Trade Facilitation and Economic Welfare in the Major Trading Regions of Latin America

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ABSTRACT

Border procedures around the globe can act as barriers hindering international trade. Another impact of these procedures relates to their economic resource costs. In this thesis, using a microeconomic framework of international trade, the potential economic gains are estimated for reductions in trade administration costs related to trade in the three Latin American trade blocs as well as for the increase in import and export trades that are stimulated as a consequence of the reduction in trade administration costs. Excess economic cost of the current trade administration procedures is measured in the studied blocs with respect to two benchmark levels of trade administration costs, namely those for Chile and Singapore. International trade policy history and trade facilitation journey of the regions are reported. Our results suggest that improving the trade administration cost levels to match those of the reference countries will enable CAN, CARICOM and MERCOSUR to enjoy substantial economic resource savings, corresponding to a significant amount of their gross domestic product. Given the current trade environment of the studied nations, relevant policy and reform options are suggested. The key policy recommendation is to improve the electronic single window system for trade administration and in particular, the interconnectivity of information flows between the member countries of the blocs. Maintaining the port infrastructure is also critical for the delivery of efficient services for the movement of goods.

Keywords: International Trade; Trade Facilitation; Trade Administration Cost; Trade Transaction Costs; Economic Gain; Welfare Gain; Latin America

ÖZ

Dünya genelinde sınır işlemleri, uluslararası ticareti zorlayan engeller olarak işlev görebilir. Bu işlemlerin bir başka etkisi ise ekonomik kaynak maliyetlerine ilişkindir. Bu tezde, uluslararası ticaretin mikroekonomik bir taslağını kullanarak, üç Latin Amerika ticaret bloğundaki ticaret ile ilgili maliyetlerindeki azalmalar ve ticaret idaresi maliyetlerindeki azalmaların sonucu olarak artan ithalat ve ihracat ticaretleri ve potansiyel ekonomik kazançlar hesap edilmektedir. Şu anki ticaret idaresi prosedürlerinin fazla ekonomik maliyeti, ticaret idaresi maliyetlerinin iki referans düzeyi olan Şili ve Singapur'a göre ölçülmektedir. Uluslararası ticaret politikası tarihi ve bölgelerin ticareti kolaylaştırma yolculuğu tezde yer bulmaktadır. Sonuçlarımız, ticaret idaresi maliyet seviyelerini referans ülkelerle eşleştirmenin, CAN, CARICOM ve MERCOSUR'un gayri safi yurt içi hasılaya oranlı önemli ekonomik kaynak tasarrufları sağlayacağını göstermektedir. İncelenen ülkelerin mevcut ticaret ortamı göz önüne alındığında, ilgili politika ve reform seçenekleri önerilmektedir. Ana politika önerisi, ticaret idaresi için elektronik tek pencere sistemi ve özellikle, blok üye ülkeleri arasındaki bilgi akışlarının bağlantısını geliştirmektir. Liman altyapısını geliştirkmek de, malların hareketi için etkili hizmetler sunma açısından kritik öneme sahiptir.

Anahtar Kelimeler: Uluslararası Ticaret; Ticaret Kolaylaştırma; Ticaret İdaresi Maliyeti; Ticaret İşlem Maliyetleri; Ekonomik Kazanç; Refah Kazancı; Latin Amerika

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LIST OF SYMBOLS AND ABBREVIATIONS

$\Delta M1$	Reactionary Change in Import Volume
$\Delta X1$	Reactionary Change in Export Volume
ALADI	Latin American Integration Association
APEC	Asia-Pacific Economic Cooperation
AVE	Ad Valorem Equivalent
AVE^{total}	Ad Valorem Equivalent of Benchmark Level of Costs
AVE^{total}	Ad Valorem Equivalent of Current Level of Costs
CAN	Andean Community
CARICOM	Caribbean Community
CARIFTA	Caribbean Free Trade Association
CET	Common External Tariff
CGE	Computable General Equilibrium
CIF	Cost, Insurance and Freight
DB	Doing Business
DG	Direct Gain
ECW	Economic Cost of Waiting
EG	Efficiency Gain
E^M	Import Demand Elasticity
ESCAP	The Economic and Social Commission for Asia and the Pacific
ESW	Electronic Single Window
ETI	World Economic Forum's Enabling Trade Index
E^X	Export Supply Elasticity
FOB	Free on Board

FTA	Free Trade Agreement
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GVC	Global Value Chain
LAC	Latin America and the Caribbean
M	Imports
MERCOSUR	The Southern Common Market
MFN	Most Favoured Nation
NAFTA	North American Free Trade Agreement
NTB	Non-tariff Barriers
OECD	Organization of Economic Co-operation and Development
RoW	Rest of the World
RTA	Preferential Trade Agreement
RTA	Regional Trade Agreement
SACU	South Africa Customs Union
SG	Structural Gravity Model
t	Tariff Rate
TA	Trade Agreements
TAB	Trading Across Borders
TF	Trade Facilitation
TFA	Trade Facilitation Agreement
TFI	Trade Facilitation Indicators
TG	Tariff Gain
TTC	Trade Transaction Costs
UN	United Nations

UNCTAD	The United Nations Conference on Trade and Development
UNECLAC	United Nations' Economic Commission on Latin America and the Caribbean
VAT	Value Added Tax
WB	World Bank
WCO	World Customs Organization
WTO	World Trade Organization
X	Exports

Chapter 1

INTRODUCTION

1.1 What is Trade Facilitation and a Brief Trade Facilitation History

United Nations' Economic Commission on Latin America and the Caribbean (UNECLAC), describes trade facilitation as; "simplification, standardization and harmonization of procedures and associated information flow required to move goods from seller to buyer and to make payment." (ECLAC, 2021). Trade facilitation is defined by the World Trade Organization (WTO) as; "the simplification, modernization, and harmonization of import, export, and transit processes" (WTO, 2021). The significance of trade facilitation came under the spotlight after free international trade was the established foreign trade agenda of many countries. Prior to trade liberalization, international trade has been dominated by tariff policies for various reasons, and now this tariff lock has been mostly eliminated on a global scale. Trade liberalization did not come into existence in a matter of years but rather in a matter of decades, and it is still an ongoing process. However, it is possible to state that a big portion of trade liberalization policies came into effect in the mid-late 20th century. This portion of history also corresponds to the establishment of trade agreements (TA). North American Free Trade Agreement (NAFTA), came into effect in 1994. The European single market was established a year earlier in 1993. The Southern Common Market (MERCOSUR) of Latin America consisting of Brazil, Argentina, Uruguay and Paraguay was finalised by 1994. As of December 2022, there

are 355 regional trade agreements (RTA) in effect as recognised by the WTO, in which 164 countries are members of. As trade liberalization progressed and tariff rates came down and the rate at which tariffs came down slowed down, the global focus on international trade shifted to non-tariff barriers (NTBs). Therefore, it was towards the start of the 21st century that trade facilitation started gaining noteworthy momentum on a global scale.

1.2 TFA as a Benchmark

Today one of the most comprehensive trade facilitation initiatives is the Trade Facilitation Agreement (TFA) put forward by WTO. The first steps for this agreement were taken in 1996. After two decades of negotiations and talks between WTO members and officials, the final version of the TFA entered into force in 2017 (WTO, 2014). TFA has been adopted by 156 WTO members as of 20/09/22 (WTO, 2023c). There are 23 articles in the agreement, in which core trade facilitation aspects such as 'Customs Cooperation', 'Freedom of Transit' and 'Release and Clearance of Goods' are regulated. As of 02/02/2023, the global implementation rate of TFA is 75.6% (WTO, 2023a). The implementation rate of TFA for developing and least developed nations stands at 68.2%.

Although there are many RTAs and preferential trade agreements (PTA) which contain TF measures, as an initiative of WTO, which is among the most prominent modern global organizations, the TFA stands as the gold standard of trade facilitation. Alike WTO, the World Customs Organization (WCO), the United Nations (UN), the World Bank (WB) and the Organization of Economic Co-operation and Development (OECD) are also at the centre of global trade facilitation policy-making, provided that these organisations create some of the most comprehensive trade and trade facilitation

reports and datasets. The above-mentioned organisations are a creation of post WWII period and can be adhered a legacy of the Bretton Woods system (Grainger, 2007).

Trade facilitation is not solely the responsibility of customs agencies. Although many measures fall under their legal jurisdiction, trade facilitation encompasses all government bodies that participate in the supply chain and necessitates their collaboration and coordination (Staples, 2015). Additionally, reducing trade transaction costs (TTCs) involves enhancing trade logistics across the entire supply chain, from production to consumption, and investing in transportation (roads, railways, ports, and airports) and technology (information and telecommunications) infrastructure. The "whole supply chain" approach, as demonstrated and measured by the World Economic Forum's Enabling Trade Index (ETI), offers one of the most comprehensive and in-depth perspectives and definitions of trade facilitation (Staples, 2015).

1.3 What is Possible With TF

The benefits of trade facilitation correspond to those created by tariff elimination to a certain extent. For instance, increasing trade volumes is possible with both NTB elimination and tariff elimination. According to the microeconomic framework used in this thesis, any measure which results in cheaper imports or exports, also has trade enhancing effect. Hence, it is possible to state that elimination of tariff and NTBs have similar effects on trade, but certainly, the magnitude of the effects varies from case to case. A major difference regarding these two trade enhancing policy options, is the economic welfare effects they have. Elimination of NTBs, which is possible through trade facilitation, have positive welfare effects in the form of saved real economic

resources, where tariff elimination have smaller effects in this area, since it is only in the form of eliminating dead-weight loss associated with the levied tariffs.

The possibilities created by trade facilitation initiatives are multifarious and not limited to the direct trade-enhancing effect. Creating economic growth is one of the more general outcomes of trade facilitation. Reducing cost of trade will create growth and development within an economy (Jiahao et al., 2022). A more specific effect would be enhancement of competitiveness within an economy. This will also be true for export competitiveness. Less costly imports and exports will demand the domestic firms to be more competitive in the imports market and will enable exporting domestic firms to be more competitive in the global market. This said effect also extends to creating new markets to import from and export to. Import/Export diversification is not only limited to possible target markets but also to product portfolios of trading firms. Faster, cheaper and more reliable trade administration can enable previously not plausible transactions to take place. This new possibility would be in the form of a new market, a new product or a mixture of the two. Beverelli et al. (2015), reported that, with respect to, the number of products exported and number of destinations exported, Sub-Saharran Africa and Latin America and the Caribbean (LAC) can have substantial gains from trade facilitation.

Predictability serves as the foundation that enables businesses and governments to strategize and pursue their goals. In its absence, supply chain planning and competitiveness are significantly hindered (Staples, 2015). Predictability transforms trade facilitation into a means of fostering business growth and success.

1.4 Establishing the Research Question and Addressing the Literature Gap

The primary motivation for this research stems from the growing recognition that trade facilitation can lead to significant net economic gains in terms of increased trade and real incomes. Moreover, understanding the distribution of these gains across different sectors and firm sizes is crucial for formulating targeted policy interventions that maximize welfare improvements. By adopting a microeconomic approach, this thesis will provide a more nuanced understanding of the dynamics at play and offer valuable insights into the specific mechanisms through which trade facilitation initiatives can enhance welfare in three major trading blocs of LAC.

The main objectives of this thesis are to: (1) develop a microeconomic model that captures the essential features of trade facilitation, (2) use the model to estimate potential welfare gains that can result from trade facilitation initiatives in the three blocs and (3) provide policy recommendations based on the findings.

The findings of this thesis will contribute to the existing body of knowledge on trade facilitation by providing a rigorous microeconomic analysis of its potential welfare gains. This research will also offer valuable guidance to policymakers seeking to design effective trade facilitation interventions that maximize welfare improvements.

Chapter 2

LITERATURE REVIEW

Google Scholar returns about 18,700 search results for the search term "Trade Facilitation" published in the years 1990-2000, the number for the 2000-2010 period is 55,800 and for 2010-2023 is 64,900[1]. As discussed in the earlier chapter, TF as a modern international trade liberalization phenomenon has stepped under the spotlight at the turn of the millennia. This is evident from the number of publications in the literature as well as TF initiatives around the globe. A good measure of TF's increase in popularity in the recent decades can be the number of paperless trade measures in RTAs which have doubled from 8 in 2005 to 16 in 2013 where paperless trade is another name for the trade facilitation measure of digitalizing trade documents and procedures (Mengjing & Duval, 2018). Since talks among WTO members on a comprehensive TFA began in 2004, the number of regional TAs that contain trade facilitation components has almost doubled (WTO, 2015b).The finalisation of TFA in 2014 and ratification in 2017 have also served the upward trend in the number of scientific publications regarding trade facilitation in this period.

In a very brief sense, it can be said that trade facilitation initiatives have been associated in the literature with increased trade flows, improved import/export

[1] This simple test is done by the author on the date 28/02/2023.

diversification, economic growth and economic welfare gains (Anderson & Wincoop, 2001; Wilson et al., 2003; Wilson et al., 2005; Portugal-Perez & Wilson, 2009; Portugal-Perez & Wilson, 2012; Evdokia & Sorescu Silvia, 2012; Evdokia Moïse Florian Le Bris, 2013; WTO, 2015; Go, 2018; UNESCAP, 2021). A substantial portion of TF studies uses a Computable General Equilibrium (CGE) or a structural gravity (SG) model methodology (Go, 2018). CGEs are generally large scale and complex models with multiple dimensions like factors of production, nations and sectors (Bekkers & Rojas-Romagosa, 2019). CGE models have been used extensively in modelling trade policy changes and have been regarded as an industry standard in studying large sets of data. SG models have also been a very useful and popular trade policy analysing concept. WTO regards the SG method as one of the most popular and successful frameworks in economics (WTO, 2023d). Although there are similarities between the two models there are important differences which fundamentally sets them apart. For example, CGE models can incorporate a multitude of features. These may include tariffs, transport margins, rate of competition etc. Whereas, SG models tend to oversee some of those variables which can be argued to be secondary in terms of importance from estimation. Another important difference between the two models is the nature of the parameters where SG tends to structurally estimate some of them whereas CGE may use secondary sources in estimating those parameters (Bekkers & Rojas-Romagosa, 2019). Hence the estimation results from those different methods will differ while estimating the effects of the same policy change. This does not imply that one of them is inferior to the other nor that any study using either of them is superior to the other. While the scope of this thesis does not include a detailed comparison of the two methods, it is important to acknowledge the both as the main trade policy analysing tools in the world of international trade research.

In regards to available TF data, there are several sources in which trade facilitation performance comparisons can be made at an international level. Doing Business (DB) by the WB is one of the most popular trade facilitation performance rankings publicly available. The Doing Business report is an annual report in which countries are evaluated and ranked according to their performance in terms of ease of doing business. This ranking is actually called the Ease of doing business and countries are ranked after accounting for their performance in 10 different components related to setting up and operating a business. One of the components is the Trading Across Borders (TAB) where certain aspects of cross border trade of each country are evaluated using an identical framework for each country. The TAB data is a very useful source since it consists of quantitative elements giving way to empirical studies. Apart from reporting quantitative data regarding cross border trade metrics, TAB can also be used as a performance indicator. The data gathered by surveys with stakeholders in a country's trading ecosystem such as freight forwarders and customs brokers is used to create a ranking list in which all reported countries are compared to the best performer.

Another data source for trade performance is the OECD's Trade Facilitation Indicators (TFI). TFIs amount to a total of 12 and incorporate a priori articles of trade facilitation such as information availability and advance rulings. The countries are assigned a value from 0 to 2 for each indicator where 2 is the best possible performance and 0 is the worst. TFI data is also gathered by surveys from government and private sector stakeholders (Go, 2018). The results for the 12 indicators are used to create an aggregate point which can be used to indicate trade facilitation performance of the reported countries.

A comprehensive trade cost data set which is based on Novy (2012) is put together by The Economic and Social Commission for Asia and the Pacific (ESCAP) and the World Bank (UNESCAP, 2023). The database consists of 180 countries and trade costs are reported for each bilateral pair. The reported sectors are manufactured goods and agricultural products, where costs for energy trade are not included in the database. The methodology used in the creation of this database is a top-down approach aiming to capture all of NTB to trade. These NTBs even include not so obvious barriers such as language and cultural differences (J. E. Anderson & Wincoop, 2003). This database is based on micro-foundations and uses macro-economic data which provides a comprehensive set of information which may be of great use for trade facilitation researchers (UNESCAP, 2023).

