	-	-	-	-	-	-	-	-	-	-	-
South Africa	-1.28	-	-	-	-	-	-	-	-	-	-	-

Table I5c: The welfare gain (Before Reform)

1		2	3	5	6	7	8
	TR	**C**	**-**	**D**	**A+B**	**A+B+C**	**A+B+D**
Country	Total revenue of import duty, M$	Economic loss caused by duty (M$)	-	-	-	-	-
.	TR2419	© DW traiff---	(D own) tCC own---	(D total) tCCs---	(A+B) tDWCC br, duty there is---	(A+B+C) DWs, CC&tariff-br---	(A+B+D) DWs, excessCC---
Botswana	22.75	0.4412	2.2642	5.1190	0.2209	0.6622	5.3399
Namibia	-	-	-	-	-	-	-
Eswatini	-	-	-	-	-	-	-
Lesotho	-	-	-	-	-	-	-
South Africa	-	-	-	-	-	-	-

Table I5d: The welfare gain (The Change After Reform)

1	2	3	5	6	7	8	9
	C	**-**	**d**	**b**	**a+b**	**a+b+d**	**-**
Country	Economic loss caused by duty (M$)	direct EL of itself excess TRADE COMPLIANCE COSTS	Total Direct Economic loss, as excessive economic resources used up (M$)	-	Economic loss caused by excess CC (M$)	Total econoimc costs of excessive trade transaction cost (M$)	Total economic loss of excess cc (while there is tariff) as % of GDP
.	© DW traiff---	(d own)exc CC own---	(T d) Texc CCs (tDEL)---	Tb---2	(a+b) tDW excessCC, duty there is---	(a+b+d) tEL of excessCC---	tEL/GDP---
Botswana	0.4412	-	0.5905	0.0229	0.0232	0.6137	0.0000
Namibia	-	-	-	-	-	-	-
Eswatini	-	-	-	-	-	-	-
Lesotho	-	-	-	-	-	-	-
South Africa	-	-	-	-	-	-	-

Part I6: SACU, Overall Result of Scenario (A+B+C), (Benchmarks: BWA & MOZ)

Table I6a: Change in the Level of Import due to tariff and the compliance costs

1	2	3	4	5	6	7	8
Country	Change in Im (BR - CIF)	Change in Im (BR - normal)	**Change in Im (BR - ATR), due to total excess TCC**	Change in Im (BR - AR zaf)	Change in Im (BR - AR nam)	Change in Im (BR - AR own)	**Change in Im (norm - ATR), due to tariff**
.	^Im BR-cif2	^Im BR-norm	^im BR- du n(ATR)	^im BR-BRown(AR ZAF)	^im BR-BRown(AR NAM)2	^im BR-(AR OWN)2	^im norm - ATR
Botswana	346.13	275.02	34.08	31.69	0.65	-	240.94
Namibia	269.43	215.34	30.31	23.63	-	5.32	185.03
Eswatini	128.80	104.00	15.46	12.86	-	1.63	88.55
Lesotho	83.77	67.78	10.69	8.29	-	1.73	57.09
South Africa	9,350.47	7,931.85	1,064.06	-	-	1,064.06	6,867.80

Table I6b: The Level of Import with tariff and the compliance costs

1	2	3	4	5	6	7	8	9	10
Country	Im BR(IMP less reEx(M$))	im cif	im norm	Im du n (ATR)	Im BRown(AR ZAF)	Im BRown(AR NAM)	Im (AR OWN)	%Change in import, due to total excess CC	%Change in import, due to duty
.	Im BR	im cif2	im norm	Im du n 2(ATR)	Im BRown(AR ZAF)2	Im BRown(AR NAM)22	Im (AR OWN)2	(im BR-ATR)/ im BR	im norm-ATR/ im BR
Botswana	6,210.82	6,556.95	6,485.85	6,244.90	6,242.52	6,211.47	6,210.82	0.55%	3.88%
Namibia	5,741.99	6,011.43	5,957.33	5,772.30	5,765.63	-	5,747.32	0.53%	3.22%
Eswatini	1,978.15	2,106.95	2,082.16	1,993.61	1,991.01	-	1,979.78	0.78%	4.48%
Lesotho	1,300.94	1,384.72	1,368.73	1,311.63	1,309.23	-	1,302.67	0.82%	4.39%
South Africa	116,844.00	126,194.47	124,775.85	117,908.05	116,844.00	-	117,908.05	0.91%	5.88%

Table I6c: The welfare gain (Before Reform)

1		2	3	4	6	7	8	9
	TR	**tC**	**-**	**-**	**D**	**A+B**	**A+B+C**	**A+B+D**
Country	Total revenue of import duty, M$	Total Economic loss caused by duty, from reduced import(M$)	-	-	-	-	-	-
.	TR2	(C) T DW traiff2	(D direct) tCC directly	(D through zaf)	(total D)	(A+B) tDWCC br, duty there is2	(A+B+C) DWs, CC&tariff-br2	(A+B+D) DWs, CC
Botswana	211.35	4.0996	21.0370	68.3760	92.2678	4.5515	8.6511	96.8193
Namibia	171.48	2.7629	24.5215	53.7021	78.2236	3.3075	6.0704	81.5310
Eswatini	91.19	2.0410	8.4898	32.9657	41.4555	2.2775	4.3185	43.7330
Lesotho	59.97	1.3160	6.3425	21.6801	28.0227	1.5172	2.8332	29.5398
South Africa	5,386.51	158.3027	1,947.1972	-	1,947.1972	135.1382	293.4409	2,082.3354

Table I6d: The welfare gain (The Change After Reform)

1	2	3	4	5	6	7
		C	**-**	**-**	**d**	**a+b**
Country	GDP (current Million US$)	Total Economic loss caused by duty, from reduced import(M$)	direct EL(benefit),come directly	direct EL, come through ZAF	Total Direct Economic loss, as excessive economic resources used up (M$)	Economic loss caused by excess CC (M$)
.	GDP	(C) T DW traiff2	(d directly)	(d through zaf)	(total d)2	(a+b) tDW excessCC, duty there is2
Botswana	18,616	4.0996	-	29.3055	29.8960	1.2794
Namibia	14,522	2.7629	5.0725	23.0163	28.0888	1.0182
Eswatini	4,704	2.0410	1.7895	14.1289	15.9184	0.7747
Lesotho	2,792	1.3160	1.9361	9.2919	11.2280	0.5389
South Africa	368,288	158.3027	834.554	-	834.5542	52.8530
Sum	408,921	168.5223	843.3523	75.7426	919.6854	56.464

Table I6e: The welfare gain (The Change After Reform)