The TF literature in the region of LAC has gotten richer in recent years in line with the global trend. Since global research on TF and its effects are arguably applicable to the entire global trading landscape, this thesis first presents the literature regarding trade facilitation in broad terms and then aims to present a literature review primarily concerning the LAC region. Other developing regions and trade blocs of the world are given priority as well since the developing parts of the globe show similarities in terms of administrating economic activities like trade.

As defined by the WTO, excessive trade costs are burdens on an economy, making exports uncompetitive and preventing firms from accessing inputs with ease (WTO, 2015a). WTO has stressed the positive impact of policy reforms on trade facilitation. Their study points out that the lowest-income countries are likely to gain the most from such reforms. WTO (2015a) also states that developing countries with higher trade

costs (measured by the number of days required to export) tend to have a higher share of the population living on less than USD 2 per day.

In general terms, trade facilitation has been found to decrease the costs of trading, increase trade flows, improve import/export diversification, improve international trade performance of domestic firms, create economic growth etc.

It's been reported by James E. Anderson & Van Wincoop (2001) that border barriers or non-tariff barriers hinder trade. An econometric study using regression simulations to find the effects of improving logistics, customs environment, and e-business usage standards of Asia-Pacific Economic Cooperation (APEC) countries, finds that intra-APEC trade would increase by 21% and the gain from improving behind the border regulatory harmonization and e-business usage is US$116 billion (Wilson et al., 2003). In another simulation, Wilson et al. (2005) find that trade facilitation has the potential to increase the trade of the studied 75 countries by US$ 377 billion which represents 10% of the total trade of the studied nations. In their 2009 study, Portugal-Perez & Wilson (2009) find that trade facilitation can have significantly more benefits than trade liberalization. They give the example of Ethiopia where if it were able to improve its trade cost efficiency so that the gap between Ethiopia and Mauritius in costs were reduced by half, the response in the volume of imports would be equivalent to that produced by a 7.8% reduction in the tariffs (Portugal-Perez & Wilson, 2009). Once again Portugal-Perez and Wilson state that improvement to the trading regime, specifically in the areas of infrastructure and border efficiency can have substantial benefits (Portugal-Perez & Wilson, 2012). In their report Evdokia Moïse and Florian Le Bris (2013) discussed the trade facilitation initiatives and cite a study by the OECD

where a 1% reduction in trade costs can result in US$ 40 billion in income gains globally. The same OECD study reports that a 1% decrease in LAC trade transaction costs can result in an increase in GDP in the region by 0.12%–0.36% (Lesser & Moise-Leeman, 2009). The authors further underline that some trade facilitation initiatives have the potential of having immediate positive effects. An extensive literature review by the World Bank summarized the impacts of trade facilitation interventions as trade cost reducing, trade enhancing, trade diversifying and trade enabling. The latter being particularly important for smaller firms (Go, 2018).

Estevadeordal (2017) points out that in the 1990s, LAC embraced the trade liberalization trend, a time frame that also corresponds to the founding of MERCOSUR and the Andean Community (CAN). This trend was preceded by a period of relatively higher protectionism in the LAC region (Loser & Guerguil, 1999). Tariffs were cut and a number of free trade agreements (FTAs) were established. But Estevadeordal (2017) further points out that recent times require that attention is given to extended trade policy beyond the regular global trade policy agenda. This is because the FTAs made within the region cannot properly deal with customs-related costs, regulatory costs, informational trade barriers and other related costs.

Wilmsmeier et al. (2006) looked at the intra-Latin American maritime trade costs. They estimate that among all variables included in the study, port efficiency has the highest elasticity among the port-related variables. The study, which looked at 16 LAC countries, reports that doubling the port efficiency on both sides of the importer–exporter equation has the same impact as halving the distance between traders.

El Dahrawy Sánchez-Albornoz & Timini (2020) performed a CGE analysis rooted in Anderson and Van Wincoop (2003), concluding that TAs between Latin American countries, as well Latin America and RoW pairs, have a positive effect on trade. The study reports an approximate 10% increase in trade achieved by TAs, which the study finds to be in line with the previous literature. The analysis on welfare uses an approach to apply a 'best performer' narrative to conduct CGE simulations in different scenarios. The report estimates a significant gain in welfare for Latin American countries from reducing bilateral trade costs to that of the best performer.

Cai & Li (2020) using a general equilibrium model based on Caliendo et al. (2015), looked at the trade and welfare effects of trade liberalization in the region. Using a data set from 1990 to 2015, the authors conclude that a big majority of Latin American countries benefited from a reduction in tariff rates. In terms of non-tariff barriers, the same study suggests that Venezuela has a very high potential to gain by reducing trade costs: according to this study, non-tariff trade costs imposed in Venezuela account for 93% and 89% of the total trade costs for agriculture and manufacturing, respectively. The authors underline this finding as a measure of the importance of trade facilitation.

Although Latin American countries have managed to record progress in the field of trade facilitation, there are still many challenges and plenty of room for improvement (S. Herreros, 2021). According to the World Bank's Doing Business 2020 report, countries in LAC lag behind high-income members of the OECD by a significant margin in terms of the Trading Across Borders component of the report (World Bank Group, 2020).

Using firm-level data from Peruvian exporters, Lee et al. (2021) found that trade facilitation measures and trade facilitation provisions in Preferential Trade Agreements of which Peru is a member have a positive effect on exporting firms, in particular firms that are included in global value chains (GVC). The main channel in which this benefit surface is efficiency gains in Peru's domestic border operations. The estimated benefit of trade facilitation measures is not only limited to Peruvian firms but also applies to their trading partners (Lee et al., 2021).

A case study by Volpe Martincus (2016) that investigated Peruvian import times finds that an increase of 10% in border times leads to a decline of 2.4% in import volumes.

In a CGE analysis, possible welfare gains associated with removing non-tariff barriers were estimated. This study by Fugazza & Maur (2008), estimated that CAN countries have the potential to gain 0.1% to 1.2% of their GDP as welfare gains from removing all NTBs during importing. The same study, using NTBs while exporting as ad valorem tax on exports, found that removing them altogether would result in 0.1% of GDP gain for the bloc.

Otsuki (2011) used a gravity model analysis and reported that progress in the trade facilitation fields of port efficiency, customs environment, regulatory environment, and service sector infrastructure can lead to great increases in trade volumes. Improvement toward the halfway point of the global average is estimated to create around US$100 billion of trade volume as a result of trade facilitation in the LAC region (Otsuki, 2011).

According to estimations from OECD's METRO simulation model, trade facilitation reforms can create additional gains of 0.04% to 0.41% for a country's GDP (OECD, 2018). For Latin America, the estimated welfare gains amount to 0.2%, while the welfare gain estimation for Central America and the Caribbean is around 0.4%.

A study by Choi et al. (2021) suggested that the low-value exports that are more likely to be exported by a developing nation are undermined by export costs as much as by export delays. The study reported that for the period 2006–2011, the mean trade delay and trade costs (cargo documentation filing, shipment inspection, and other related costs including handling at the ports) in the CAN region were 23.7 days and US$1,375.3, respectively, while for the EU the delay and costs were 10.8 days and US$903.1. Choi et al. argued that developing nations have managed to bring down these delays but at the cost of increasing the fees associated with trade.

A recent study looking into the African trade bloc ECOWAS has found that the economic welfare cost of an inefficient trade administration system is much larger than the impact tariffs have on welfare. Improving the standard of the trade costs regime in ECOWAS is expected to yield positive welfare gains that are 2.5 to 4.4 times greater than the expected gains from removing tariffs completely (Safaeimanesh & Jenkins, 2021b). Furthermore, the total potential welfare gains in the region are estimated to be between US$ 1.56 billion to US$ 2.69 billion amounting to 0.24% to 0.42% of their GDP. Using a similar methodology Safaeimanesh and Jenkins (2021a) have reported that the potential economic gains in South Africa Customs Union (SACU) amount to US$ 2.2-3.7 billion in 2018 prices. In this study, the authors include a well-structured

single window system amongst the suggested policy options to be implemented in this customs union.

Abrego et al. (2021) report that for the African continent, reducing non-tariff barriers (NTBs) has a much larger welfare effect than reducing tariffs alone. The study, which uses a CGE model, further states that the effects of lowering NTBs are strongly non-linear, with a reduction of 35% in NTBs resulting in welfare gains of 1.7% for the whole continent and a reduction of 45% in NTBs resulting in almost 4% of positive welfare effect.

Jiahao et al. (2022) also found significant evidence relating trade facilitation to sustainable economic growth. In their study of Sub-Saharan African countries, the impact of improving importation costs and document simplification is estimated to result in an increase in sustainable economic growth.

In a study estimating the effects of customs reform in Albania, Fernandes et al. found that a 0.36% tariff equivalent reduction in trade costs yielded savings of US$12 million in 2012 (Fernandes et al., 2015).

The 2015 World Trade Report by WTO (2015b), illustrates a model to estimate the welfare effects of cutting costs to trade. The section on the effect of inefficient customs procedures on an economy uses a similar microeconomic model to this thesis. Although there are some differences in our approach, which mainly focuses on individual economies and treats import and export sides separately, the WTO report uses an approach that is fundamentally identical but that treats the import side of an

economy together with the export side of the partner economy. Thus, the report maintains that multilateral agreements, in this case the TFA, are the most sensible way to introduce an effective method of benefiting both parties of an import–export relationship. The report applies the prisoner's dilemma to international trade theory, in which the cost associated with implementing an effective trade facilitation agenda would only benefit the parties if incurred collectively. Hence, it is argued that the necessity of a multilateral agreement ensuring collective risk taking and the implementation of such facilitation policy is the fairest and sound way forward.

In a working paper published by the IMF, it is reported that trade facilitation is crucial in lowering transaction costs and promoting inclusive growth (Bacchetta et al., 2021). Elevated trade expenses prevent impoverished economies from participating in international markets, hindering their ability to benefit from increased specialization, access to new technologies, and the generation of economies of scale (Bacchetta et al., 2021). The report predicts that the complete implementation of the Trade Facilitation Agreement could decrease global trade costs. Low and lower-middle income countries are expected to experience the most significant reduction in trade costs according to the report. Developing nations implementing the TFA are projected to see a substantial increase in export growth between 2015 and 2030.

Tariff application is considered international trade's 'enemy number one', and an important study assessing the effect of tariffs on a nation's welfare was conducted by Francois & Hall (2002). They estimate the effect of tariff reductions using the partial equilibrium framework, and with detailed microeconomic theory, explain the basis of the working principles of the simulation model used in this study.

In a policy recommendation type study, a microeconomic model similar to the one used in this thesis is put forward in order to make a case for lowering transaction costs' positive welfare effects. It is argued that countries engaged in trade that have a probable comparative advantage in minimizing transaction expenses can concentrate on the coordination role within the production process. By doing so, they can capture a portion of the welfare benefits resulting from increased trade (Baeten & Den Butter, 2006).

Chapter 3

HISTORY OF ECONOMIC AND POLITICAL INTEGRATION IN LATIN AMERICA AND THE CARIBBEAN FROM A TRADE LIBERALIZATION AND TRADE FACILITATION PERSPECTIVE

3.1 Introduction

The continent of South America is home to self-governing 12 Latin American states[2]. The region is home to several overseas territories of ex-colonial powers such as France and the UK. The nations of the West Indies are regarded to constitute a different set of countries than continental mainland states. These nations are better known as the Caribbean countries and they mainly consist of island nations with limited industries. The greater region and the countries located in it are generally given the name Latin America and the Caribbean which also includes Central American nations such as El Salvador and Mexico.

The colonial history of LAC starts right after the discovery of this continent by the Europeans. The Portuguese and the Spanish have been the initial and most influential

[2] Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, and Venezuela

European colonizers of this continent, evident by the current culture and the language of the LAC nations. In contrast to the independence histories of ex-colonies of the UK, who broke loose from the crown in mid 20th century, continental LAC countries gained their independence from their colonisers mostly in the 19th century. In this sense, some LAC countries have a relatively long history of independence and self-governance.

Those countries that broke loose from the crown in the 20th century and are members of LAC are the island nations of the Caribbean. Interestingly, O'Brien (2011) stated that the legacy of colonial rule in the Commonwealth Caribbean has resulted in a political culture of island self-government and a profound mistrust of political union, which has shaped the institutional structure and governance of the Caribbean Community (CARICOM). Member states remain committed to regional integration through cooperation and association without transferring sovereign decision-making powers (O'Brien, 2011).

The struggle for independence created a sense of sharing the same purpose within some neighbouring countries and this common struggle played a key role in attempts to establish a supranational union (Van Klaveren, 2017). Although the current state of LAC is not comparable to Europe in terms of integration, the spirit of cooperation is still around (König, 2013). In the post war period, LAC nations who associated themselves with common economic or ideologic policies and shared geographical proximity started to form various types of regional groupings (Van Klaveren, 2017).

The integration initiatives of this period were also fuelled by the globalization and regionalism trends that started to emerge on a global scale. The US as the biggest

economy in the world and the Americas, have put forward the idea of the Free Trade Area of the Americas (FTAA) with the rising trend of regionalism. In 1990 President Bush[3] has proposed the Initiative for the Americas (IA), and at the same time, the negotiations for NAFTA started to take place (Pizarro, 1999). After the initial enthusiasm, there have not been any further advancements in FTAA during the Bush administration. The Clinton administration proposed to put FTAA into force in 2005, but the countries have failed to reach an agreement until that time. This changed the US's attitude towards the north-south trade of the Americas and bilateral FTAs became a more popular trade policy agenda towards the LAC countries.

There have been previous intra-regional attempts to achieve higher degrees of economic and political integration several times in this post-war period. In the 60s, the treaty of Montevideo established Latin American Free Trade Association (LAFTA) as a solid step towards a common market (Miranda & Frisancho, 2022). The differences between the signatories regarding their political aspirations have led to the failure of establishing a common market for the region. In 1980 this initiative was transformed into Latin American Integration Association (ALADI). ALADI is still around today but the renewed Treaty of Montevideo establishing ALADI in 1980 lacks the political and economic depth of integration which is a reminder of the heterogeneity of the LAC region. Today, the popular cross-border trade policies of LAC countries can be summarized as multilateral TAs as well as customs unions and trading blocs.

[3] President George H. W. Bush is the 41st president of the US from 1989-1993 and is the father of George W. Bush who is the 43rd president of the US.

In this thesis, we will analyse the potential economic gains of three different trading blocs of the region. The rationale for selecting the trading blocs under investigation can be described by our efforts of keeping the study limited to Latin America while maximising the investigated geographical area. Therefore, the Andean Community (CAN), the Southern Common Market (MERCOSUR) and the Caribbean Community (CARICOM) are selected on the basis that these selections represent the biggest and the smallest economies in the region as well as representing a wide range of geography expanding from the south to north, northwest and to the Caribbean sea. These blocs also present some of the most effective joint actions undertaken by the region's members. The LAC region in general is regarded as a developing region and the countries in it continuously show promising areas of development which makes LAC further interesting to study.

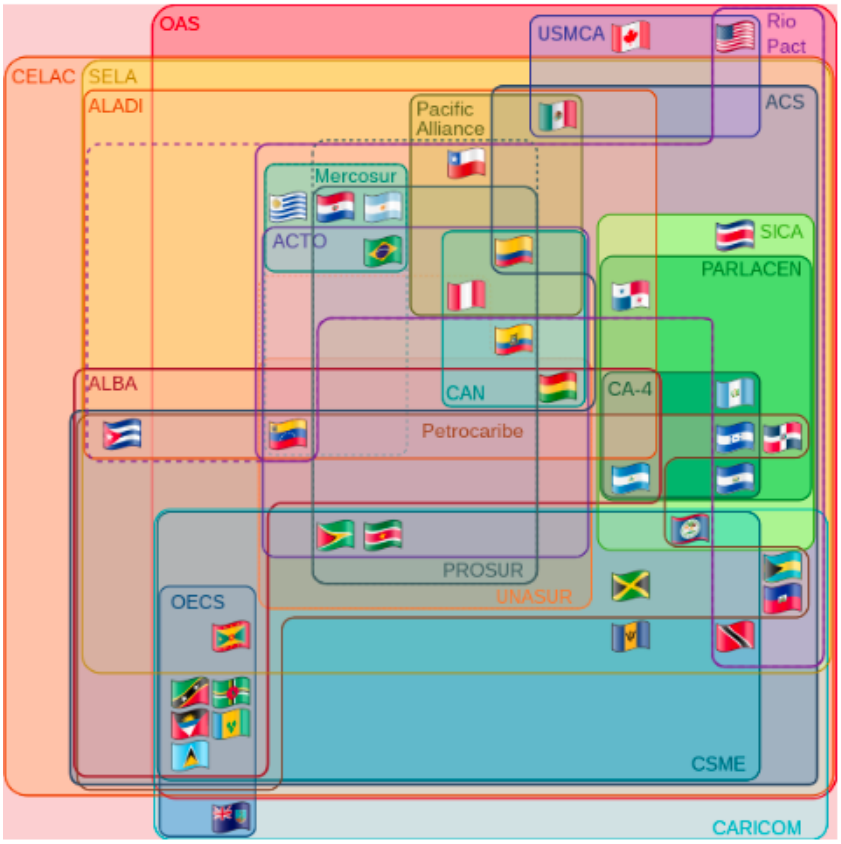

Figure 1: Euler Diagram representing the LAC supranational integration bodies.[4]

The mentioned heterogeneity of the region also contributes to the ineffectiveness of the trade facilitation measures aiming to reduce frictions in cross-border trade. TF measures in general can be labelled as a set of cooperation guidelines for intra-economic agents as well as cross-border agents. This inevitably requires a degree of integration albeit not complete removal of the borders, even though complete removal of borders presents a utopia in terms of removing all kinds of trade barriers. TF measures in this regard, stand as a tool for deepening regional integration in any part of the world. Inefficient trade policies and inadequate infrastructure present challenges

[4] Source: Wikipedia (*Template:Supranational American Bodies - Wikipedia*, n.d.).

for regional integration (trade regional integration). The research interest of this study regards the intra-bloc trade of these blocs as secondary importance whereas the trade facilitation measures and their effects of reducing NTBs pose as primary importance. The implications of integration in this study, therefore, should be taken into consideration with the respective ranks of above mentioned significances.

A positive note regarding the intra-regional trade in LAC would be about the trade in intermediate goods. Around the world, intermediate goods make up approximately 60% of the total trade (Staples, 2015). Intriguingly, for LAC, intra-regional trade demonstrates higher levels of intra-industry trade compared to trade with other regions, with the exception of Mexico. This suggests a greater possibility for the development of advanced, intricate supply chains through trade within the region (Staples, 2015).

Results of S. Herreros (2021) reveal significant advancements in trade facilitation for LAC over 2019-2021. For the first time, LAC ranks as the top-performing developing region, surpassing East and Southeast Asia in terms of improvements in trade facilitation. Among the 14 participating countries, average implementation rates exceed 80% for 23 of the 31 core measures in the Global Survey of UN ECLAC, particularly in the Transparency and Formalities categories, which align closely with the Trade Facilitation Agreement (TFA) provisions. Based on current progress and country notifications to the WTO TFA implementation in the region should be nearly complete by the end of 2023 (S. Herreros, 2021).

However, once again the Regional Report suggests that progress is inconsistent across both geographic and thematic areas (S. Herreros, 2021). The substantially lower

participation of Caribbean countries in the 2021 Global Survey, compared to the 2019 edition, may be concealing the distinct challenges these small economies and CARICOM members continue to face in executing trade facilitation reforms. Additionally, LAC still has significant opportunities for improvement in cross-border paperless trade, integrating trade facilitation with access to trade finance, and ensuring that small and medium-sized enterprises (SMEs) and women can reap the benefits of trade facilitation. The UN ECLAC report reiterates that international cooperation initiatives, such as the WTO's TFA Facility, could offer particularly valuable support (S. Herreros, 2021).

3.2 CAN History

The Andean Community, initially the Andean Pact, was established in 1969 by Bolivia, Chile, Colombia, Ecuador, and Peru, with Venezuela joining later in 1973. The purpose of the community was to promote development through regional integration and also the Andean Pact sought to set a customs union for a period of ten years among its members (Pizzolante, 2002). The community was strengthened in institutional terms in 1979 by the establishment of the Council of Foreign Ministers, the Andean Court of Justice, and the Andean Parliament (König, 2013).

Three decades later, the experience proved to be complex in the achievement of the main objectives set by the Cartagena Agreement, such as the liberalization of trade in goods within the region, the adoption of a common external tariff, and the harmonization of foreign trade instruments and policies. Due to these challenges, it became necessary to undertake both institutional and policy reforms (Pizzolante, 2002). In 1996, the Trujillo Protocol amended the founding Cartagena Treaty, making

the way for CAN to be a regional organization with international legal status and establishing CAN as a trade bloc (König, 2013).

However, in 2006, the Andean Community entered a deep crisis when Venezuela left the bloc. Despite this setback, the Andean Community has continued to work towards its goals of promoting economic and social development in the region through regional integration. The Andean Community has played an important role in promoting trade and investment between its member countries, as well as in addressing common challenges such as poverty, inequality, and environmental degradation.

Today, the Andean Community is made up of Bolivia, Colombia, Ecuador, and Peru. The Andean Community continues to work towards its goals of promoting economic and social development in the region through regional integration, and it remains an important regional organization in South America.

3.3 CARICOM History

CARICOM was established on July 4, 1973, with the signing of the Chaguaramas Treaty, initially signed by four countries: Barbados, Jamaica, Guyana, and Trinidad and Tobago. The Community began to function on August 1 of the same year, and a year later, in 1974, eight more countries joined (Santana & Ochoa, 2020). This new organisation was built on the foundations of the Caribbean Free Trade Association (CARIFTA) (CARICOM, n.d.). CARIFTA's overall goals were not achieved due to differing stances among member states. As a result, in 1973, attempts were made to reinforce, harmonize, and regulate the economic and trade relationships among CARIFTA members by establishing CARICOM (Hudson, 2003).

Initially, the establishment of a common market proved challenging for the members as there were disagreements regarding the application of tariffs. Nevertheless, there have been positive developments regarding the cooperation and integration of member states in the initial phases of the community (Santana & Ochoa, 2020).

After the American-style free market economy emerged as the better form of economic policymaking and the economies of the globe started to embrace more liberalized policies, CARICOM states recognizing the need to adapt to the current trends, proclaimed in favour of deepening the community, creating a climate for the establishment of a trade bloc and an economic union (Santana & Ochoa, 2020).

From 1989, after the Grand Anse Declaration, and until 2001, heads of state began to generate different protocols to adapt the Grand Anse Declaration to the Chaguaramas Treaty. A total of nine protocols were added, which generally constituted the first notion of reconfiguring the Chaguaramas Treaty, whose postulates had already been overtaken by the new global economy and politics (Santana & Ochoa, 2020). Changes in geopolitics and the challenges of globalization led to a rethinking of CARICOM's model, resulting in the Protocol of Chaguaramas in 1997, which aimed to modify the functioning of CARICOM in specific areas, including non-discrimination for obtaining capital, industry protocols to promote sustainable development, and a shift towards international trade orientation and fundamental modification of the agricultural sector.

3.4 MERCOSUR History

The Southern Common Market (MERCOSUR) is a regional trade agreement established on March 26, 1991, with the signing of the Treaty of Asunción by Argentina, Brazil, Paraguay, and Uruguay (Luca Gardini, 2007). MERCOSUR's primary objective was to promote economic integration, trade liberalization, and the facilitation of trade within the region (König, 2013). Since its inception, MERCOSUR has made significant strides in promoting trade facilitation and regional integration.

MERCOSUR's initial phase focused on the establishment of a free trade area and the gradual reduction of tariffs among member countries. Between 1991 and 1994, member states agreed to eliminate non-tariff barriers and reduce intra-regional tariffs on a wide range of goods. The process culminated in the creation of a common external tariff (CET) (Brambilla et al., 2018).

In addition to tariff reductions, MERCOSUR has taken several measures to promote trade facilitation within the region (UNECLAC, 2000). One of the key initiatives was the establishment of the technical regulations, which sought to harmonize technical standards and conformity assessment procedures across member states the technical regulations aimed to reduce trade barriers caused by divergent national regulations, thereby facilitating the movement of goods within the region (Prado & Bertrand, 2015).

3.5 International Trade Policy Histories and Trade Facilitation Performances of Selected LAC Countries

3.5.1 Argentina's Brief International Trade Policy History

Based on a set of data for the first half of the 20th century, 25% of the income difference between Argentina and the industrialized world economies can be explained by trade policies and international trade practices alone. Brambilla et al. (2018) explain Argentine anti-export bias history by poor export policies paired with an import substitution program for industrial goods. This sectoral divide (agriculture vs. industry) is found in the depths of the Argentine internal conflict of interest between landowners, workers and industrialists.

Another aspect raised into consideration by Brambilla et al. is the effective tariff rates throughout Argentine history. Argentina followed the trend in the Latin American region with high tariff rates at the dawn of the 20th century. Although global protectionism via tariff rates was common practice, Argentina with a scarcely populated vast amount of agricultural lands and little industrial production, used high tariff regimes as a form of revenue collection, to mitigate the difficulty of tax collection in a relatively decentralized socio-economic climate. Even if the contrary would be the case, the amount of economic activity would not yield great potential for taxation. This is evident by Centeno (1997) who finds the major contributor to the revenue generated by the Latin American governments to be tariffs in the 19th century, yielding >50% of total revenue.

Until WW1 Argentina enjoyed a growing economy complemented by multiple factors but primarily complemented by a booming global economy and investments in

transportation. The effect of railroads on export and transportation costs acted as one of the reasons setting Argentina apart from similar economies (Goodwin, 1977).

From WW1 to the great depression and WW2 era, Argentine tariff regimes showed an upward trend, sometimes exceeding global averages and taking a form which can be characterized as primary protectionism motivated in contrast to the beginning of the century. By the 1970s Argentine economy was slowly moving to liberalization after a couple of decades of extensive protectionist policies following an import substitution industrialization regime. The extent of protectionism in the 1950s and 60s can be summarized as not the most effective despite some strides in the industrialization process of the nation. The protectionist regime cracked as a result of crises fuelled by balance-of-payments problems alongside other off-the-counter problems caused by import substitution regimes (Casaburi, 1998). After the 1976 coup, the new state planned an economic reform which led the average tariff from 90% to 50% rates (Casaburi, 1998).

Once again, the efficacy and lifespan of the economic reforms were short-lived. Economic and political stability were poor and tariff rates fluctuated up and down during the 80s. The Argentine economy was plagued with BOP and exchange rate problems which were carried to the 90s. The new administration of Menem took average tariff rates from %30 to %18 in 1990 (Casaburi, 1998). Until the establishment of the CET of MERCOSUR in 1995, the tariff rate and trade policies varied, in line with the inherited economic and political instability history of the nation. This new CET was not a perfect CET system as some sensitive goods were left out of the special customs treatment.

As of 2020, Argentina is a signatory to several global and regional trade agreements. ALADI is the oldest of these agreements which was signed in 1980. The agreement seeks to improve regional integration with trade and economic cooperation. It encompasses several accords and sub-agreements which complement different agendas of the main agreement. Within ALADI the accord of diminishing technical barriers to trade (1998) strikes as the broadest trade facilitation article within this arrangement. All members of ALADI are signatories of this accord of reducing technical barriers to trade. Another important regional agreement is the MERCOSUR. Ratified in the 90s, the agreement reduced tariffs and enhanced cooperation of the members Argentina, Brazil, Uruguay and Paraguay. This trading bloc also has agreements with other nations within the region as well as with other nations around the globe. The most promising trade partner of the bloc became the EU after the sides came to a comprehensive agreement in 2019. The EU-MERCOSUR deal brought reduced tariffs to a wide range of goods and services, expected to eliminate billions worth of duties for the partners. Nearly all of the FTAs Argentine nation is a part of, created a positive welfare effect by being centred around trade liberalization, in other words cutting tariffs. WTO's Trade Facilitation Agreement stands out as an alternative approach to enhancing trade.

The trade facilitation agreement was signed by Argentina in 2017 among other WTO members. This landmark agreement is estimated to benefit the whole of the global economy by cutting costs and frictions to trade to a minimal level. The trade facilitation approach seeks to handle trade frictions by employing procedures which cut back on the costs associated with trading operations such as cargo handling, port operations, customs procedures and such.

3.5.2 Trade Facilitation Performance of Argentina

According to the Doing Business report, the country has not improved much during the past five years in terms of trading across borders component of the report. The only two areas of improvement had been, the improvement to Time to export: Documentary compliance where the value of 27 hours for the past four consecutive years was improved to 25 hours in 2020. The other area had been, Time to import: Documentary compliance where the value of 336 hours in 2015 has been improved gradually making the value for the year 2020 166 hours. The report suggests that Argentina have improved its import/export times by introducing electronic certificates of origin and improvement to the licensing system. As of 03/2023, Argentina has completed 97.9% of TFA commitments (WTO, 2000).

3.5.3 Paraguay's Brief International Trade Policy History

The 1970s have been a period in which the rapid expansion of Paraguay's economy stood at an average of 8% (Baer & Birch, 1987). It was during this time that the world's then-largest hydroelectric plant was built in Paraguay. Agriculture was the main driver of the economy and it had positive prospects for the coming years. Cotton and soybean being the primary cash crops of the 70s Paraguay, the yield of the crops increased from 470% and 350% respectively, however the same did not apply for the other locally grown crops which did not pose many opportunities for exports. By 1981, cotton contributed to 43.7% of the exports (Baer & Birch, 1987).

Being a landlocked country, Paraguay was dependent on the export route passing from Argentina, but the situation of dependence on Argentina changed when the highway to Brazil was built (Baer & Birch, 1987). During the 70s, Paraguay's debt performance was good enough to save them from the debt crisis of the 1980s (Birch, 2014). When

General Alfredo Stroessner's regime of 35 years came to an end following a military coup in 1989, Paraguay was in a great transformation fuelled by the new regime, the end of the cold war and a prospective new common market of the geography, the MERCOSUR. By 1991, Paraguay's tariff rates were below the average of the MERCOSUR region, indicating that the nation was relatively more open to trade. Although Paraguay did not experience high levels of inflation, debts and tariff rates in contrast to its neighbours, the new transition to a democratic state brought new challenges in the developmental policy and bureaucracy (Birch, 2014). One of the earliest challenges of the new democratic government was the challenge posed by illegal border trade which became prominent as the construction activity of the hydroelectric plants which employed thousands nearing the borders created a more "porous" border. Consumer products, which were mainly imported, saw an increased activity in trade which put Ciudad del Este as a marketplace for consumer goods which contributed towards the re-export of those goods, whether legally or illegally. Tax reform took place and it included "regimen de turismo" which seek to institutionalize the re-export activities (Birch, 2014). This favoured an exclusive tariff and VAT regime for those products, in order to regulate border activities. The Paraguayan government managed to protect this tax regime even during the common external tariff application of the MERCOSUR, by being a disadvantaged member of the MERCOSUR, it was allowed for them to exclude certain goods from CET (Birch, 2014). Surprisingly, re-export activities under the preferential regime had a volume which exceeded the export volume of conventional agricultural primary products by three folds in the 90s. Even more recently it was estimated that the re-export activities in the Ciudad del Este region contribute as much as the soybean trade and outperforms the soybean industry in terms of employment (Birch, 2014).

As an anticipated effect of MERCOSUR, Paraguay's growth in exports to member countries of the common market outpaced that of the rest of the world. By 1996 the total export volume to MERCOSUR exceeded the amount of export made to the rest of the world (Birch, 2014). The timeline of events went the same for the imports from MERCOSUR, MERCOSUR imports exceeding that of the rest of the world (RoW), but the balances shifted again favouring the RoW trade for the 2006-2010 period (Birch, 2014). Another interesting relationship which is worth a remark is the fact that certain percentages of imports and exports are of transit in nature which means that they don't end up being consumed in the target economy. Birch (2014) cites a study by CADEP where it is reported that when the transit goods for both imports and exports are adjusted, Paraguay becomes a net exporter (Birch, 2014).

Today, Paraguay's foreign trade is mainly shaped by its neighbouring countries and MERCOSUR. Agriculture is still the prominent sector fuelling exports and economic activity. Within MERCOSUR, Paraguay is the most open nation to trade where the rate of trade in terms of percentage of GDP is at 69% in the year 2019 according to the World Bank.