1	2	3	4	5	6	7	8	9	10
		C	**d**	**a+b**	**a+b+d**	**(a+b+d)/gdp**	**c/gdp**	**(a+b+d)/c**	
Country	GDP (current Million US$)	Total Economic loss caused by duty, from reduced import(M$)	Total Direct Economic loss, as excess economic resources used up (M$)	Economic loss caused by excess CC (M$)	Total econoimc costs of excessive trade transaction cost (M$)	Total economic loss of excess cc (while there is tariff) as % of GDP		-	
.	GDP	(C) T DW traiff2	(total d)2	(a+b) tDW excessCC, duty there is2	(a+b+d) tEL of excess	tEL/GDP2	c/gdp	(a+b+d)/c	a+b/c
Botswana	18,616	4.10	29.8960	1.28	31.18	0.0017	0.0002	7.60	0.312
Namibia	14,522	2.76	28.0888	1.02	29.11	0.0020	0.0002	10.53	0.369
Eswatini	4,704	2.04	15.9184	0.77	16.69	0.0035	0.0004	8.18	0.380
Lesotho	2,792	1.32	11.2280	0.54	11.77	0.0042	0.0005	8.94	0.409
South Africa	368,288	158.30	834.5542	52.85	887.41	0.0024	0.0004	5.61	0.334
SUM	**408,921**	**168.52**	**919.69**	**56.46**	**976.15**				
AVG						**0.0024**	**0.0004**	**5.792**	**0.335054785**

Appendix J: SACU, Analysis of Individual Reform (Case of Mozambique)

Table J1: SACU, Reforms in South Africa's Compliance Costs

1	2	4	5	6	7	8	7	9	10	11	12	13	14
Country	Import Demand Elasticity	IMP less reEx(m$)	the proportion of import coimg from ZAF	Change in import(M $), due to excessCC zaf	Change in import(M $), due to Duty	%Change in import, due to excesCC zaf	%Change in import, due to duty	Total Economic loss caused by duty, from reduced import(M $)	direct EL, come throug h ZAF	Economic loss caused by excess CC (M$)	***Total econoimc costs of excessive trade transaction cost (M$)***	Total economic loss of excess cc (while there is tariff) as % of GDP	
	E	IMP less reEx(M$)	% ZAF Im	im BR-AR ZAF	^im norm - ATR	(im BR-ATR)/ im BR	im normAT R/ im BR	(C) T DW traiff2	**d**	**a+b**	***a+b+d (tEL of excess)***	**a+b+d /GDP**	**a+b+d /c**
Botswana	(1.14)	6,211	0.66	31.69	240.94	1%	4%	4.100	29.305	1.198	***30.50***	0.0016	7.4406
Namibia	(1.08)	5,742	0.56	23.63	185.03	0%	3%	2.763	23.016	0.795	***23.81***	0.0016	8.6181
Eswatini	(0.97)	1,978	1.00	12.86	88.55	1%	4%	2.041	14.129	0.642	***14.77***	0.0031	7.2370
Lesotho	(0.95)	1,301	1.00	8.29	57.09	1%	4%	1.316	9.292	0.414	***9.71***	0.0035	7.3751
South Africa	(1.28)	116,844	1.00	1,064.06	6,867.80	1%	6%	158.303	834.55	52.853	***887.41***	0.0024	5.6058
SUM		**132,075.905**		**1,140.53**	**7,439.41**			**168.52**	**910.3**	**55.902**	***966.20***		
AVG						**1%**	**6%**					**0.00236**	**5.7334**

Table J2: SACU, Reforms in Namibia's Compliance Costs

1	2	3	4	5	6	7	8	11	12	13
							d	a+b	**a+b+d**	(a+b+d)/gdp
Country	Import Demand Elasticity	GDP (current Million US$)	IMP less reEx (m$)	% of import coming from NAM	Change in import (M$), due to excssCC nam	%Change in import, due to excess CC nam	Direct Economic loss, as excessive economic resources used up (M$), Nam	Economic loss caused by excess CC (M$)	**Total econoimc costs of excessive trade transaction cost (M$)**	Total economic loss of excess cc (while there is tariff) as % of GDP
.	E	GDP	IMP less reEx	% NAM Im	im BR- AR NAM	change IM/IMP less reEx	(d through nam)	a+b	tEL	tEL/GDP2
Botswana	(1.14)	18,616	6,211	0.11	0.6	0.01%	0.5905	0.0223	**0.6128**	0.00003
Namibia	(1.08)	14,522	5,742	-	5.3	0.09%	5.0725	0.1828	**5.2553**	0.00036
SUM		**33,138**	**11,953**		**6.0**		**5.6630**	**0.2051**	**5.8681**	
AVG						**0.0005**				**0.00018**

Table J3: SACU, Reforms in Botswana, Eswatini, Lesotho's Compliance Costs

1	2	3	4	5	6	7	10	11	12
Country	Import Demand Elasticity	GDP (current Million US$)	IMP less reEx (m$)	Change in import(M$)	%Change in import	Total Direct Economic loss, as excessive economic resources used up (M$), itself	Economic loss caused by excess CC (M$)	**Total econoimc costs of excessive trade transaction cost (M$)**	Total economic loss of excess cc (while there is tariff) as % of GDP
.	E	GDP	IMP less reEx	im BR- AR OWN	change IM/IMP less reEx	**d**	**a+b**	**a+b+d**	**(A+b+d)/GDP**
Botswana	(1.14)	18,616	6,211	-	0.025	**-**	0.000	**0.0000**	0.0000
Eswatini (Swaziland)	(0.97)	4,704	1,978	1.6	0.013	1.789	0.088	**1.877**	0.00040
Lesotho	(0.95)	2,792	1,301	1.7	0.010	1.936	0.094	**2.030**	0.00073
SUM		**26,112**	**9,490**	**3.4**	**0.047**	**3.726**	**0.182**	**3.907**	
AVG									**0.00015**

Appendix K: SACU, Analyses on Compliance Costs to Import (Benchmarks: Botswana and Singapore)

This appendix is comprised up from the following parts:

- Part K1: SACU, Benchmarking (Botswana (BWA) and Singapore (SNG))
- Part K2: SACU, Costs to Import (Benchmarks: BWA & SNG)
- Part K3: SACU, Scenario A; Goods Directly Coming to the Country, (Benchmarks: BWA & SNG)
- Part K4: SACU, Scenario B; Goods Coming to the Country through South Africa (ZAF), (Benchmarks: BWA & SNG)
- Part K5: SACU, Scenario C; Goods Coming to the Country through Namibia (NAM), (Benchmarks: BWA & SNG)
- Part K6: SACU, Overall Result of Scenarios (A+B+C), (Benchmarks: BWA & SNG)

Part K1: SACU, Benchmarking (Botswana (BWA) and Singapore (SNG))

1	2	3	4	5	6	7	8	9
Country	Total cost to import (USD)	Benchmark total cost to import (USD)	Excess tCIM copmare by BWA	Excess tCIM copmare by SING	tCIM as a %of Shipment's value	Benchmark tCIM as a %of Shipment's value	% of Excess tCIM copmare by BWA	% of Excess tCIM copmare by SING
	tCIM	Bench mark	excess tCIM	excess tCIM2	tCIM /50000	normal cost/50000	exc/50000-	exc/50000--
Botswana	169.36	169.36	-	-	0.34%	0.34%	0.00%	0.00%
Namibia	213.53	169.36	44.17	-	0.43%	0.34%	0.09%	0.00%
Eswatini	214.59	169.36	45.23	-	0.43%	0.34%	0.09%	0.00%
Lesotho	243.77	169.36	74.41	-	0.49%	0.34%	0.15%	0.00%
South Africa	833.25	284.66	-	548.59	1.67%	0.57%	0.00%	1.10%

Part K2: SACU, Costs to Import (Benchmarks: BWA & SNG)

Table K2a: Cost to import per shipment, as a % value of a shipment, and Value of cost to import (Before Reform)