3.5.4 Trade Facilitation Performance of Paraguay

Throughout 2015-2020 Paraguay has improved some aspects of the trading across borders component of the doing business report. According to doing business, Paraguay has improved the time required for exporting a shipment from 192 hours to 144 hours over this period. This is the total time required for documentary compliance and border compliance combined. This was achieved as a result of introducing an electronic single window for export operations in 2017. Although Paraguay had introduced systems like of electronic single-window for exports as far as 2005

(Ministerio de Industria y Comercio, 2004), the Doing Business report is assumed to be referring to an update or re-make of that same window, which enabled to improve Paraguay's costs of exporting. In terms of imports, Paraguay has halved the time required for border compliance in the year 2019 by implementing an electronic signature for clearance of imports, from 48 hours to 24 hours. As of 03/2023, Paraguay has implemented 96.2% of the TFA since ratification on 01/03/2016 (WTO, 2023b).

3.5.5 Uruguay's Brief International Trade Policy History

Uruguay located south of Brazil and north of Argentina stands at the crossroads of the biggest LAC and Mercosur members. As with most LAC nations, Uruguay historically has been exporting livestock and agricultural products and importing mostly manufactured products and energy (Estrades & Flores, 2020). In terms of trade liberalization, Uruguay, following suit with the rest of the continent, started its liberalization policies in the 70s extending until the 90s, until the establishment of Mercosur, which can be considered a pinnacle for liberalization. As a result of liberalization, trade expanded significantly during this period and continued with an upward trend thanks to MERCOSUR and a booming global economy in the 21st century. Since the 90s the export portfolio of Uruguay has demonstrated changes in comparative advantage (Estrades & Flores, 2020). For the period 2010-2017, the trade in services has also substantially increased in line with the trend on a global scale. During this period, Uruguay has diversified its trade partners, both imports and exports demonstrating an increase in the number of destinations. As a result of this diversification, China became its biggest trade partner of Uruguay in the 2010s while the relevancy of MERCOSUR states for Uruguayan trade seemed weaker as downstream markets.

3.5.6 Trade Facilitation Performance of Uruguay

In the timeframe 2010-2020, Uruguay has improved its trading across borders performance. The first paperless trade implementation in Uruguay has been in 2009 (WTO, 2023e). According to DB, this came in the form of improvements in the banking system which reduced the time it takes for import and export operations by implementing an electronic paperless data exchange system. Another digital improvement came in 2013 further reducing the time for border operations. According to the report, Uruguay has covered some noticeable improvements in the field of paperless and digital trade enabling digital certificates of origin and an electronic customs clearance system (WTO, 2023e). According to WTO, Uruguay has completed 100% of its commitments to the TFA (WTO, 2023f).

3.5.7 Peru's International Trade Policy History

In the period 1957-59, the average tariff rates in Argentina, Brazil and Chile varied from 100% to 140% and the average rate for Mexico and Colombia stood at 50% to 60% (Berry, 1990). During the same period, the average tariff rate in Peru was 25% (Berry, 1990). This is the main reason for the high imports to GDP ratio Peru achieved in contrast to the other medium to large LAC countries. Independently from the import side, Peru has also managed to achieve high rates of export to GDP ratio during the same period. As expected from any similar-sized LAC country, Peruvian exports of the time mainly consisted of primary products (Berry, 1990). Unlike most other LAC nations, Peru has not engaged in a strong import substitution program until the late 50s, which came after the Industrial Development Loan. Manufactured products corresponded to only 1% of the exports in 1970 but in 1987 the total manufactured products as a percentage of total exports amounted to 14%.

In its second trade policy review of Peru in 2000, WTO states that Peru has achieved great figures of growth thanks to the consolidations in the field of economic reforms since 1994 (WTO, 2023g). Some of these reforms were the privatization of state-owned enterprises, the establishment of a good regulatory framework and the strengthening financial system. From 1994 to 1998 the growth in merchandise trade stood at 8.5%, as a result of free trade. The liberalization of trade also increased the trade in services for Peru. It is also reported that the foreign direct investment in Peru has increased five folds from 1993 to 2000. The average applied most favoured nation (MFN) tariff rate Peru imposed on imports was 16% in 1993. The tariff rate fell to 13.6% in 1999 (WTO, 2023g). For the year 2020, the weighted mean MFN tariff rate of Peru is 2.0% (World Bank, 2023).

In the early 1990s, Peru's unilateral pursuit of liberalization caused the country to become detached from sub-regional integration initiatives. Consequently, in August 1992, Peru's status was reduced to that of an observer in the Andean Free Trade Area (AFTA) negotiations, as it had suspended its commitments to the liberalization program (Lengyel & Ventura-Dias, 2004). It was in 1996 when the community members reinvited Peru to become a member. As a result, Peru became a full member and imposed a complete MFN status on all CAN countries in 1999 (Lengyel & Ventura-Dias, 2004).

In the last trade policy review report of Peru, published by WTO in 2020, it is clearly stated that Peru has been implementing a trade policy of openness aiming at economic growth (WTO, 2019). In its National Strategic development plan (a decade-long development plan) adopted in 2011, foreign trade was positioned as a central element

for development. The most recent National Strategic Export Plan (PENX 2025) of Peru aims to increase the export capacities of domestic firms and the report suggests that this strategy is in line with the past few decades of tariff liberalization and trade facilitation policies.

3.5.8 Trade Facilitation Performance of Peru

According to the WTO (2023b), Peru has invested in cranes which enabled the port of Callao to speed up port handling activities in 2010. The following year it is reported that Peru implemented its first paperless trade measure by utilizing a new web-based data interchange system. In the last instalment of the Doing Business report, the electronic single window system has expanded to serve customs brokers as well by streamlining import customs clearance procedures (WTO, 2023e).

Very recently Peru with the other CAN nations has passed a decree 'Decision No. 908' enabling a smoother transition of hygiene products when imported from third countries (Estudio Echecopar, 2023). Now the requirement of presenting free sale certificates for products originating outside CAN is eliminated. This is expected to save a considerable amount of cost and time for companies engaging in the marketing of these products (Estudio Echecopar, 2023).

3.5.9 Jamaica's International Trade Policy History

Trade liberalization and facilitation have been important factors in Jamaica's economic development over the past several decades. The early history of Jamaica's trade relations dates back to the period of Spanish colonization (1494-1655) and later, British colonization (1655-1962). During these periods, Jamaica's economy was largely based on the export of agricultural products such as sugar, coffee, and bananas, with a heavy reliance on the European markets. Jamaica became a member of the

General Agreement on Tariffs and Trade (GATT) in 1963, a year after gaining independence (WTO, n.d.). The GATT membership facilitated Jamaica's integration into the global trading system and encouraged trade liberalization (Bernal, 2000).

The nation has oscillated between comparatively protectionist and liberal approaches to address its trade imbalances, protect sensitive economic sectors, maintain foreign exchange availability, and fulfil specific political and economic obligations. Jamaica's trade policy framework has mirrored prevailing trade ideologies of different eras, with a greater emphasis on protectionist strategies before the 1980s (Hudson, 2003).

Between 1957 and 1986, Jamaica's trade policy centred on employing quantitative limitations to stimulate growth via export promotion and import substitution tactics. The aim was to safeguard specific economic sectors to foster expansion. Consequently, quantitative constraints were applied to various manufactured goods, promoting tariff-skirting foreign direct investment in manufacturing facilities. Additionally, during this timeframe, Jamaican producers were granted duty-free importation of numerous industrial raw materials (Hudson, 2003).

A member of the CARIFTA and then later the CARICOM, Jamaica had been involved in regional integration initiatives in the region. While a key component of the CARICOM agreement was the CET and efforts were undertaken to reduce tariffs within CARICOM, Jamaica simultaneously heightened restrictions on trade outside the region. The number of quantitative restrictions imposed on imports from non-CARICOM countries rose from an average of 93 products in the 1960s to an average of 270 products in the 1970s (Hudson, 2003).

The balance of payments (BOP) issues faced by Jamaica played a significant role in shaping the country's foreign trade policy (Bernal, 2000). Policymakers believed that the balance of payments outcome would depend on effectively managing domestic demand. As a result, a crucial aspect of this policy involved banning and restricting certain lists of importable products. On average, 364 products faced quantitative restrictions, with around 177 items necessitating specific licenses prior to importing. The State Trading Corporation (later renamed the Jamaica Commodity Trading Company), a governmental entity, was granted exclusive rights to import a variety of consumer goods. Numerous modifications to this regulatory system were implemented throughout the 1970s and into the early 1980s (Hudson, 2003).

During the 90s, Jamaican foreign trade showed a capacity of expansion in certain goods such as garments and agricultural produces, most importantly coffee and bananas. The mining industry, thanks to Jamaica's vast resources of bauxite (aluminium ore), had posed as the main source of foreign exchange in this period (McCoy, 1992). Jamaica's immediate accession to WTO in 1995, demonstrated the commitment made to the rising global trend of trade liberalization.

The Jamaican government aims to establish the country as a world-class logistics hub and stimulate economic growth through trade. To achieve these goals, Jamaica is working on a trade facilitation agenda to address trade obstacles, with support from the World Bank Group (World Bank, 2019c). The country currently faces complicated and inefficient procedures, high costs, and delays in its trade environment, ranking low in trading across borders (World Bank Group, 2020).

Trade facilitation can bring predictability, simplicity, transparency, and uniformity to the border clearance process, offering economic gains for developing countries of the CARICOM. Jamaica has been working with the World Bank Group's Trade Facilitation Support Program to comply with the World Trade Organization's Trade Facilitation Agreement, modernize the national trading environment, and increase coordination among border agencies (World Bank, 2019c).

A reform made in 2019 is the launch of the Jamaica Trade Information Portal, which makes cross-border trade regulatory information readily available and helps traders and investors comply with import and export regulations. This portal is expected to be a game-changer for the business community, especially for small businesses, by reducing costs and increasing transparency (World Bank, 2019c).

3.5.10 Trade Facilitation Performance of Jamaica

Over the past decade, Jamaica took some strides in the field of trade facilitation. It is reported by the Doing Business report that Jamaica has reduced the time necessary for an import operation in the 2013 report by allowing customs to lodge entries at night time (WTO, 2023e). The report's 2017 and 2018 volumes have iterated the steps taken in the trade facilitation area of implementing a single window. Jamaica implemented ASYCUDA World, a web-based system developed by the United Nations Conference on Trade and Development (UNCTAD), to improve its export process (WTO, 2023e). It allows for the electronic submission of customs declarations and required documents, speeding up customs clearance and reducing the time needed for documentary compliance, making international trade easier for businesses. Building on the success of ASYCUDA World in the export process, Jamaica extended its use to improve the import process as well. The same web-based system developed by

UNCTAD automates customs data management, enabling electronic submissions for customs declarations and other required documents. Jamaica Customs Agency was the first to adopt Cargo-XML messaging standards of the International Air Transport Association (IATA) (ASYCUDA, n.d.).

3.6 Conclusion

As a final remark, it is possible to say that in LAC's past several decades, import substitution programs followed by trade liberalization have been at the forefront of the LAC international trade policymaking. Although the region shows heterogeneity, this heterogeneity is in terms of the scale of those trade policies. Another heterogeneity causing difference among LAC is the asynchrony in the phases of international trade policymaking.

However, LAC has been mostly successful in liberating trade and opening to the world markets, both as an export and import destination. In respect of trade facilitation initiatives, with the degree of regional and global integration discussed in the earlier sections, LAC has shown progress. All trade blocs studied in this thesis have trade facilitation agreements with their respective members. Also, the trade agreements made with external members or trade unions such as the EU also contain trade facilitation commitments.

On the other hand, LAC countries experience some of the highest trade costs in areas such as border administration, transportation and communication services and physical security, indicating the execution of trade facilitation measures to be poor or inadequate. The World Economic Forum's (WEF) 2014 Enabling Trade Report identified access to finance, competitive pricing for imported inputs, and elevated costs

and delays in domestic transportation as the primary barriers to exporting within the LAC region (Staples, 2015). More recent analysis shows that border compliance and lack of interoperation of trade agencies are other forms of important factors making trading expensive for the region.

Chapter 4

METHODOLOGY

4.1 The Model

A microeconomic model is the primary methodology used in this study. Surpluses associated with reducing the price of imports and increasing the price of exports are calculated separately. As a result of changing trade administration procedures in the sense of improving efficiency and hence reducing the costs associated with trading, the consequent reduction and increments in prices of imports and exports (each treated as a composite good) will create consumer and producer surpluses, respectively. These surpluses at the national level translate into market economic gains in which a positive welfare effect is the expected outcome. This positive effect comes in different forms. The biggest impact comes as a result of the direct effect of reducing the costs of imports and exports in which more is imported/consumed, and more is exported/produced. In the case of imports, another positive welfare gain of reducing trade costs is the increase in tariff revenue because of increased import volumes.

The taxing nature of the costs associated with trading is inevitable. Resources need to be used to organize and administer every step of any given operation, which is also true for trading. However, inefficient operations and burdensome regulations act as an excess amount of burden on buyers and sellers of these goods, which in turn creates an excess amount of welfare losses. To analyse the potential welfare gains from

improving trade administration costs, we treat these costs as ad valorem taxes on total import/export volumes and build our model on various price levels arising from these costs.

An important aspect of this research is the use of import demand and export supply elasticities. With the model at hand, finding the change in the volume of trade from current levels necessitates the use of import demand and export supply elasticities. The reactive change in quantities that is necessary to find the surpluses and losses will be found by using elasticities. These country-specific import elasticity values are taken from Grübler et al. (2022) and the export elasticities, from Tokarick (2014). The country-specific import demand functions reported in (Grübler et al., 2022) are based on a semiflexible trans-log GDP maximization function outlined by (Kohli, 1991), while the country-specific export price elasticities data is based on a standard general equilibrium methodology.

To determine what constitutes an efficient trade administration, ad valorem trade cost values of two selected countries are used as benchmarks. The usage of a benchmark reference enables us to have a figure for potential welfare gains if the countries under investigation meet the level of the benchmark. These reference countries need to possess at least some resemblance to the countries under investigation, and must also have a successful history in trade facilitation to be able to stand as a meaningful reference. In this regard, Chile is selected as the first reference benchmark trade costs regime because of its geographical, historical, and cultural similarity to the CAN bloc. Another important criterion is the fact that important and effective trade facilitation reforms have enabled Chile to have an efficient trade costs regime (World Bank Group,

2020). The other benchmark trade costs regime selected is Singapore. Singapore is an obvious reference benchmark because, through the development of its TradeNet system, it was able to dramatically lower its costs of trade administration (Evdokia Moïse Florian Le Bris, 2013)

Since that time the Singapore government has inspired some countries to implement trade facilitation measures, especially digitalization measures (Grainger, 2008). It currently stands as a global reference benchmark with an efficient 'doing business' regime including an efficient trade costs regime, ranking second in the world in the Ease of Doing Business global list (World Bank Group, 2020).

The trade costs data used in this study is from the latest available Doing Business report, which was published annually by the World Bank Group until 2021. The trade costs data in the Doing Business report is based on surveys conducted with the trading agents, including importers/exporters, freight forwarders, and customs agents, and is reported in the Trading Across Borders section of the report. It can be classified as a disaggregate set of data and enables us to study the effects of trade administration through a bottom-up approach in terms of data. However, our model takes the import and export functions as aggregate for the whole market and uses real-world trade volume data (CIF and FOB) to determine the current positions of the reporting nations. The reporting nations are taken as price takers in the global markets.

4.2 Estimating Potential Economic Welfare Gains from Import Operations

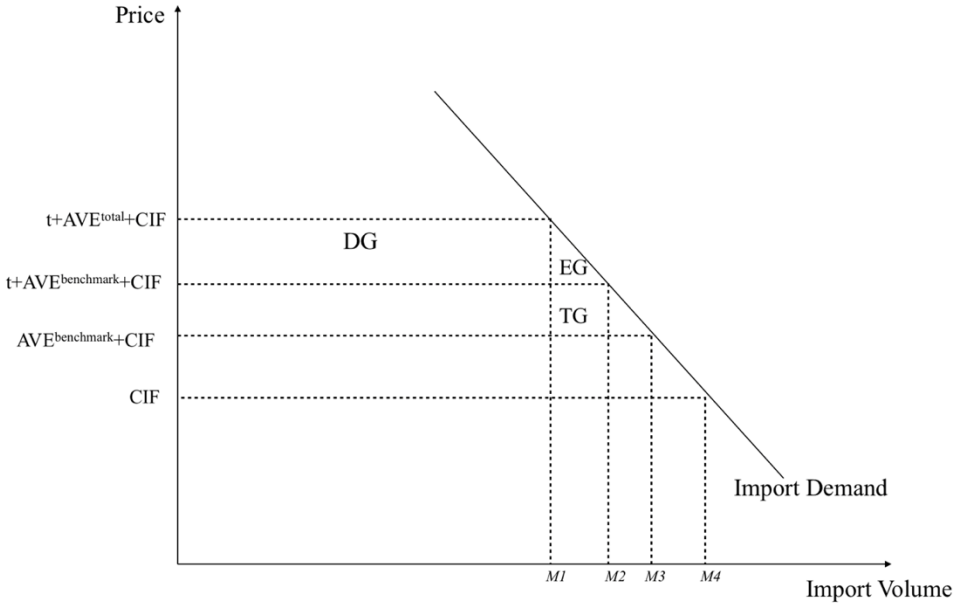

Figure 2: Representative import demand function of an importing country.
Notes: The potential economic efficiency gains associated with reducing trade costs from AVE^{total} to $AVE^{benchmark}$ for the existing level of imports is denoted by the area of the rectangle (DG), and the increased efficiency gains from the response to expanding imports with the lower costs are denoted by the area of the triangle (EG). The increase in tariff revenues due to the increase in imports is (TG). The volume of imports demanded when the price of imports includes tariffs and excessive trade transaction costs are denoted as M1. The import volume when the price includes just the normal trade costs plus the tariff rate is denoted by M2. The import volumes when there are no tariffs but normal trade costs the price is just the basic CIF price and are denoted as M3 and M4, respectively. Ad-valorem equivalent trade costs (AVE) and tariffs are surcharged on the basic CIF price. Sources: Authors' work.

The reported costs to import values are divided in two, as documentary and border compliance costs (World Bank Group, 2020). These costs arise from border procedures such as customs declarations and clearance, freight declarations, health and safety regulations, and other types of procedures that take place for compliance with the law. The data also includes the waiting times (in hours) for documentary and border procedures. The waiting times during importing or exporting operations harm trade flows and, more relevantly to our scope, border delays have economic opportunity costs for traders (Roberts et al., 2014). The border and documentary operations waiting

times are incorporated into our model to account for the costs of the delays. The average annual economic discount rate now used by LAC countries is 10%. Hence, using this rate is appropriate for this evaluation of changes in economic welfare due to changes in waiting time (Moore et al., 2020). The economic cost of waiting time is estimated in terms of the economic cost of time defined in terms of hours as shown in Equation (1). This is the standard approach used for estimating the value of time lost from tying up cargo by inefficient administrative procedures. The 10% annual cost of capital for each shipment is defined in terms of hours, by simply dividing the cost by the number of hours in a year:

$$Economic\ Cost\ of\ Waiting\ (ECW) = \frac{Waiting\ time \times Cost\ of\ Capital \times Shipment\ Value}{Number\ of\ Hours\ in\ a\ Year} \quad (1)$$

In this study, the value of a standard shipment is taken as US$50,000. This figure is used to find the ad valorem value of trade costs as a percentage of this standard shipment value. The standard shipment value is used in Equation (1) together with the number of hours in a year, which is 8,760, to find the ECW.

The usage of the ad valorem percentage value enables us to treat the trade costs as a tax on trade and allows us to find the change in imports and consequently find the welfare gain from the surpluses associated with reducing these costs

$$Excess\ Cost^{M\&X} = AVE^{total} - AVE^{benchmark} \quad (2)$$

This ad valorem equivalent total cost of the benchmark countries is named $AVE^{benchmark}$ in Equation (2), while AVE^{total} is used to describe the ad valorem equivalent of the total import and export cost for the reported countries under investigation. Hence, the excess cost is described as the difference between the AVE

cost of reported nations with the benchmark AVE. The percentage figure of the excess cost found using Equation (2) is used in Equation (3) to find the direct effect of reducing the price of imports. The direct gain from reducing costs is depicted as DG in Figure 2. The result of improving trade costs to the level of references would mean the price of the imports would be reduced to t + $AVE^{benchmark}$ + CIF and the new level of demanded imports would be at the M2 level in Figure 1. The area DG can be calculated using Equation (3).

$$DG = Excess\ Cost^{M} \times M1 \quad (3)$$

DG, as described in Equation (3), yields the greatest economic gain. Eliminating excess trade costs has the effect of reducing taxes on imported goods. As it has been studied extensively in the literature, tariff cuts have the effect of increasing trade volumes but the welfare effect associated with trade liberalization is limited to the efficiency gain, which can be thought of as the area of the triangle EG of Figure 2 (Go, 2018). The tariff revenues do not contribute to losses but the existence of tariffs creates deadweight losses as triangles, like EG in Figure 2. Excess trade costs on the other hand create a loss of real resources, as high trade transaction costs are due to the existence of inefficient and burdensome procedures and operations.

Equation (3) uses real-world values of import volumes. These values are reported in relevant tables in the Empirical Analysis and Results section and this corresponds to M1 in Figure 2 as the current quantity of imports demanded.

In order to find the reactionary shift from M1 to M2 (ΔM1), import demand elasticity is used. Equation (4) is used to find the M2 level so that the areas of gain named EG and TG in Figure 2 can be found.

$$\Delta M1 = Excess\ Cost^{M} \times M1 \times E^{M} \quad (4)$$

ΔM1's absolute value is added to M1 to find the M2 level of import volumes. ΔM1 comes out as a negative value from our formula since the excess cost given in Equation (2) is positive, but in practice, the amount of excess cost is to be deducted from the current price level. This leads us to the calculation of the deadweight loss created by the excess cost, which is the triangle labelled EG.

$$EG = Excess\ Cost^{M} \times \Delta M1 \times \frac{1}{2} \quad (5)$$

The trapezoid formed by DG and EG together is the amount of economic gains that directly translate as saved resources. The increase in trade volumes as a result of this price change creates additional tariff revenue for the government. This extra tariff revenue will also count toward the potential welfare gains of improving trade costs. The tariff revenue is depicted as TG in Figure 2 and is calculated by Equation (6).

$$TG = \Delta M1 \times t \quad (6)$$

The total of TG, EG, and DG gives us the potential economic welfare gain of improving the trade costs to the benchmark level.

4.3 Estimating Potential Economic Welfare Gains from Export Operations

Reducing the transaction costs of international trade will also benefit a country if it is engaged in exporting. In this case, it will be the producers of exports who will be the

primary beneficiaries. The approach taken for estimating potential welfare gains due to improving exporting costs is the same as was taken with imports.

The FOB price of exports is normalized to 1 and the costs are expressed as ad valorem equivalent (AVE^X) on top of the normalized value. The difference between the current total cost to export and the benchmark creates a price increase as the costs associated with trade are borne by the producers in the microeconomic model. As a result of the increase in the partial equilibrium price, the producer surplus increases. Figure 3 represents the potential welfare gain from reducing trade costs. The existence of excess costs creates an economic situation caused by a price ceiling for exports. Therefore, the elimination of these excess costs creates extra exports and welfare gains from a supply point of view.

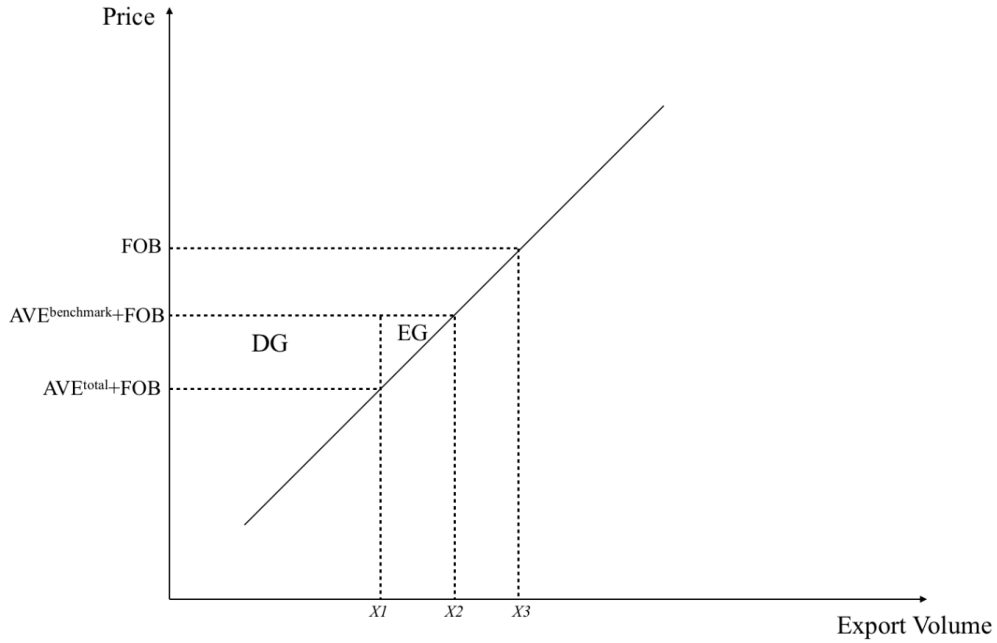

Figure 3: Representative export supply function of an exporting country.
Notes: X1 corresponds to the current level of exports supplied by the exporters. The cost reduction to exports to the level of benchmark will enable the exporters to export at the X2 level creating a positive welfare gains of DG and EG. Sources: Authors' work.

Potential gains associated with improving trade costs are the areas labelled as DG and EG. It is important to reiterate that decreasing the cost associated with trade increases the price of exports in the market.

The increase in trade volumes because of increasing the price of exports creates two areas of contribution to gains. The gain directly resulting from increased exports is measured by the area of DG. DG together with EG creates a trapezoid and represents the total potential economic gains associated with improving exporting costs. As stated, Chile and Singapore are selected to represent the benchmark values of costs to export, with AVE values of 0.78% and 0.76%, respectively.

After calculating Excess Cost^X using Equation (2), we can find the reactionary change in export volumes as a result of a price increase in the value of Excess Cost.

$$\Delta X1 = Excess\ Cost^X \times X1 \times E^X \quad (7)$$

With a positive price elasticity and a positive excess cost, the resulting ΔX1 is also positive and it is represented as X2 when added to the current level of export volume, which is denoted as X1 in Figure 3.The area DG of Figure 2 is found using the formula:

$$DG = Excess\ Cost^X \times X1 \quad (8)$$

The triangle EG is considered an efficiency loss created by the existence of excess costs, which act as a price ceiling policy. To find the value of EG, Equation (9) is used.

$$EG = \Delta X1 \times Excess\ Cost^X \times \frac{1}{2} \quad (9)$$

The total of DG and EG, which forms a trapezoid, is the estimated economic gain from improving the export trade costs to match the benchmark value.

4.4 Elasticities

The use of import demand and export supply elasticities are very useful in assessing trade policy impacts on trade. It is reported by Grübler et al. (2022) that in recent literature the import demand elasticities are used in studies to calculate welfare implications of changes in trade policies such as the 'trade war' policies of the Trump administration. The use of a single methodology for the estimation of the import demand elasticities has the advantage of enabling comparative studies (Grübler et al., 2022).

Using imports as a composite good, the reported import demand elasticities used in this study are found by finding the product share in the GDP. In other words, the share of imports (as a composite good) maximising a country's GDP is found using a translog GDP maximising function outlined by Kohli (1991). The derivative of the share of imports with respect to its price yields an expression which captures the change in the share of imports in the GDP in terms of the price of imports (Grübler et al., 2022). This expression is then used to compute the import demand elasticity which is further accounted for selection and endogeneity.

The authors of this study suggest that the uses of the elasticities as reported in their study could be interesting in the context of slowed-down global trade, in which NTBs are expected to play a crucial role in any policy aimed at tackling this 'trade plateau' (Grübler et al., 2022).

The export supply elasticities used in Tokarick (2014) are based on a CGE model of international trade. The model uses a three-goods case with three inputs and uses several assumptions to complete the model. One of the most important assumptions is that the elasticity of substitutions of inputs is fixed and identical for each input pairing. This enables the author to find the reactionary change in the demand for an input with respect to a change in the price of that input. Using that definition the author substitutes the endogenous and exogenous definitions to find the import demand and export supply elasticities. The three goods that a country is assumed to produce are goods that are exported, goods that compete with imports and non-traded goods. The inputs are labour, a factor specific to each sector and imported intermediate inputs. Because of the limitations of the model regarding the import side, we only used the export supply elasticities from this study.

Overall, the data regarding the trade elasticities used in this study is among the most up-to-date, reliable and most cited studies in the literature.

4.5 Data

The trade costs data used in this study is reported by the World Bank's Doing Business report. The most recent available data set regarding the trade costs is for the year 2020. During the pandemic, the publication could not produce a new report and after the pandemic, the WB announced the discontinuation of the report. The discontinuation of the report can be thought of as a rebranding of the publication, as the World Bank has also announced that a new periodic publication will replace the DB. The case for stating a term as rebranding of the old publication can be made when the announced replacement report is studied in terms of aim and methodology. The new report is announced to be named 'Business Enabling Environment (BEE)' which will still target

to inform the readers about certain aspects of doing business in a country, aspects like enforcing contracts, starting up a business and trading across borders (World Bank, 2022). The former DB is amongst the top reports comparing business regulation environments around the world, comparing 190 countries in its 2020 edition (World Bank Group, 2020).

The data gathered for TAB comes from surveys with ship and customs broker associations, freight forwarders, transportation and logistics companies, international trade businessmen and ministries of transportation and commerce (Múgica, 2019).

The database used for the import and export volumes is Un COMTRADE Database (UN COMTRADE, 2022). Imports are given as CIF and exports are given as FOB. These incoterms are standard when reporting import and export volumes.

The tariff rates used in this study is sourced from World Bank and it is given as applied, weighted mean, all products for each county under investigation (World Bank, 2020).

Chapter 5

EMPIRICAL ANALYSIS AND RESULTS

5.1 Introduction

The results calculated using the Equations (n) described in the earlier sections of this thesis are presented in a set of tables in this chapter. The tables summarize the DG, EG, and TG (only in the case of imports) and their total. The total of the gains is the estimated potential economic gains from improving the trade costs in a trade bloc. The two different benchmark reference cases are presented separately.

With the aid of the description given in the earlier section, a further step-by-step description of the empirical study will be given in the next section. Since the methodology and steps taken to calculate the potential economic welfare gains for each region are identical, this thesis will only contain a detailed step-by-step analysis for a single region. This region is selected to be CAN. In this part of the thesis, using the data for CAN countries, the potential economic welfare gains as a result of improving costs to trade to meet that of a benchmark method is described.

5.2 Applied Presentation of the Model and Potential Gains for CAN

5.2.1 Potential Gains from Imports

Table 1: CAN import and export costs.

Country	Time to export: Documentary compliance (hours)	Time to import: Documentary compliance (hours)	Time to export: Border compliance (hours)	Time to import: Border compliance (hours)	Cost to export: Documentary compliance (USD)	Cost to import: Documentary compliance (USD)	Cost to export: Border compliance (USD)	Cost to import: Border compliance (USD)
Bolivia	144	72	48	114	25	30	65	315
Colombia	48	64	112	112	90	50	630	545
Ecuador	24	120	96	24	60	75	560	540
Peru	24	48	48	72	50	80	630	700

Table 1 contains the information on import and export costs of CAN states as given in the data source Doing Business 2020. Using Equation (1), we are able to adhere an economic value for the time that is used to do an import operation. After attaining a value for the economic cost of waiting, the total cost of a representative shipment is divided by the average value of a container shipment which is taken as US$50,000. This will enable us to represent the total import costs as an ad-valorem equivalent for individual shipments. This approach will also enable the comparison of the investigated countries to reference benchmarks. Using Equation (1) and representing the total cost as a percentage of a shipment, Table (2) is constructed.

Table 2: CAN import costs.

Country	Time to import: Documentary compliance (hours)	Time to import: Border compliance (hours)	Cost to import: Documentary compliance (USD)	Cost to import: Border compliance (USD)	Cost of waiting time for imports	Total Cost of Imports (USD)	Ad valorem equivalent
Bolivia	72	114	30	315	106	451	0.90%
Colombia	64	112	50	545	100	695	1.39%
Ecuador	120	24	75	540	82	697	1.39%
Peru	48	72	80	700	68	848	1.70%

It is demonstrated in Table 2 that the costs associated with importing amount to 0.90%, 1.39%, 1.39%, and 1.70% of the shipment's value of US$50,000 for Bolivia, Colombia, Ecuador and Peru respectively. This value of ad valorem percentage representation is used to find the amount of excess cost. Using Equation (2) it is possible to find the amount of improvement an investigated country can have in terms of lowering costs to import which is referred to as excess cost. This will be the amount of costs that is more than the reference country. So in simple terms Equation (2) is used to find this excess cost.