1	2	3	4	5	6	7	8	9	10	11	12
Country	Total cost to import (USD)	Total cost to import, come through ZAF($)	Total cost to import, come through NAM($)	tCIM as a %of Shipment's value	tCIM%, come through ZAF	tCIM%, come through NAM	Value of cost to import, come directly(M$)	Value of cost to import come through ZAF(M$)	Value of cost to import come through NAM(M$)	Total Value of cost to mport(M$)	**Total Value of cost to import(as a % of TIM-)**
.	tCIM	tCIM own+ZAF	tCIM own+NAM	tCIM /50000	tCIM own+ZAF/50000	tCIM own+NAM/50000	vCIM directly	vCIM ZAF	vCIM NAM	Total vCIM	**TvCIM/TIMP**
Botswana	169.4	1002.60	382.88	0.34%	2.01%	0.77%	5	82	5	92	0.015
Namibia	213.5	1046.77	-	0.43%	2.09%	2.09%	11	67	-	78	0.014
Eswatini	214.6	1047.84	-	0.43%	2.10%	0.00%	-	41	-	41	0.021
Lesotho	243.8	1077.01	-	0.49%	2.15%	0.00%	-	28	-	28	0.022
South Africa	833.3	-	-	1.67%	1.67%	0.00%	1,947	-	-	1,947	0.017

Table K2b: Cost to import per shipment, as a % value of a shipment, and Value of cost to import (After Reform)

1	2	3	4	5	6	7	8	9	10	11	12
Country	AR, Total cost to import, come directly($)	AR, Total cost to import, come through ZAF($)	AR, Total cost to import, come through NAM($)	AR, tCIM%, come directly	AR, tCIM%, come through ZAF	AR, tCIM%, come through NAM	AR,Value of cost to import, come directly(M$)	AR, Value of cost to import come through ZAF(M$)	AR, Value of cost to import come through NAM(M$)	AR, Total Value of cost to import	**AR, Total Value of cost to import**
.	AR tCIM own	AR tCIM own+ ZAF	AR tCIM own+NAM	AR tCIM own/50000	AR tCIM own+ZAF/50000	AR tCIM own+NAM/50000	vCIM other AR	vCIM ZAF AR	vCIM NAM AR	Total vCIM AR	**TvCIM AR/TIMP**
Botswana	169.36	454.02	338.72	0.34%	0.91%	0.68%	5	37	5	47	0.008
Namibia	169.36	454.02	-	0.34%	0.91%	0.00%	9	29	-	38	0.007
Eswatini	169.36	454.02	-	0.34%	0.91%	0.00%	-	18	-	18	0.009
Lesotho	169.36	454.02	-	0.34%	0.91%	0.00%	-	12	-	12	0.009
South Africa	284.66	-	-	0.57%	0.00%	0.00%	665	-	-	665	0.006

Table K2c: Cost to import per shipment, as a % value of a shipment, and Value of cost to import (due to Excess compliance costs)

1	2	3	4	5	6	7	8	9	10	11	12
	Excess, Total cost to import, come directly($)	Excess, Total cost to import, come through ZAF($)	Excess, Total cost to import, come through NAM($)	Excess tCIM%, come directly	Excess tCIM%, come through ZAF	Excess tCIM%, come through NAM	Excess Value of cost to import, come directly(M$)	Excess Value of cost to import come through ZAF(M$)	Excess Value of cost to import come through NAM(M$)	Total Excess Value of cost to import(M$)	**Total Excess Value of cost to import(as a % of TIM-)**
.	Excess tCIM own	Exc tCIM own+ZAF	Exc tCIM own+NAM	Exc tCIM own/50000	Exc tCIM own+ZAF/50000	Exc tCIM own+NAM/50000	Vexcss others	Vexcss ZAF	Vexcss NAM	Total Vexss	**T Vexss/TIMP**
Botswana	0.00	548.59	44.17	0.00%	1.10%	0.09%	0	45	1	46	0.73%
Namibia	44.17	592.76	-	0.09%	1.19%	1.19%	2	38	0	40	0.70%
Eswatini	45.23	593.82	-	0.09%	1.19%	0.00%	0	23	0	23	1.19%
Lesotho	74.41	623.00	-	0.15%	1.25%	0.00%	0	16	0	16	1.25%
South Africa	548.59	-	-	1.10%	1.10%	0.00%	1282	0	0	1,282	1.10%
sum										1,408	0.00%
avg										-	1.07%

Part K3: SACU, Scenario A; Goods Directly Coming to the Country, (Benchmarks: BWA & SNG)

Table K3a: Cost to import as a % value of a shipment, (Before Reform, and Excess) & The Price of import per shipment value due to tariff and the compliance costs

1	2	3	4	5	6	7	8	9	10	11	12
Country	Official exchange rate (LCU per US$, period average)	% of import coimg directly	Import,come Directly(M$)	tCIM as %of Shipment's value	% of Excess tCIM	Total rate of trade distortion ($), before reform	Total rate of extra CC & duty	CIF	CIF+ normal TCC	CIF+ normal CC+duty (AR)	CIF+ normal CC+duty+ Execess CC (BR)
.	ER	%directly	TIMP Directly	tCIM /50000-	exc/50000-2	Tdis BR-	Texcess tCIM rate + eff tariff-	Pcif-	P norm-	P du norm-	P BR,Texces-
Botswana	10.347	0.23	1,439	0.0034	-	0.0374	0.0340	1.0000	1.0034	1.0374	1.0374
Namibia	13.313	0.44	2,520	0.0043	0.0009	0.0341	0.0307	1.0000	1.0034	1.0333	1.0341
Eswatini	13.334	0.00	-	0.0043	0.0009	0.0504	0.0470	1.0000	1.0034	1.0495	1.0504
Lesotho	13.334	0.00	-	0.0049	0.0015	0.0510	0.0476	1.0000	1.0034	1.0495	1.0510
South Africa	13.334	1.00	116,844	0.0167	0.0110	0.0628	0.0571	1.0000	1.0057	1.0518	1.0628

Table K3b: Change in the Level of Import due to tariff and the compliance costs

1	2	3	4	5	6	7	8	9
Country	Import Demand Elasticity	change in IM(BR-CIF)	change in IM(BR-normal)	change in IM(BR-AR)	Im BR	im cif	im normal	im AR
.	E	^Im BR-cif-	^Im BR-norm-	^im BR- du n(AR)-	Im BR-	im cif-	im norm-	im dun (AR)-
Botswana	-1.14	61.40	55.84	-	1,439.36	1,500.75	1,495.20	1,439.36
Namibia	-1.08	92.80	83.59	2.40	2,519.53	2,612.33	2,603.12	2,521.93
Eswatini	-0.97	-	-	-	-	-	-	-
Lesotho	-0.95	-	-	-	-	-	-	-
South Africa	-1.28	9,350.47	8,502.33	1,634.53	116,844.00	126,194.47	125,346.33	118,478.53

Table K3c: The welfare gain (Before Reform, the Change After Reform)