The data source reports Bolivia to import and export through a land border crossing. This border crossing is reported to be on the Chilean border. One of the implications of trading through a land border crossing is that the operations are much cheaper in contrast to a sea-port importing operation. This is perhaps because of the relative simplicity of a land crossing. A lorry or a truck may be inspected for the cargo it is carrying and with the presentation of relevant paperwork, the customs agent would allow the vehicle to pass. This is even simpler for an export operation. However, a seaport may require heavy equipment for handling the cargo to and from a vessel, storage and inspections which makes the seaport borders to be more costly.

The information presented in Table 2 is a proof of this difference between sea and land borders in which the Bolivian import costs are much smaller than the remaining CAN members.

For the above-stated reasons, Bolivian trade will be left out of the scope of this study, in order to present comparable results across regions. This does not imply that Bolivian trade costs present little room for improvement. Trade facilitation measures will most certainly benefit a country like Bolivia, however, the presentation of such a hypothesis alongside Bolivia's neighbouring countries' sea border cost rates may disrupt the outcomes from the results.

With the above remarks, it is possible to produce Table 3. Table 3 incorporates the levels of current import volumes, excess costs (found with Eq. 2), weighted average tariff rates and import demand elasticities of the reported countries. It is important to keep the representative import demand function of the reported countries which was given in Figure 1. In terms of Figure 1, the current level of imports is denoted as M1 and the current level of price is denoted as $t+AVE^{total}+CIF$.

Table 3: Summary of data to be used in potential gains from imports in CAN.

Country	**Import Cost**	**Excess Cost^{M} wrt Chile**	**Excess Cost^{M} wrt Singapore**	**Current Volume of Imports (M1) in mil. USD**	**Weighted Average Tariff Rate**	**Elasticity of Import Demand (E^{M})**
Colombia	1.39%	0.61%	0.83%	41209.39	2.40%	-1.524
Ecuador	1.39%	0.61%	0.83%	18961.90	6.20%	-1.248
Peru	1.70%	0.92%	1.14%	41111.57	0.70%	-1.458

Using the information given in Table 3, it is possible to find out the potential welfare gains by using Equations (3), (4), (5) and (6). As discussed in the previous section, the total of the corresponding results of these equations will give the total potential economic welfare gains from improving the trade costs regime to meet the standard of the reference benchmarks. We can describe this by a new Equation.

$$Total\ Potential\ Welfare\ Gains\ for\ Imports = DG + EG + TG \quad (10)$$

Since we are using two sets of reference benchmark values, two tables are used to describe potential economic gains with respect to each benchmark.

Table 4: CAN's potential gains from imports with respect to Chile.

Country	**ΔM1 (million USD)**	**DG (million USD)**	**EG (million USD)**	**TG (million USD)**	**Total (million USD)**
Colombia	383.10	251.38	1.17	9.19	261.74
Ecuador	144.35	115.67	0.44	8.95	125.06
Peru	551.45	378.23	2.54	3.86	384.62
				Grand Total:	771.42

Table 5: CAN's potential gains from imports with respect to Singapore.

Country	**ΔM1 (million USD)**	**DG (million USD)**	**EG (million USD)**	**TG (million USD)**	**Total (million USD)**
Colombia	521.27	342.04	2.16	12.51	356.71
Ecuador	196.41	157.38	0.82	12.18	170.38
Peru	683.32	468.67	3.89	4.78	477.35
				Grand Total:	1004.44

The total of each country is added together to represent a potential figure for the CAN. This will enable us to compare the potential of each region studied in this thesis.

5.2.2 Potential Gains from Exports

Presentation of potential gains from improving export operations will be like that of the imports case in the previous section. The methodology described for exports in previous sections will be expressed in a step-by-step manner using only CAN data on exports. The methodology applies for the remaining trading blocs, hence the results from the empirical study for those blocs will only be presented.

With a similar approach to the imports case, the main target of this analysis is to find out the magnitudes of areas DG and EG of Figure 3. Once again, in order to find the potential direct gains from improving export operations, we will use Equations (1) and (2) to find the economic cost of waiting time during export operations and to find the excess cost with regards to the values of the benchmark reference countries. The next equation to be used in our model is Equation (4), which is used to calculate the reactionary change in exports in reaction to increase in exports price, $\Delta X1$ (due to reduced costs).

Table 6: Summary of data to be used in potential gains from exports in CAN.

Country	**Total Export Cost**	**Excess Cost^X wrt Chile**	**Excess Cost^X wrt Singapore**	**Current Volume of Exports (X1) in mil. USD**	**Elasticity of Export Supply (E^X)**
Colombia	1.62%	0.84%	0.86%	31056	0.76
Ecuador	1.38%	0.60%	0.62%	20355	0.39
Peru	1.44%	0.66%	0.68%	38757	0.73

Table 6 sums up the current state of export costs regime in the CAN countries. The current cost structure which is denoted as AVE^{total}+FOB in Figure 3 terms is given in

column 2 of the Table 6. The corresponding current export volume (X1 in Figure 3) which corresponds to this price level is given as Current Volume of Exports. With the Equations (7), (8) and (9) we find the DG, EG and the total of the two which is given in the Tables 7 and 8. Grand total of these potential gains represents the total for the trade bloc.

Table 7: CAN's potential gains from exports with respect to Singapore.

Country	**Excess Cost**	**E^X**	**ΔX1 (million USD)**	**DG (million USD)**	**EG (million USD)**	**Total (million USD)**
Colombia	0.86%	0.76	142.77	187.85	0.61	188.46
Ecuador	0.62%	0.39	38.19	97.92	0.12	98.04
Peru	0.68%	0.73	149.20	204.39	0.51	204.89
					Grand total:	491.40

Table 8: CAN's potential gains from exports with respect to Chile.

Country	**Excess Cost**	**E^X**	**ΔX1 (million USD)**	**DG (million USD)**	**EG (million USD)**	**Total (million USD)**
Colombia	0.84%	0.76	139.45	183.48	0.59	184.07
Ecuador	0.60%	0.39	36.96	94.76	0.11	94.87
Peru	0.66%	0.73	144.81	198.38	0.48	198.85
					Grand total:	477.79

5.3 Potential Gains for CARICOM

5.3.1 Potential Gains from Imports

Table 9: CARICOM import and export costs.

Country	Time to export: Documentary compliance (hours)	Time to import: Documentary compliance (hours)	Time to export: Border compliance (hours)	Time to import: Border compliance (hours)	Cost to export: Documentary compliance (USD)	Cost to import: Documentary compliance (USD)	Cost to export: Border compliance (USD)	Cost to import: Border compliance (USD)
Antigua and Barbuda	51	48	61	61	121	100	546	546
Bahamas, The	12	6	36	51	550	550	512[i]	1385
Barbados	48	46	41	81	117	150	486	1776
Belize	38	36	96	30	50	75	710	688
Dominica	12	24	36	39	50	50	625	906
Grenada	13	24	101	37	40	50	1034	1256
Guyana	200	156	72	84	78	63	468	265
Haiti	22	28	28	83	48	150	368	563
Jamaica	47	56	58	80	90	90	876	906
St. Kitts and Nevis	24	33	27	37	100	90	335	311
St. Lucia	19	14	27	27	63	98	718	842
St. Vincent and the Grenadines	48	24	28	48	80	90	340	540
Suriname	12	24	84	48	40	40	468	658
Trinidad and Tobago	32	44	60	78	250	250	499	635

Notes: Table 9 is constructed from the same data source of Table 1 (World Bank Group, 2020). It contains the costs of the studied CARICOM members for importing and exporting (World Bank Group, 2020);[i] Per hour rate of Cost to export: Border compliance for The Bahamas is exceptionally high with respect to the rest of the members.

Table 10: CARICOM import costs.

Country	Time to import: Documentary compliance (hours)	Time to import: Border compliance (hours)	Cost to import: Documentary compliance (USD)	Cost to import: Border compliance (USD)	Cost of waiting time for imports (USD)	Total Cost of Imports (USD)	Ad valorem equivalent
Antigua and Barbuda	48	61	100	546	62.21	708.21	1.42%
Bahamas, The	6	51	550	1385	32.53	1967.53	3.94%
Barbados	46	81	150	1776	72.49	1998.49	4.00%
Belize	36	30	75	688	37.67	800.67	1.60%
Dominica	24	39	50	906	35.96	991.96	1.98%
Grenada	24	37	50	1256	34.82	1340.82	2.68%
Guyana	156	84	63	265	136.99	464.99	0.93%
Haiti	28	83	150	563	63.36	776.36	1.55%
Jamaica	56	80	90	906	77.63	1073.63	2.15%
St. Kitts and Nevis	33	37	90	311	39.95	440.95	0.88%
St. Lucia	14	27	98	842	23.40	963.40	1.93%
St. Vincent and the Grenadines	24	48	90	540	41.10	671.10	1.34%
Suriname	24	48	40	658	41.10	739.10	1.48%
Trinidad and Tobago	44	78	250	635	69.63	954.63	1.91%

Notes: Table 10 contains reported values from the data source which is given in Table 9. The column reporting Cost of waiting time for imports is calculated using Equation (1). The total USD value of all import costs are represented as an ad-valorem equivalent of a standard 50,000 USD shipment in the last column.

Table 11: Summary of data to be used in potential gains from imports in CARICOM.

Country	**Import Cost**	**Excess Cost wrt Singapore**	**Excess Cost wrt Chile**	**Current Volume of Imports (M1) in million USD**	**Tariff Rate**	**Import Demand Elasticity (εID)**
Antigua and Barbuda	1.42%	0.86%	0.64%	568.34	13.10%	-0.958
Bahamas, The	3.94%	3.38%	3.16%	3320.458	17.10%	-1.238
Barbados	4.00%	3.44%	3.22%	1580.842	11.80%	-1.049
Belize	1.60%	1.04%	0.82%	985.904	18.70%	-0.964
Dominica	1.98%	1.42%	1.20%	212	7.80%	-0.922
Grenada	2.68%	2.12%	1.90%	479.834	10.80%	-0.921
Guyana	0.93%	0.37%	0.15%	4025.139	6.50%	-1.21
Haiti	1.55%	0.99%	0.77%	4820	6.80%	-1.58
Jamaica	2.15%	1.59%	1.37%	6389.126	8.40%	-1.124
St. Kitts and Nevis	0.88%	0.32%	0.10%	338	8.80%	-0.928
St. Lucia	1.93%	1.37%	1.15%	623.792	9.10%	-0.942
St. Vincent and the Grenadines	1.34%	0.78%	0.56%	335.23	9.00%	-0.918
Suriname	1.48%	0.92%	0.70%	1711.449	8.70%	-1.001
Trinidad and Tobago	1.91%	1.35%	1.13%	6338.601	8.60%	-1.195

Notes: Table 11 contains all the necessary data to be used in Equations (3), (4), (5) and (6). The Excess Cost columns are calculated using Equation (2) and is an ad-valorem representation of the preventable amount of costs if the studied countries are to meet the reference nations (Singapore and Chile). Current Volume of Imports column is the most recent pre-COVID-19 volume of imports reported by UN COMTRADE (2022). Tariff Rate is the weighted average tariff rate imposed by the reported countries reported by the World Bank (2020). Import Demand Elasticity values are taken from Grübler et al. (2022).

Table 12: CARICOM's potential gains from imports with respect to Singapore.

Country	**ΔM1 (million USD)**	**DG (million USD)**	**EG (million USD)**	**TG (million USD)**	**Total (million USD)**
Antigua and Barbuda	4.66	4.87	0.02	0.61	5.50
Bahamas, The	138.74	112.07	2.34	23.72	138.13
Barbados	57.00	54.33	0.98	6.73	62.04
Belize	9.90	10.27	0.05	1.85	12.17
Dominica	2.78	3.02	0.02	0.22	3.26
Grenada	9.38	10.18	0.10	1.01	11.29
Guyana	18.02	14.89	0.03	1.17	16.10
Haiti	75.60	47.85	0.38	5.14	53.36
Jamaica	113.99	101.41	0.90	9.57	111.89
St. Kitts and Nevis	1.01	1.09	0.00	0.09	1.18
St. Lucia	8.03	8.53	0.05	0.73	9.31
St. Vincent and the Grenadines	2.41	2.62	0.01	0.22	2.85
Suriname	15.73	15.71	0.07	1.37	17.16
Trinidad and Tobago	102.20	85.52	0.69	8.79	95.00
				Grand total:	539.24

Notes: Table 12 is reporting the individual potential economic welfare gains as given by the Equations (3), (5) and (6), using Singapore as the reference benchmark. The countries' individual potential gains and the grand total potential gain as a trade bloc is calculated and reported. ΔM1 is found using Equation (4) and it is the amount of change in import volume as a result of meeting the reference standards of import costs.

Table 13: CARICOM's potential gains from imports with respect to Chile.

Country	**ΔM1 (million USD)**	**DG (million USD)**	**EG (million USD)**	**TR (million USD)**	**Total (million USD)**
Antigua and Barbuda	3.47	3.62	0.01	0.45	4.08
Bahamas, The	129.70	104.76	2.05	22.18	128.99
Barbados	53.35	50.86	0.86	6.29	58.01
Belize	7.81	8.10	0.03	1.46	9.59
Dominica	2.35	2.55	0.01	0.18	2.75
Grenada	8.40	9.12	0.08	0.91	10.11
Guyana	7.30	6.04	0.01	0.47	6.52
Haiti	58.85	37.24	0.23	4.00	41.47
Jamaica	98.19	87.36	0.67	8.25	96.27
St. Kitts and Nevis	0.32	0.34	0.00	0.03	0.37
St. Lucia	6.74	7.15	0.04	0.61	7.81
St. Vincent and the Grenadines	1.73	1.88	0.00	0.16	2.05
Suriname	11.96	11.95	0.04	1.04	13.03
Trinidad and Tobago	85.54	71.58	0.48	7.36	79.42
				Grand total:	460.47

Notes: Table 12 is reporting the individual potential economic welfare gains as given by the Equations (3), (5) and (6), using Chile as the reference benchmark. The countries' individual potential gains and the grand total potential gain as a trade bloc is calculated and reported. ΔM1 is found using Equation (4) and it is the amount of change in import volume as a result of meeting the reference standards of import costs.

5.3.2 Potential Gains from Exports

Table 14: CARICOM export costs.

Country	Time to export: Documentary compliance (hours)	Time to export: Border compliance (hours)	Cost to export: Documentary compliance (US$)	Cost to export: Border compliance (US$)	Economic Cost of waiting time for exports (US$)	Total Cost of Exports (US$)	Ad valorem equivalent (AVE)
Antigua and Barbuda	51	61	121	546	63.93	730.93	1.46%
Bahamas, The	12	36	550	512	27.40	1089.40	2.18%
Barbados	48	41	117	486	50.80	653.80	1.31%
Belize	38	96	50	710	76.48	836.48	1.67%
Dominica	12	36	50	625	27.40	702.40	1.40%
Grenada	13	101	40	1034	65.07	1139.07	2.28%
Guyana	200	72	78	468	155.25	701.25	1.40%
Haiti	22	28	48	368	28.54	444.54	0.89%
Jamaica	47	58	90	876	59.93	1025.93	2.05%
St. Kitts and Nevis	24	27	100	335	29.11	464.11	0.93%
St. Lucia	19	27	63	718	26.26	807.26	1.61%
St. Vincent and the Grenadines	48	28	80	340	43.38	463.38	0.93%
Suriname	12	84	40	468	54.79	562.79	1.13%
Trinidad and Tobago	32	60	250	499	52.51	801.51	1.60%

Notes: Table 14 contains reported values from the data source which is given in Table 9. The column reporting Cost of waiting time for exports is calculated using Equation (1). The total USD value of all export costs are represented as an ad-valorem equivalent of a standard 50,000 USD shipment in the last column.

Table 15: Summary of data to be used in potential gains from exports in CARICOM.