1	2	3	4	7	8	9	10	13	14	15	16
	TR	**C**	**D**	**A+B**	**A+B+C**	**A+B+D**	**d**	**a+b**	**a+b+c**	**a+b+d**	**-**
Country	Total revenue of import duty, M$	Economic loss caused by duty (M$)	-	-	-	-	direct EL(benefit) of excess CC,itself	Economic loss caused by excess CC (M$)	Economic loss due to duty and Excess CC (M$)	Total econoimc costs of excessive trade transaction costs (M$)	Total economic loss of excess cc (while there is tariff)as % of GDP
.	TR23	(C) DW traiff-	(D) tCC own-	(A+B) tDWCC br, duty there is-	(A+B+C) DWs, CC&tariff -br-	(A+B+D)DWs, CC-	(d)exc CC own-	(a+b) tDW excessCC, duty there is-	(a+b+c) DWs, excessCC&tariff-2	(a+b+d) tEL of excessCC-	tEL/GDP-
Botswana	49	0.9501	4.8753	0.1985	1.1486	5.0739	-	-	0.9501	-	-
Namibia	75	1.2124	10.7598	0.3715	1.5839	11.1313	2.2257	0.0728	1.2851	2.2985	0.0002
Eswatini	-	-	-	-	-	-	-	-	-	-	-
Lesotho	-	-	-	-	-	-	-	-	-	-	-
South Africa	5,387	158.3027	1,947.1972	135.1382	293.4409	2,082.3354	1,281.9867	84.3188	242.6216	1,366.3056	0.0037

Part K4: SACU, Scenario B; Goods Coming to the Country through South Africa (ZAF), (Benchmarks: BWA & SNG)

Table K4a: Cost to import as a % value of a shipment, (Before Reform, and Excess) & The Price of import per shipment value due to tariff and the compliance costs

1		2	3	4	5	6	7	8	9	10	11	12	13	14
Country	the proportion of import coimg from ZAF	Import value,come through ZAF(M$)	tCIM as %of Shipment's value	Total tCIM as %of Shipment's value	% of Excess tCIM	% of Total Excess tCIM	Total rate of trade distortion ($), before reform	Total rate of extra CC & duty	CIF	cif+ normal CC	cif+ normal CC+duty (ATR)	cif+ normal CC+duty+ Execess CC own(AR zaf)	cif+ normal CC+duty+ Execess CC zaf(AR own)	cif+ normal CC+duty+ T excess CC(BR)
.	% ZAF Im	TIMP * ZAF%	tCIM /50000--	TtCIM /50000--	exc/50000--2	T exc/50000--	Tdis BR--	Texcess tCIM rate + eff tariff--	Pcif--	P norm--	P du norm(ATR)--	P BR own(AR ZAF)--	P BR zaf(AR OWN)--	P BRs,T exce--
Botswana	0.66	4,103	0.0034	0.0201	-	0.0110	0.0541	0.0450	1.0000	1.0091	1.0431	1.0431	1.0541	1.0541
Namibia	0.56	3,222	0.0043	0.0209	0.0009	0.0119	0.0508	0.0417	1.0000	1.0091	1.0389	1.0398	1.0499	1.0508
Eswatini	1.00	1,978	0.0043	0.0210	0.0009	0.0119	0.0671	0.0580	1.0000	1.0091	1.0552	1.0561	1.0662	1.0671
Lesotho	1.00	1,301	0.0049	0.0215	0.0015	0.0125	0.0676	0.0586	1.0000	1.0091	1.0552	1.0567	1.0662	1.0676
South Africa	0.00	-	0.0167	**0.0167**	**0.0110**	-	0.0628	0.0461	-	-	-	-	-	-

Table K4b: Change in the Level of Import due to tariff and the compliance costs

1	2	3	4	5	6	7	8	9	10	11	12	13
Country	Import Demand Elasticity	Change in IM (BR-CIF)	Change in IM (BR-normal)	Change in IM (BR-ATR)	Change in IM (BR-AR zaf)	Change in IM (BR-AR own)	Im BR	im cif	im norm	Im dun(ATR)	Im Br own(AR ZAF)	Im Br zaf(AR OWN)
Botswana	-1.14	252.96	210.49	51.32	48.686453	-	4,102.99	4,355.95	4,313.48	4,154.31	4,151.68	4,102.99
Namibia	-1.08	176.63	145.06	41.22	36.30	2.92	3,222.46	3,399.10	3,367.53	3,263.68	3,258.77	3,225.39
Eswatini	-0.97	128.80	111.36	22.81	19.750049	1.63	1,978.15	2,106.95	2,089.51	2,000.96	1,997.90	1,979.78
Lesotho	-0.95	83.77	72.53	15.43	12.727627	1.73	1,300.94	1,384.72	1,373.47	1,316.37	1,313.67	1,302.67
South Africa	-1.28	-	-	-	-	-	-	-	-	-	-	-

Table K4c: The welfare gain (Before Reform)

1	2	3	4	5	6	7	8	9	10	11
	TR	**C**	**-**	**-**	**D**	**-**	**-**	**A+B**	**A+B+C**	**A+B+D**
Country	Total revenue of import duty, M$	Economic loss caused by duty (M$)	-	-	-	-	-	-	-	-
.	TR24	(C)DW traiff--	(D own) Tcc own --	(D zaf) tCC ZA--	(D total) TtCCs--	TA--	TB--	(A+B) tDWCC br, duty there is--	(A+B+C) DWs, CC&tariff-br--	(A+B+D) DWs, excessCC--
Botswana	139.62	2.7082	13.8974	68.3760	82.2735	0.9404	3.1917	4.1321	6.8403	86.4055
Namibia	96.24	1.5506	13.7617	53.7021	67.4638	0.7620	2.1740	2.9359	4.4865	70.3998
Eswatini	91.19	2.0410	8.4898	32.9657	41.4555	0.4218	1.8557	2.2775	4.3185	43.7330
Lesotho	59.97	1.3160	6.3425	21.6801	28.0227	0.2873	1.2298	1.5172	2.8332	29.5398
South Africa	-	-	-	-	-	-	-	-	-	-

Table K4d: The welfare gain (The Change After Reform)

1	2	3	4	5	12	13	14	15
	C	**-**	**-**	**d**	**a+b**	**a+b+c**	**a+b+d**	**-**
Country	Economic loss caused by duty (M$)	direct EL of itself excess CC	direct EL of zaf excess C	Total Direct Economic loss, as excessive economic resources used up (M$)	Economic loss caused by excess CC (M$)	Economic loss due to duty and Excess CC (M$)	Total econoimc costs of excessive trade transaction cost (M$)	Total economic loss of excess cc (while there is tariff) as % of GDP
.	(C)DW traiff--	(d own) exc CC own--	(d zaf) exc CC ZAF--	(T d) Texc CCs (tDEL)--	(a+b) tDW excessCC, duty there is--	(a+b+c) DWs, excessCC&tariff--2	(a+b+d) tEL of excessCC--	tEL/GDP--
Botswana	2.7082	-	45.0171	45.0171	2.0279	4.7362	47.0450	0.0025
Namibia	1.5506	2.8467	35.3562	38.2029	1.4754	3.0260	39.6783	0.0027
Eswatini	2.0410	1.7895	21.7038	23.4933	1.1871	3.2281	24.6804	0.0052
Lesotho	1.3160	1.9361	14.2737	16.2097	0.8075	2.1236	17.0173	0.0061
South Africa	-	-	-	-	-	-	-	-

Part K5: SACU, Scenario C; Goods Coming to the Country through Namibia (NAM), (Benchmarks: BWA & SNG)

Table K5a: Cost to import as a % value of a shipment, (Before Reform, and Excess) & The Price of import per shipment value due to tariff and the compliance costs

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Country	% of import coimg fromNAM	Import, come through NAM(M $)	tCIM as %of Shipment 's value	Total tCIM as %of Shipment 's value	% of Excess tCIM	% of Total Excess tCIM	Total rate of trade distortion ($), before reform	Total rate of extra CC & duty	CIF	cif+ normal TRADE COMPLIANCE COSTS	cif+ normal CC+duty (ATR)	cif+ normal CC+duty + Execess CC own (AR NAM)	cif+ normal CC+duty + Execess CC zaf (AR Own)	cif+ normal CC+duty + T Execess CC(ATR)
.	% NAM Im	TIMP * NAM%2	tCIM /50000---	TTtCIM /50000---	exc/50000---2	T exc/50000---	Tdis BR---	Texcess tCIM rate + eff tariff---	Pcif---	P norm---	P du norm(ATR)---	P BR own(AR NAM)---	P BRnam(AF OWN)---	P BRs,T exce---
Botswana	0.11	668	0.0034	0.0077	-	0.0009	0.0417	0.0349	1.0000	1.0068	1.0408	1.0408	1.0417	1.0417
Namibia	0.00	-	0.0043	0.0085	0.0009	0.0018	-	-	-	-	-	-	-	-
Eswatini	0.00	-	0.0043	0.0086	0.0009	0.0018	-	-	-	-	-	-	-	-
Lesotho	0.00	-	0.0049	0.0091	0.0015	0.0024	-	-	-	-	-	-	-	-
South Africa	0.00	-	0.0167	0.0209	-	0.0119	-	-	-	-	-	-	-	-

Table K5b: Change in the Level of Import due to tariff and the compliance costs

1	2	3	4	5	6	7	8	9	10	11	12	13
Country	Import Demand Elasticity	Change in IM (BR-CIF)	Change in IM (BR-normal)	Change in IM (BR-ATR)	Change in IM (BR-ARnam)	Change in IM (BR-ARown)	Im BR	im cif	im norm	Im du n (ATR)	Im BRown(ARNAM)	Im BRnam(AROWN)
Botswana	-1.14	31.77	26.61	0.67	0.65	-	668.48	700.24	695.08	669.15	669.12	668.48
Namibia	-1.08	-	-	-	-	-	-	-	-	-	-	-
Eswatini	-0.97	-	-	-	-	-	-	-	-	-	-	-
Lesotho	-0.95	-	-	-	-	-	-	-	-	-	-	-
South Africa	-1.28	-	-	-	-	-	-	-	-	-	-	-

Table K5c: The welfare gain (Before Reform)

1	2		3	4	5	8	9	10
	TR	**C**	**-**	**-**	**D**	**A+B**	**A+B+C**	**A+B+D**
Country	Total revenue of import duty, M$	Economic loss caused by duty (M$)	-	-	-	-	-	-
.	TR2419	© DW traiff---	(D own) tCC own---	(D nam) tCC NAM---	(D total) tCCs---	(A+B) tDWCC br, duty there is---	(A+B+C) DWs, CC&tariff-br---	(A+B+D) DWs, excessCC---
Botswana	22.75	0.4412	2.2642	2.8548	5.1190	0.2209	0.6622	5.3399
Namibia	-	-	-	-	-	-	-	-
Eswatini	-	-	-	-	-	-	-	-
Lesotho	-	-	-	-	-	-	-	-
South Africa	-	-	-	-	-	-	-	-

Table K5d: The welfare gain (The Change After Reform)

1	2	3	4	5	14	15	16	17
	C	**-**	**-**	**d**	**a+b**	**a+b+c**	**a+b+d**	**-**
Country	Economic loss caused by duty (M$)	direct EL of itself excess TRADE COMPLIANCE COSTS	direct EL of nam excess TRADE COMPLIANCE COSTS	Total Direct Economic loss, as excessive economic resources used up (M$)	Economic loss caused by excess CC (M$)	Economic loss due to duty and Excess CC (M$)	Total econoimc costs of excessive trade transaction cost (M$)	Total economic loss of excess cc (while there is tariff) as % of GDP
.	DW traiff---	(d own)exc CC own---	(d nam) exc CC NAM---	(T d) Texc CCs (tDEL)---	(a+b) tDW excessCC, duty there is---	(a+b+c) DWs, excessCC&tariff---2	(a+b+d) tEL of excessCC---	tEL/GDP---
Botswana	0.4412	-	0.5905	0.5905	0.0232	0.4644	0.6137	0.0000
Namibia	-	-	-	-	-	-	-	-
Eswatini (Swaziland)	-	-	-	-	-	-	-	-
Lesotho	-	-	-	-	-	-	-	-
South Africa	-	-	-	-	-	-	-	-

Part K6: SACU, Overall Result of Scenario (A+B+C), (Benchmarks: BWA & SNG)

Table K6a: The Change in the Level of Import due to tariff and the compliance costs

1	2	3	4	5	6	7	8
Country	Change in Im (BR - CIF)	Change in Im (BR - normal)	Change in Im (BR - ATR), due to total excess TCC	Change in Im (BR - AR zaf)	Change in Im (BR - AR nam)	Change in Im (BR - AR own)	Change in Im (norm -ATR), due to tariff
Botswana	346.13	292.93	51.99	48.69	0.65	-	240.94
Namibia	269.43	228.65	43.62	36.30	-	5.32	185.03
Eswatini	128.80	111.36	22.81	19.75	-	1.63	88.55
Lesotho	83.77	72.53	15.43	12.73	-	1.73	57.09
South Africa	9,350.47	8,502.33	1,634.53	-	-	1,634.53	6,867.80
SUM	**10,178.61**	**9,207.80**	**1,768.39**	**117.47**	**0.65**	**1,643.21**	**7,439.41**

Table K6b: The Level of Import with tariff and the compliance costs

1	2	3	4	5	6	7	8	9	10
Country	Im BR(IMP less reEx(M$))	im cif	im norm	Im du n (ATR)	Im BRown(AR ZAF)	Im BRown(AR NAM)	Im (AR OWN)	%Change in import, due to total excess CC	%Change in import, due to duty
Botswana	6,210.82	6,556.95	6,503.76	6,262.82	6,259.51	6,211.47	6,210.82	0.84%	3.88%
Namibia	5,741.99	6,011.43	5,970.64	5,785.61	5,778.30	-	5,747.32	0.76%	3.22%
Eswatini	1,978.15	2,106.95	2,089.51	2,000.96	1,997.90	-	1,979.78	1.15%	4.48%
Lesotho	1,300.94	1,384.72	1,373.47	1,316.37	1,313.67	-	1,302.67	1.19%	4.39%
South Africa	116,844.00	126,194.47	125,346.33	118,478.53	116,844.00	-	118,478.53	1.40%	5.88%
SUM	**132,075.90**	**142,254.51**	**141,283.71**	**133,844.30**	**132,193.37**	**6,211.47**	**133,719.12**		
AVG								**1.34%**	**5.63%**

Table K6c: The welfare gain (Before Reform)