Country	**Total Export Cost**	**Excess Cost^X wrt Singapore**	**Excess Cost^X wrt Chile**	**Current Volume of Exports (X1) in mil. $**	**Elasticity of Export Supply**
Antigua and Barbuda	1.46%	0.70%	0.68%	37.40	0.92
Bahamas, The	2.18%	1.42%	1.40%	537.27	0.92
Barbados	1.31%	0.55%	0.53%	444.09	0.92
Belize	1.67%	0.91%	0.89%	244.91	1.08
Dominica	1.40%	0.64%	0.62%	37.00	0.92
Grenada	2.28%	1.52%	1.50%	34.48	0.92
Guyana	1.40%	0.64%	0.62%	1,565.72	0.82
Haiti	0.89%	0.13%	0.11%	1,200.00	0.92
Jamaica	2.05%	1.29%	1.27%	1,651.16	0.92
St. Kitts and Nevis	0.93%	0.17%	0.15%	58.00	0.92
St. Lucia	1.61%	0.85%	0.83%	97.26	0.92
St. Vincent and the Grenadines	0.93%	0.17%	0.15%	34.72	0.92
Suriname	1.13%	0.37%	0.35%	2,155.13	0.82
Trinidad and Tobago	1.60%	0.84%	0.82%	7,191.89	0.92

Notes: Table 15 contains all the necessary data to be used in Equations (7), (8) and (9). The Excess Cost^X columns are calculated using Equation (2) and is an ad-valorem representation of the preventable amount of costs if the studied countries are to meet the reference nations (Singapore and Chile). Current Volume of Exports column is the most recent volume of imports reported by UN COMTRADE (2022). Export supply elasticity values are from Tokarick (2014).

Table 16: CARICOM's potential gains from exports with respect to Singapore.

Country	Excess Cost	Ex	ΔX1 (million USD)	DG (million USD)	EG (million USD)	Total (million USD)
Antigua and Barbuda	0.70%	0.92	37.40	0.26	0.001	0.26
Bahamas, The	1.42%	0.92	537.27	7.62	0.050	7.67
Barbados	0.55%	0.92	444.09	2.43	0.006	2.44
Belize	0.91%	1.08	244.91	2.24	0.011	2.25
Dominica	0.64%	0.92	37.00	0.24	0.001	0.24
Grenada	1.52%	0.92	34.48	0.52	0.004	0.53
Guyana	0.64%	0.82	1565.72	10.06	0.027	10.09
Haiti	0.13%	0.92	1200.00	1.55	0.001	1.55
Jamaica	1.29%	0.92	1651.16	21.33	0.127	21.46
St. Kitts and Nevis	0.17%	0.92	58.00	0.10	0.000	0.10
St. Lucia	0.85%	0.92	97.26	0.83	0.003	0.83
St. Vincent and the Grenadines	0.17%	0.92	34.72	0.06	0.000	0.06
Suriname	0.37%	0.82	2155.13	7.88	0.012	7.89
Trinidad and Tobago	0.84%	0.92	7191.89	60.63	0.235	60.86
					Grand Total:	116.23

Notes: Table 16 is reporting the individual potential economic welfare gains as given by the Equations (8) and (9), using Singapore as the reference benchmark. The countries' individual potential gains and the grand total potential gain as a trade bloc is calculated and reported. ΔX1 is found using Equation (7) and it is the amount of change in export volume as a result of meeting the reference standards of export costs.

Table 17: CARICOM's potential gains from exports with respect to Chile.

Country	Excess Cost	Ex	ΔX1 (million USD)	DG(million USD)	EG(million USD)	Total(million USD)
Antigua and Barbuda	0.68%	0.92	0.23	0.26	0.001	0.26
Bahamas, The	1.40%	0.92	6.91	7.52	0.048	7.56
Barbados	0.53%	0.92	2.16	2.34	0.006	2.35
Belize	0.89%	1.08	2.36	2.19	0.011	2.20
Dominica	0.62%	0.92	0.21	0.23	0.001	0.23
Grenada	1.50%	0.92	0.48	0.52	0.004	0.52
Guyana	0.62%	0.82	7.99	9.75	0.025	9.77
Haiti	0.11%	0.92	1.20	1.31	0.001	1.31
Jamaica	1.27%	0.92	19.32	21.00	0.123	21.12
St. Kitts and Nevis	0.15%	0.92	0.08	0.09	0.000	0.09
St. Lucia	0.83%	0.92	0.75	0.81	0.003	0.81
St. Vincent and the Grenadines	0.15%	0.92	0.05	0.05	0.000	0.05
Suriname	0.35%	0.82	6.11	7.45	0.011	7.46
Trinidad and Tobago	0.82%	0.92	54.46	59.19	0.224	59.41
					Grand Total:	113.15

Notes: Table 17 is reporting the individual potential economic welfare gains as given by the Equations (8) and (9), using Chile as the reference benchmark. The countries' individual potential gains and the grand total potential gain as a trade bloc is calculated and reported. ΔX1 is found using Equation (7) and it is the amount of change in export volume as a result of meeting the reference standards of export costs.

5.4 Potential Gains for MERCOSUR

5.4.1 Potential Gains from Imports

Table 18: MERCOSUR import and export costs.

Country	Time to export: Documentary compliance (hours)	Time to import: Documentary compliance (hours)	Time to export: Border compliance (hours)	Time to import: Border compliance (hours)	Cost to export: Documentary compliance (USD)	Cost to import: Documentary compliance (USD)	Cost to export: Border compliance (USD)	Cost to import: Border compliance (USD)
Argentina	25	166	21	60	60	120	1074	1200
Brazil	12	24	49	30	226	107	862	1267
Paraguay	24	36	120	24	120	135	815	1095
Uruguay	24	48	96	6	231	285	1038[i]	1349

Notes: Table 18 is constructed from the same data source of Table 1 (World Bank Group, 2020). It contains the costs of the studied MERCOSUR members for importing and exporting (World Bank Group, 2020). [i] Per hour rate of Cost to export: Border compliance for Uruguay is exceptionally high with respect to the rest of the members.

Table 19: MERCOSUR import costs.

Country	Time to import: Documentary compliance (hours)	Time to import: Border compliance (hours)	Cost to import: Documentary compliance (USD)	Cost to import: Border compliance (USD)	Cost of waiting time for imports (USD)	Total Cost of Imports (USD)	Ad valorem equivalent
Argentina	166	60	120	1200	129.00	1449.00	2.90%
Brazil	24	30	107	1267	30.82	1404.82	2.81%
Paraguay	36	24	135	1095	34.25	1264.25	2.53%
Uruguay	48	6	285	1349	30.82	1664.82	3.33%

Notes: Table 19 contains reported values from the data source which is given in Table18. The column reporting Cost of waiting time for imports is calculated using Equation (1). The total USD value of all import costs are represented as an ad-valorem equivalent of a standard 50,000 USD shipment in the last column.

Table 20: Summary of data to be used in potential gains from imports in MERCOSUR.

Country	Import Cost	Excess $Cost^M$ wrt Singapore	Excess $Cost^M$ wrt Chile	Current Volume of Imports (M1) in million USD	Tariff Rate (t)	Import Demand Elasticity(E^M)
Argentina	2.90%	2.34%	2.12%	63,183	6.90%	-1.757
Brazil	2.81%	2.25%	2.03%	226,252	8.40%	-1.903
Paraguay	2.53%	1.97%	1.75%	15,583	4.00%	-1.224
Uruguay	3.33%	2.77%	2.55%	7,608	5.30%	-1.26

Notes: Table 20 contains all the necessary data to be used in Equations (3), (4), (5) and (6). The Excess Cost columns are calculated using Equation (2) and is an ad-valorem representation of the preventable amount of costs if the studied countries are to meet the reference nations (Singapore and Chile). Current Volume of Imports column is the most recent volume of imports reported by UN COMTRADE (2022)[5]. Tariff Rate is the weighted average tariff rate imposed by the reported countries reported by the World Bank (2020). Import Demand Elasticity values are taken from Grübler et al. (2022).

[5] For countries with most recent trade data corresponding to Covid-19 pandemic, the most recent trade volumes prior to the pandemic is used.

Table 21: MERCOSUR's potential gains from imports with respect to Singapore.

Country	**ΔM1 (million USD)**	**DG (million USD)**	**EG (million USD)**	**TR (million USD)**	**Total (million USD)**
Argentina	2595.46	1477.21	30.34	192.06	1699.62
Brazil	9687.55	5090.67	108.98	775.00	5974.66
Paraguay	375.75	306.99	3.70	18.79	329.47
Uruguay	265.53	210.74	3.68	14.07	228.49
				Grand Total:	8232.24

Notes: Table 21 is reporting the individual potential economic welfare gains as given by the Equations (3), (5) and (6), using Singapore as the reference benchmark. The countries' individual potential gains and the grand total potential gain as a trade bloc is calculated and reported. ΔM1 is found using Equation (4) and it is the amount of change in import volume as a result of meeting the reference standards of import costs. ΔM1 is reported as an absolute value, in reality ΔM1 is a negative value.

Table 22: MERCOSUR's potential gains from imports with respect to Chile.

Country	**ΔM1 (million USD)**	**DG (million USD)**	**EG (million USD)**	**TR (million USD)**	**Total (million USD)**
Argentina	2,351.24	1,477.21	27.49	173.99	1,678.69
Brazil	8,740.32	5,090.67	98.33	699.23	5,888.22
Paraguay	333.79	306.99	3.29	16.69	326.96
Uruguay	244.45	210.74	3.39	12.96	227.08
				Grand Total:	8120.96

Notes: Table 22 is reporting the individual potential economic welfare gains as given by the Equations (3), (5) and (6), using Chile as the reference benchmark. The countries' individual potential gains and the grand total potential gain as a trade bloc is calculated and reported. ΔM1 is found using Equation (4) and it is the amount of change in import volume as a result of meeting the reference standards of import costs. ΔM1 is reported as an absolute value, in reality ΔM1 is a negative value.

5.4.2 Potential Gains from Exports

Table 23: MERCOSUR export costs.

Country	Time to export: Documentary compliance (hours)	Time to export: Border compliance (hours)	Cost to export: Documentary compliance (US$)	Cost to export: Border compliance (US$)	Economic Cost of waiting time for exports (US$)	Total Cost of Exports (US$)	Ad valorem equivalent (AVE)
Argentina	25	21	60	1074	26.26	1160.00	2.32%
Brazil	12	49	226	862	34.82	1122.82	2.25%
Paraguay	24	120	120	815	82.19	1017.19	2.03%
Uruguay	24	96	231	1038	68.49	1337.49	2.67%

Notes: Table 23 contains reported values from the data source which is given in Table 18. The column reporting Cost of waiting time for exports is calculated using Equation (1). The total USD value of all export costs are represented as an ad-valorem equivalent of a standard 50,000 USD shipment in the last column.

Table 24: Summary of data to be used in potential gains from exports in MERCOSUR.

Country	Total Export Cost	Excess $Cost^X$ wrt Singapore	Excess $Cost^X$ wrt Chile	Current Volume of Exports (X1) in million $	Elasticity of Export Supply (E^X)
Argentina	2.32%	1.56%	1.54%	77,934.00	0.64
Brazil	2.25%	1.49%	1.47%	295,146.00	0.81
Paraguay	2.03%	1.27%	1.25%	10,571.00	0.77
Uruguay	2.67%	1.91%	1.89%	6,829.00	0.78

Notes: Table 24 contains all the necessary data to be used in Equations (7), (8) and (9). The Excess $Cost^X$ columns are calculated using Equation (2) and is an ad-valorem representation of the preventable amount of costs if the studied countries are to meet the reference nations (Singapore and Chile). Current Volume of Exports column is the most recent volume of imports reported by UN COMTRADE (2022). Export supply elasticity values are from Tokarick (2014).

Table 25: MERCOSUR's potential gains from exports with respect to Singapore.

Country	Excess Cost	Ex	ΔX1 (million USD)	DG (million USD)	EG (million USD)	Total (million USD)
Argentina	1.56%	0.64	768.12	1,200.18	5.91	1,206.10
Brazil	1.49%	0.81	3,514.30	4,338.65	25.83	4,364.48
Paraguay	1.27%	0.77	101.75	132.14	0.64	132.77
Uruguay	1.91%	0.78	100.67	129.07	0.95	130.02
					Grand Total:	5833.37

Notes: Table 25 is reporting the individual potential economic welfare gains as given by the Equations (8) and (9), using Singapore as the reference benchmark. The countries' individual potential gains and the grand total potential gain as a trade bloc is calculated and reported. ΔX1 is found using Equation (7) and it is the amount of change in export volume as a result of meeting the reference standards of export costs.

Table 26: MERCOSUR's potential gains from exports with respect to Chile.

Country	Excess Cost	Ex	ΔX1 (million USD)	DG (million USD)	EG (million USD)	Total (million USD)
Argentina	1.56%	0.64	768.12	1,200.18	5.91	1,206.10
Brazil	1.49%	0.81	3,503.87	4,325.76	25.68	4,351.44
Paraguay	1.27%	0.77	102.10	132.60	0.64	133.24
Uruguay	1.91%	0.78	100.94	129.41	0.96	130.37
					Grand Total:	5821.14

Notes: Table 26 is reporting the individual potential economic welfare gains as given by the Equations (8) and (9), using Chile as the reference benchmark. The countries' individual potential gains and the grand total potential gain as a trade bloc is calculated and reported. ΔX1 is found using Equation (7) and it is the amount of change in export volume as a result of meeting the reference standards of export costs.

5.5 Discussion of the Results

5.5.1 CAN

In our empirical results, the total of ΔM1 ranges from roughly USD 1,079 million to 1400 million for CAN. This expected increase in trade volumes because of improving

importing costs demonstrates the potential trade-enhancing effect of reducing friction at the borders.

More importantly, the amount of economic gain from improving the costs of importing amounts to between USD 771 million and 1004 million for the region. DG represents the biggest contribution to economic gains, and the DG component of gains corresponds to real resources saved at the current volume of imports. EG, on the other hand, is the elimination of the deadweight losses that are created by shifting between the benchmark and the current level of prices. An increase in tariff revenues is expected to be the second biggest component of economic gain. As a result of the relatively elastic import demand elasticities of CAN member countries, the increase in trade volume creates extra tariff revenues. Given the weighted average tariff rates in Table 3, there is a potential of more than USD 22 million of tariff revenue as a result of improving importing costs when Chile is taken as the reference. The potential tariff revenue arising from matching Singapore is USD 29.5 million.

The potential economic gains from improving export costs are estimated to be between USD 478 million and 491 million for the CAN bloc. The two gains contributing to the total are DG and EG, as discussed earlier. The expected export gains amount to between USD 321.22 million and 330 million for improving the cost level of 0.78% and 0.76%, with respect to Chile and Singapore, respectively. As the smallest CAN country, Ecuador's export supply elasticity is inelastic, in contrast to that of the other countries in the bloc. This minimizes the potential increase in trade volumes as exports become more attractive for firms within Ecuador. However, the estimated trade increase and economic gain values are annual values, and over a period of time, the

improvements to the exit points of goods in these countries are significant for even the least industrialized members.

The total amount of real resources to be saved by improving the trade costs is between USD 1.25 billion and 1.5 billion. Given that the GDP of the CAN bloc stands at USD 644 billion (excluding Bolivia), the total economic gains amount to 0.19–0.23% of GDP (World Bank, 2021). The amount of economic gains from improving trade costs presents a scenario in which the cost–benefit ratio of implementing a successful trade administration reform is greatly beneficial even in the short run.

The results in the previous section demonstrate the potential of trade facilitation. Multiple core elements give rise to the differences in the potential economic welfare gains for different countries and different trade flow directions. An obvious one is the difference in trade costs for each member, which creates the different excess costs that are used to calculate the potential gains.

From Table 1, we can see that border compliance is more troublesome than documentary compliance. All border compliances for exporters are at least two times greater than documentary compliance. This is not the case for Bolivia, as the reported export medium for Bolivia is for a land border crossing, and land border crossings are in nature less troublesome than sea borders, hence the difference in the time taken for border compliance magnitudes. In the estimates of the costs of trade administration, an estimate has been made of the economic costs of waiting for the documentation and import and export procedures to be completed. This estimation is the basic cost of locking up capital during the waiting time of import or export operations. Other cost

components, such as border compliance and documentary compliance, are directly related to the border waiting times. For instance, to ship a container as an export from a Colombian sea border requires almost 7 full days (112 h) to complete, and considering that exporting requires less compliance at the border than importing does by nature, the border compliance time for imports is even longer at 114 h. The mean value for time required to complete an exporting border and documentary compliance for CAN is 5.66 days per shipment. The benchmark value reported for Chile is 3.5 days, measured using the same methodology. Border times as a trade barrier are well established in the literature (Roberts et al., 2014)(Volpe Martincus, 2016). Using David Hummels and George Schaur's phrase, time acts as a trade barrier (Hummels & Schaur, 2013). They estimate that each day a product is in transit equates to a 0.6% to 2% reduction in its value (similar to applying an ad-valorem tariff at that rate). This illustrates that minimizing the time taken to transport goods can have a substantial impact. Border times in this regard correlate with import and export costs, as reported in Doing Business (World Bank Group, 2020).