1		2	3	4	5	6	9	10	11
	TR	**tC**	**-**	**-**	**-**	**D**	**A+B**	**A+B+C**	**A+B+D**
Country	Total revenue of import duty, M$	Total Economic loss caused by duty, from reduced import(M$)	-	-	-	-	-	-	-
.	TR2	(C) T DW traiff2	(D direct) tCC directly	(D through zaf)	(D through nam)	(total D)	(A+B) tDWCC br, duty there is2	(A+B+C) DWs, CC&tariff-br2	(A+B+D) DWs, CC
Botswana	211.35	4.0996	21.0370	68.3760	2.8548	92.2678	4.5515	8.6511	96.8193
Namibia	171.48	2.7629	24.5215	53.7021	-	78.2236	3.3075	6.0704	81.5310
Eswatini	91.19	2.0410	8.4898	32.9657	-	41.4555	2.2775	4.3185	43.7330
Lesotho	59.97	1.3160	6.3425	21.6801	-	28.0227	1.5172	2.8332	29.5398
South Africa	5,386.51	158.3027	1,947.1972	-	-	1,947.1972	135.1382	293.4409	2,082.3354

Table K6d: The welfare gain (The Change After Reform)

1	2	3	4	5	6	7	16
		C	**-**	**-**	**-**	**d**	**a+b**
Country	GDP (current Million US$)	Total Economic loss caused by duty, from reduced import(M$)	direct EL(benefit),come directly	direct EL, come through ZAF	direct EL, come through NAM	Total Direct Economic loss, as excessive economic resources used up (M$)	Economic loss caused by excess CC (M$)
.	GDP	(C) T DW traiff2	(d directly)	(d through zaf)	(d through nam)	(total d)2	(a+b) tDW excessCC, duty there is2
Botswana	18,616	4.0996	-	45.0171	0.5905	45.6076	2.0511
Namibia	14,522	2.7629	5.0725	35.3562	-	40.4286	1.5482
Eswatini	4,704	2.0410	1.7895	21.7038	-	23.4933	1.1871
Lesotho	2,792	1.3160	1.9361	14.2737	-	16.2097	0.8075
South Africa	368,288	158.3027	1,281.987	-	-	1,281.9867	84.3188
	408,921	**168.5223**	**###########**	**116.3508**	**0.5905**	**1,407.7260**	**89.913**

Table K6e: The welfare gain (The Change After Reform)

1	2	3	4	5	6	7	8	9	10	11
		C	**d**	**a+b**	**a+b+c**	**a+b+d**	**(a+b+d)/gdp**	**c/gdp**	**(a+b+d)/c**	a+b/c
Country	GDP (current Million US$)	Total Economic loss caused by duty, from reduced import(M$)	Total Direct Economic loss, as excessive economic resources used up (M$)	Economic loss caused by excess CC (M$)	Economic loss due to duty and Excess CC (M$)	Total econoimc costs of excessive trade transaction cost (M$)	Total economic loss of excess cc (while there is tariff) as % of GDP			
Botswana	18,616	4.10	45.6076	2.05	6.1507	47.66	0.0026	0.0002	11.63	0.500
Namibia	14,522	2.76	40.4286	1.55	4.3111	41.98	0.0029	0.0002	15.19	0.560
Eswatini	4,704	2.04	23.4933	1.19	3.2281	24.68	0.0052	0.0004	12.09	0.582
Lesotho	2,792	1.32	16.2097	0.81	2.1236	17.02	0.0061	0.0005	12.93	0.614
South Africa	368,288	158.30	1,281.9867	84.32	242.6216	1,366.31	0.0037	0.0004	8.63	0.533
SUM	**408,921**	**168.52**	**1,407.73**	**89.91**	**258.44**	**1,497.64**				
AVG							**0.0037**	**0.0004**	**8.89**	**0.53**

Appendix L: SACU, Analysis of Individual Reform (Case of Singapore)

Table L1: SACU, Reforms in South Africa's Compliance Costs

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Country	Import Demand Elasticity	GDP (current Million US$)	IMP lessreEx(m $)	the proportion of import coimg from ZAF	Change in import(M $), due to excessCC zaf	Change in import(M $), due to Duty	%Change in import, due to excesCC zaf	%Change in import, due to duty	Total Economic loss caused by duty, from reduced import(M$)	direct EL, come through ZAF	Economic loss caused by excess CC (M$)	***Total econoimc costs of excessive trade transaction cost (M$)***	Total economic loss of excess cc (while there is tariff) as % of GDP	
.	E	GDP	IMP lessreEx(M $)	% ZAF Im	im BR- ZAF	AR^im norm -ATR	(im BR-ATR)/ im BR	im BR-dun(ATR)/ im BR	c	d	a+b	*a+b+d*	(a+b+d)/gdp	g(a+b+d)/c
Botswana	(1.14)	18,616	6,211	0.66	48.69	240.94	1%	4%	4.100	45.017	1.938	***46.96***	0.0025	11.454
Namibia	(1.08)	14,522	5,742	0.56	36.30	185.03	1%	3%	2.763	35.356	1.294	***36.65***	0.0025	13.265
Eswatini	(0.97)	4,704	1,978	1.00	19.75	88.55	1%	4%	2.041	21.704	1.027	***22.73***	0.0048	11.137
Lesotho	(0.95)	2,792	1,301	1.00	12.73	57.09	1%	4%	1.316	14.274	0.662	***14.91***	0.0053	11.349
South Africa	(1.28)	368,288	116,844		1,634.53	6,867.80	1%	6%	158.303	1,281.987	84.319	***1,366.31***	0.0037	8.631
SUM		**408,921**	**132,076**	**3**	**1,752**	**7,439**	**0**	**0**	**169**	**1,398**	**89**	***1,487.6***		
AVG							**1%**	**6%**					0.00364	8.8272

Table L2: SACU, Reforms in Namibia's Compliance Costs

1	2	3	4	5	6	7	8	9	10	11
Country	Import Demand Elasticity	GDP (current Million US$)	IMP less reEx(m$)	% of import coimg fromNAM	Change in import(M$), due to excssCC nam	%Change in import, due to excessCC nam	Direct Economic loss, as excessive economic resources used up (M$), Nam	Economic loss caused by excess CC (M$)	Total econoimc costs of excessive trade transaction cost (M$)	Total economic loss of excess cc (while there is tariff) as % of GDP
	E	GDP	IMP less reEx	% NAM Im	im BR- AR NAM	change IM/IMP less reEx	**d**	**a+b**	**a+b+d**	**(a+b+d)/gdp**
Botswana	(1.14)	18,616	6,211	0.11	0.6	0.01%	0.5905	0.0223	**0.6128**	0.00003
Namibia	(1.08)	14,522	5,742	-	5.3	0.09%	5.0725	0.1943	**5.2668**	0.00036
SUM		33,138	11,953		6.0		5.6630	0.2166	**5.8796**	
AVG						0.05%				**0.00018**

Table L3: SACU, Reforms in Botswana, Eswatini, Lesotho's compliance costs

1	2	3	4	5	6	7	8	9	10
Country	Import Demand Elasticity	GDP (current Million US$)	IMP less reEx(m$)	Change in import(M$)	%Change in import	Total Direct Economic loss, as excessive economic resources used up (M$), itself	Economic loss caused by excess CC (M$)	**Total econoimc costs of excessive trade transaction cost (M$)**	Total economic loss of excess cc (while there is tariff) as % of GDP
.	E	GDP	IMP less reEx	im BR- AR OWN	change IM/IMP less reEx	**d**	**a+b**	**a+b+d**	**(a+b+d)/gdp**
Botswana	(1.14)	18,616	6,211	-	0.025	-	0.000	**0.000**	0.00000
Eswatini (Swaziland)	(0.97)	4,704	1,978	1.6	0.013	1.789	0.094	**1.884**	0.00040
Lesotho	(0.95)	2,792	1,301	1.7	0.010	1.936	0.101	**2.037**	0.00073
SUM		26,112	9,490	3.4	0.047	3.726	0.195	**3.920**	
AVG									**0.00015**

Appendix M: SACU, Analyses of Compliance Costs to Export

Part M1: SACU, Export (Benchmark: Mozambique)

Table M1a: Cost to export per shipment, as a % value of a shipment, Value (Before Reform, After Reform, and Excess)

Country	Total cost to export (USD), before reform	Total rate of cost to export (USD)(per shipment), after reform (Benchmark)	Total Excess cost to export (USD)	tCEX as %of Shipment's value, Before reform	tCEX as %of Shipment's value, after reform	Excess tCEX as %of Shipment's value	Total value of cost to export (m$), BR	Total value of cost to export (m$), AR	Excess Total value of cost to export (m$)	Ratio of value of excess cost to export to Total edited Export value
Country	BR tCEX	AR tCEX	Excess tCEX	%BR tCEX	% AR tCEX	% Excess tCEX	v CEX, BR	v CEX, AR	v CEX, Excess	t v CEX/ EXP
Namibia	1,236.34	831.56	404.77	0.0247	0.0166	0.0081	107	72	35	0.0081
South Africa	1,421.59	831.56	590.03	0.0284	0.0166	0.0118	2,847	1,665	1,182	0.0118
sum									1,217	
avg									-	0.0116

Table M1b: Price of export per shipment value, Level of export due to the compliance costs and the % change of those

Country	Export Supply Elasticity				% change in price(because of Excess tCEX)	Change in export(BR-AR) (M$)		%Change in export(BR & AR)			
Country	E	P fob	P AR(fob - norm)	P BR(fob-norm-exc)	% Excess tCEX2	Ex BR-fob	Ex BR-AR	(EX BR-AR)/ATEXP	Ex BR	EX AR	EX fob
Namibia	1.07	1.00	0.9834	0.9753	0.0083	115	38	0.87%	4330.08	4367.59	4444.64
South Africa	0.88	1.00	0.9834	0.9716	0.0121	2505	1040	1.04%	100138.93	101178.82	102644.40
SUM						2,620	1,077		104,469.02		
AV								1.03%			

Table M1c: SACU, Economic loss of compliance costs, before reform, and the improvement after reform

	F	G	F+G	f	g	f+g		
Country	direct EL of tCC(benefit)(M$)	Economic loss caused by tCC (M$)	total Economic cost of tCC	direct EL(benefit) of exceCC(M$)	Economic loss caused by excess CC (M$)	total Economic cost of excess CC	Total economic loss of excess cc as % of GDP	direct EL/ ATEXP
Country	dEl, BR	DW, BR	tEl, BR	dEl, exce	DW, exce	tEl, exce	tEl excess/ GDP	
Namibia	107.0687	1.4164	108.4851	35.0540	0.1518	35.2058	0.24%	0.81%
South Africa	2847.1282	35.6175	2882.7457	1181.6915	6.1356	1187.8271	0.32%	1.18%
SUM	2954.1969	37.0339	2991.2308	1216.7455	6.2874	1223.0329		
AV							0.32%	1.16%

Part M1: SACU, Export (Benchmark: Singapore)

Table M2a: Cost to export per shipment, as a % value of a shipment, Value (Before Reform, After Reform, and Excess)

Country	Total cost to export (USD), before reform	Total rate of cost to export (USD)(per shipment), after reform (Benchmark)	Total Excess cost to export (USD)	tCEX as %of Shipment's value, Before reform	tCEX as %of Shipment's value, after reform	Excess tCEX as %of Shipment's value	Total value of cost to export (m$), BR	Total value of cost to export (m$), AR	Excess Total value of cost to export (m$)	Ratio of value of excess cost to export to Total edited Export value
Country	BR tCEX	AR tCEX	Excess tCEX	%BR tCEX	% AR tCEX	% Excess tCEX	v CEX, BR	v CEX, AR	v CEX, Excess	t v CEX/ EXP
Namibia	1,236.34	380.22	856.12	0.0247	0.0076	0.0171	107	33	74	0.0171
South Africa	1,421.59	380.22	1,041.37	0.0284	0.0076	0.0208	2,847	761	2,086	0.0208
sum									2,160	
avg									-	0.0207

Table M2b: Price of export per shipment value, Level of export due to the compliance costs and the % change of those

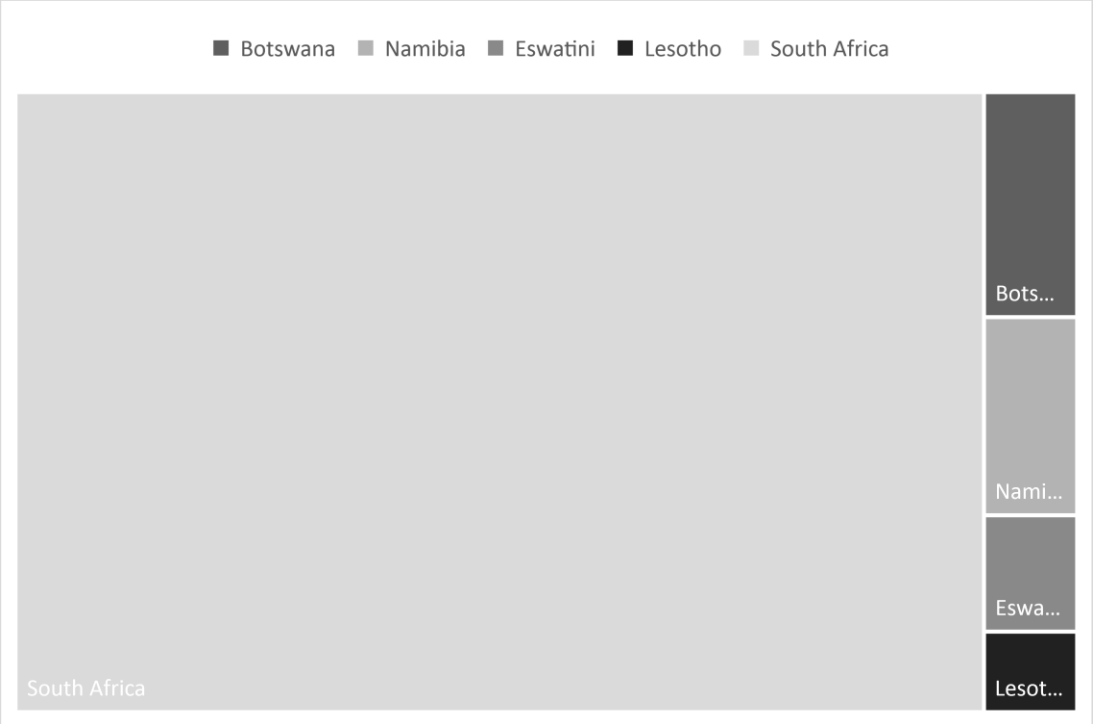
Country	Export Supply Elasticity				% change in price(because of Excess tCEX)	Change in export(BR-AR) (M$)		%Change in export(BR & AR)			
Country	E	P fob	P AR(fob - norm)	P BR(fob-norm-exc)	% Excess tCEX2	Ex BR-fob	Ex BR-AR	(EX BR-AR)/ATEXP	Ex BR	EX AR	EX fob
Namibia	1.07	1.00	0.9924	0.9753	0.0176	115	79	1.83%	4330.08	4409.41	4444.65
South Africa	0.88	1.00	0.9924	0.9716	0.0214	2505	1835	1.83%	100138.93	101974.29	102644.40
SUM						2,620	1,915		104,469.02		
AVG								1.83%			

Table M2c: SACU, Economic loss of compliance costs, before reform, and the improvement after reform

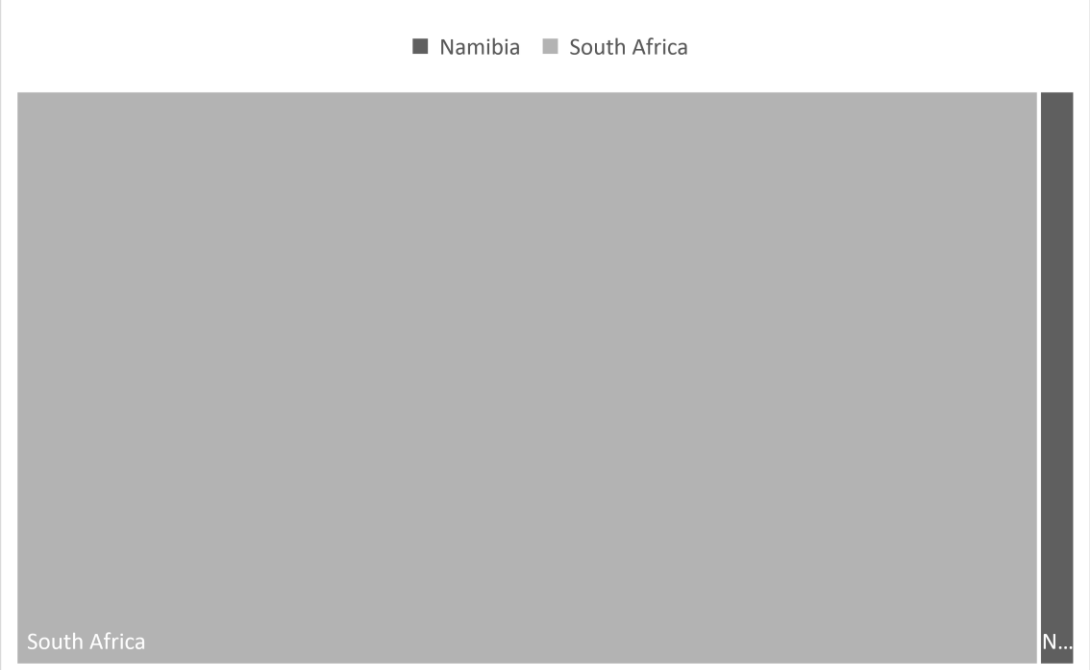
	F	G	F+G	f	g	f+g		
Country	direct EL of tCC(benefit)(M$)	Economic loss caused by tCC (M$)	total Economic cost of tCC	direct EL(benefit) of exceCC(M$)	Economic loss caused by excess CC (M$)	total Economic cost of excess CC	Total economic loss of excess cc as % of GDP	direct EL/ ATEXP
Country	dEl, BR	DW, BR	tEl, BR	dEl, exce	DW, exce	tEl, exce	tEl excess/ GDP	
Namibia	107.0687	1.4164	108.4851	74.1411	0.6792	74.8203	0.52%	1.71%
South Africa	2847.1282	35.6175	2882.7457	2085.6333	19.1129	2104.7462	0.57%	2.08%
SUM	2954.1969	37.0339	2991.2308	2159.7744	19.7920	2179.5665		
AVG							0.57%	2.07%

Appendix N: Graphs on the Economic Gains Share among SACU Countries

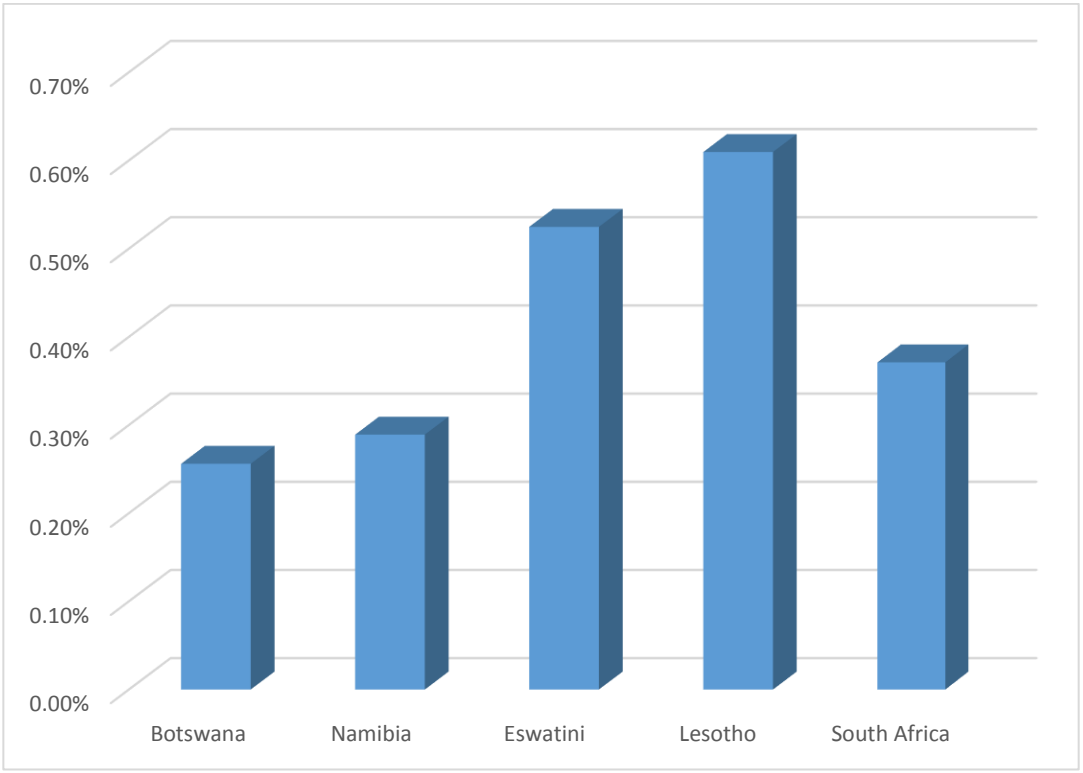
Graph N1: The Share of Total Economic Gain among the SACU Countries, Import, Case of Singapore



Graph N2: The Share of Total Economic Gain among the SACU Countries, Export, Case of Singapore



Graph N3: The Percentage of Economic Gain to GDP, for SACU Countries, Import, Case of Singapore



Graph N4: The Percentage of Economic Gain to GDP, for SACU Countries, Export, Case of Singapore