Overall, out of the two biggest economies in CAN, Peru has lower trade administration costs than Colombia in terms of cost to export. On the other hand, Colombia is the better performer when dealing with importing procedures.

Another important factor explaining the differences in potential gains is the difference in import demand and export supply elasticities. Colombia’s demand for imports is the most elastic in CAN, which can be interpreted as domestic firms in Colombia being better able to substitute imports. In this regard, Ecuador’s import demand is the least elastic among the studied nations, indicating a less developed domestic industry. These

results are consistent with the opposite direction of trade flows. Colombia and Peru rank first and second amongst CAN in terms of export supply elasticities, indicating their domestic production to be more responsive. However, the magnitudes of their export supply elasticities are both inelastic. Overall, from improving costs to import, Peru has the highest potential to gain. The potential economic welfare gains for Peru are estimated to be USD 384.62–477.35 million in terms of improving the cost to import. In the case of exports, Peru is estimated to have potential of gains in the magnitude of USD 198.85–204.89 million. Colombia and Ecuador have the potential of gaining USD 184.07–188.46 million and 94.87–98.04 million, respectively.

The results for CAN are parallel to the existing literature findings, where the expected welfare gains as a result of trade facilitation are substantial and are usually in the range of 0.15–0.50% of the GDP (OECD, 2018) (Safaeimanesh & Jenkins, 2021b).

5.5.2 CARICOM

CARICOM stands as the smallest trade bloc studied in this thesis. The average import cost for the region is 1.98% and in general, the trade cost regimes have a variety of very good and very bad performing countries. The estimated potential welfare gains from imports side range from USD 460 million to 539 million. With a higher-than-average tariff regime in CARICOM, the potential welfare gains in the form of tariff revenue is estimated to be USD 53.4 million to 61.22 million. This amounts to 0.06%of the total GDP of the reported CARICOM members.

The exports side poses a more modest potential for welfare gains. The estimated economic welfare gains from improving export operations with respect to Chile and Singapore are USD 113.51 million to 116.23 million respectively. This can be read as

an indication of weak production in this mostly island-nation trade bloc. All of the reported CARICOM states have an inelastic export supply elasticity with the exception of Belize supporting the idea of an under-developed production in CARICOM.

To put it into context the total potential welfare gains including both imports and exports are estimated to be USD 573.51-655.23. This value corresponds to 0.60%-0.68% of their GDP.

5.5.3 MERCOSUR

A potential welfare gain over USD 8 billion is expected if the current trade costs regimes for importing operations are improved to match those of the reference countries. Once again it is important to note that this estimation is an annual figure. It depends mainly on the volume of import trade and the amount of difference between current and reference costs rates. It can be expected that the biggest gains in the MERCOSUR region will be attained by Brazil and Argentina, as their trade is much larger than that of Paraguay and Uruguay. However, welfare gains as a percentage of GDP are higher for smaller countries of the customs union. For instance, with a GDP of USD 487.2 billion, Argentina's net welfare gains will amount to roughly 0.59% of its GDP (World Bank, 2021). For Paraguay, this figure is around 1.17% of its USD 39.5 billion GDP (World Bank, 2021). This is in line with previous literature on trade facilitation, where bigger gainers from trade facilitation tend to be the less developed nations.

Welfare gains from improving importing operations translate mainly into cheaper imported goods for consumers to enjoy. This can be seen in Tables 21 and 22, as the biggest welfare gain contribution is from Area DG in Figure 1. This is the result of a

direct effect on the consumer surplus of making imports cheaper. Even though the deadweight losses depicted as Area EG in Figure 1 seem relatively more trivial, the total amount of roughly USD 130 million annually creates a great cost-benefit ratio for a mutual MERCOSUR single window project, where estimations on implementing a single window range from USD 11 million to USD 56 million (UNECE, 2013).

The potential net welfare gains from improving exporting operations yield to USD 5.8 billion for the MERCOSUR member states. Once again the biggest gainers in the customs union would be Argentina and Brazil. However, as part of a well-established customs union in the continent, the members of MERCOSUR trade heavily with each other. For instance, Argentina is in the top five of Brazil's import and export destinations. It is reported that Argentina's share in Brazil's exports is 4.34% of the total. Argentina's share in Brazil's imports is 5.95% (World Bank, 2019a). Such trade connections within MERCOSUR are more prominent for the other two members. It is reported that Uruguay exports 14.28% of its total exports to Brazil, and imports from Brazil and Argentina as a percentage of total imports are 19.87% and 12.35%, respectively (World Bank, 2019b). Improvement of trade administration costs in both import and export directions is a double benefit for the intra-MERCOSUR shipments.

Chapter 6

POLICY IMPLICATIONS

Policymakers should attempt to reduce border times and compliance costs to capitalize on the expected potential economic gains. It is proposed that meeting the benchmark level of costs is a plausible comparison tool; however, much greater progress can be achieved in terms of trade facilitation. For instance, the days required to export a shipment from Panama (the northern border neighbour of CAN) is only 1.25 days. Moreover, in Singapore, it is reported that only half a day is required to complete the export formalities. The existence of better trade administration costs around the world represents a case for further improvement for the countries.

As has been demonstrated, time is an important factor in cutting costs. Inspection of shipments that are actually low risk in terms of physio-sanitary or security causes shipments to queue at ports for many hours for an insignificant risk of hazard. Proper investigation and systematic labelling of shipments are essential to overcome these unnecessary wait times.

The availability of a high-performing container port is another imperative for enabling cheaper entry and exit points for goods. Within LAC only Buenaventura and Cartagena port (Colombia) is among the world's high-performing container ports according to the Container Port Performance Index of the World Bank Group (The World Bank Group, 2022). Although not much can be done to decrease transport costs for

shipments, it is possible to influence port efficiency and reduce trade administration costs with the right policies and regulations. Rules and regulations governing a port should not be so cumbersome that they increase administration costs as well as port efficiency (Adam Willie and Douglas Chikabwi, 2018). Seaport efficiency can be determined not only with the availability of physical infrastructure but also with certain trade facilitation measures like advance rulings and interoperation of the trade agencies with their foreign partners. Attaining efficiency in seaports should also be a continuous subject for trade policymakers, to achieve greater degrees of efficiency.

Digitalization of trade processes is a big contributor to the saving of economic resources during trading operations. The processes that can be digitized include customs formalities, logistics operations, and compliance operations with relevant agencies including the banks for payment of taxes and service fees. Digitization also enables another important trade facilitation measure to foster benefits, namely the standardization of trade procedures. Electronic single window (ESW) is the most comprehensive trade digitization system that should be employed. All CAN and MERCOSUR countries employ an ESW system, but the degree of inter-bloc interoperability is not as advanced as it could be. In terms of trade facilitation, one of CAN's top priority tasks is the promotion of the interoperability of members' single window systems (UN ECLAC, 2021). As of 18 August 2020, the inter-operability of ESWs of CAN countries was limited, but projects for full inter-operability were underway (CEPAL, 2020). A regional successful single window experience has been the VUCE (Single Window for Foreign Trade) of the Pacific Alliance (PA). PA is made up of Chile, Colombia, Mexico and Peru. The two biggest economies of CAN are also members of PA. Given the benefit of VUCE, the remaining members of the

CAN may want to be integrated into this single window platform (Bórquez, 2022). Needless to say, this integration requires diplomatic efforts and political will.

Although most members of WTO who have already signed and ratified the agreement have some form of a single window system, there are specific features of such a tool that can maximize its effectiveness. A simple user interface is one of them. Continuous development and improvement of the system is another aspect that may increase its efficiency of such a system. Training of staff and/or issuance of user guidelines also should be done at regular intervals, in order to minimise the frequency of operator faults. South Korean customs authorities have reported that the introduction of a single window system for traders, other affiliated entities and border authorities brought a benefit of USD 18 million in the year of its introduction (UNECE, 2013). The same report also shows how great the return on investment can be in such reforms. In Singapore, the introduction of TradeNet, the first system of its kind, resulted in a 9,900% benefit margin over the years (UNECE, 2013).

A good prospect for the digitalization of borders is the emergence of blockchain technology. Inherently a technology related to finance, blockchain can create an impact in areas like trade facilitation (Ganne, 2018). Cross-border cooperation involves businesses and government agencies engaging in communication and exchange of information. Since blockchain technology offers a fast, reliable and secure flow of information, utilization of such a technology could reduce border times, compliance costs and fraud significantly (Ganne, 2018). Blockchain can also have a positive effect in those countries where corruption is a difficult to measure barrier to

trade. Payments between parties can take place through a blockchain network making it possible to track the finances involved in any transaction.

Blockchain is particularly suited for tasks in which multiple actors are involved in. This makes it very suitable for ESW applications. For instance, an exporter who is subject to authorization from multiple agencies would have to enter the required information into the system only once. Involved parties can then validate, confirm and issue relevant permissions with all of the involved in real-time (Ganne, 2018). The potential of blockchain should be studied further and applications of this technology regarding trade facilitation should be given a chance wherever possible. International organizations that see blockchain as a prospective technology for trade facilitation are growing in numbers and there are reports and whitepapers available specifically investigating the uses of blockchain in trade facilitation (UN, 2020).

The amount of welfare gains promised with the model alone can be expected to direct investment into the areas where room for improvement is present. It should also be noted that there are no restrictions in any form for the countries of the bloc to go further than the reference figures for achieving greater efficiency in their trade costs regimes. Given that the figures in this study represent only the annual import/export volumes and hence annual welfare gains from more efficient trade cost regimes, the primary insight relates to the great potential of any type of reform in terms of cost-benefit ratio. The Mercosur bloc, with its vast and somewhat difficult terrain, will most certainly benefit from infrastructure investments that reduce transport costs. Like Doing Business, which does not include transport costs in cost calculations in its section on trading across borders, this study excludes transport costs and concentrates mainly on

the costs arising during or leading to border operations. As Jenkins & Kuo (2006) set out, an infrastructural project in the form of a bridge on the River Plate connecting Argentina and Uruguay benefits both countries' traders as well as transits. Interestingly, Jenkins & Kuo (2006) also find Brazil to be the biggest net gainer in the MERCOSUR region, even though it was proposed that the bridge would be built between two other neighbouring countries. Despite the acknowledgement of the benefit of such infrastructural reforms in transportation, it would not be accurate to include those in the reform options. It is, however, also possible to lay out a wide range of policy reform options where the successful implementation would most certainly benefit the country in achieving the potential gains in welfare calculated in previous sections.

Export diversification is a direct effect of trade facilitation reforms. Following a cost reduction in exporting operations, goods that were not exportable because they are expensive can benefit from entering new markets. Furthermore, goods that were already being exported prior to a trade facilitation reform will be even more competitive in the world market. This edge has the potential to enable studied blocs member states to dampen the dependencies on a handful of commodities and create a much more varied portfolio of exports. The literature also indicates that export diversification is connected with GDP per capita (Dennis & Shepherd, 2011). Beverelli et al., (2015) report that meeting the average rate of WTO TFA implementation would benefit the LAC nations in terms of export diversification. The benefit is estimated to be a 12.2% increase in the number of products exported and an increase of 26.9% in the number of export destination countries.

Reforming trade administration costs saves a significantly larger portion of real resources than trade liberation through tariff reforms. It is beneficial that firms and consumers fully digest the idea of trade facilitation to enable administrators to implement reforms in these areas, where there is great potential for welfare gains. North Cyprus, which has been subject to international trade embargoes, further suffers because of its inefficient internal trade administration costs (Berhan & Jenkins, 2012). This is a clear indication of how trade offsetting and welfare-depleting trade administrations can even be compared with global red tape in a specific region. Procedures that are not carefully planned and implemented will drain resources and prevent both importing and exporting firms from participating in GVCs. This extra burden translates directly to each and every citizen, and hence, unseen effects of excess trade transaction costs require serious attention.

The relevance of trade facilitation for modern policymakers is not limited to enabling cheaper imports and exports, nor to increasing trade volumes. An even more immediate action-triggering motivation may be climate change. Sooner rather than later, policymakers around the globe will be under pressure to look for ways to address climate change without compromising voters' consumption habits. This will create an incentive to make everything more efficient, including trading operations.

By streamlining trade administration processes, policymakers can contribute to reducing the overall carbon footprint of international trade. Efficient trade procedures will not only lead to economic benefits but also help minimize the environmental impact associated with the transportation and exchange of goods. By prioritizing trade facilitation, governments can demonstrate their commitment to addressing climate

change while simultaneously enhancing their economies' competitiveness in the global market.

Trade facilitation, whether it involves broadly reducing trade costs or specifically streamlining border procedures, consistently demonstrates the potential to generate significant net economic gains in terms of increased trade and real incomes. Studies using SG and CGE models agree that trade facilitation is a valuable prospect for all countries, potentially yielding economic benefits equal to or even greater than those resulting from a major round of merchandise tariff cuts (Hoekman & Shepherd, 2015).

However, from a developmental policy perspective, it is essential to consider the distribution of these economic gains. According to Hoekman & Shepherd (2015), two key questions emerge: First, will both developed and developing countries, reap significant benefits from improved trade facilitation? Second, in the context of GVCs, do trade facilitation advantages primarily benefit large firms (predominantly located in developed countries) at the expense of small suppliers (mainly situated in developing countries)?

Using firm-level data from various developing countries, Hoekman & Shepherd (2015) find no consistent evidence supporting the idea that only large, lead firms benefit from trade facilitation. Generally, firms of all sizes benefit from improved trade facilitation, as they can export more in response to improvements such as reduced export times. Although some sectoral differences exist, the research concludes that small firms can benefit from trade facilitation in the same way that large firms do.

In terms of policy, Hoekman & Shepherd (2015)'s results and literature review suggest that the distributional concerns raised by some policymakers as reasons for African countries to approach trade facilitation cautiously do not withstand empirical scrutiny. Although distributional issues are crucial in the political economy of trade policy and its developmental implications, these concerns do not negate the overwhelming evidence that trade facilitation can boost trade and real incomes across countries at all development levels.

Chapter 7

CONCLUSION AND LIMITATIONS

This thesis set out to explore the potential of trade facilitation, specifically focusing on its potential welfare gains in three major trading blocs of LAC region. By developing a microeconomic model and estimating the welfare gains resulting from trade facilitation initiatives, this research aimed to provide valuable insights into the mechanisms that can enhance welfare and guide policymakers in designing effective interventions.

The study's findings reveal that trade facilitation can indeed lead to significant welfare gains across the three trading blocs. The microeconomic model used in this thesis captures the essential features of trade facilitation and demonstrates its potential to boost trade and real incomes. Based on these findings, several policy recommendations can be derived.

First, policymakers should prioritize trade facilitation initiatives that reduce trade costs and streamline border procedures to increase efficiency and enhance participation in global value chains. Second, collaboration and coordination among the trading blocs in the LAC region will be crucial for harnessing the full potential of trade facilitation initiatives and avoiding any unintended negative consequences. Third, trade liberalization and trade facilitation shows significant differences in terms of

eliminating welfare losses which should be unignorable and well accepted by policy makers.

In this regard, the studied LAC blocs have great potential for improvement. This improvement's effects are not limited to annual gains in welfare. Improving the trading system in this region will also contribute towards sustainable economic growth (Jiahao et al., 2022). Another positive aspect which should draw the attention of the policymakers is the diversification effect of TF. Improving trading systems can create new markets for ex-porters and/or boost the product portfolio of exports (Ganne, 2018). However, to realize these potential cost savings it will be necessary for policymakers to make legislative changes and for public sector workers to be trained to work in new ways.

In short, this thesis has contributed to the growing body of knowledge on trade facilitation by providing a robust microeconomic analysis of its potential welfare gains in the LAC region. The research has shed light on the specific mechanisms through which trade facilitation can enhance welfare and provided valuable guidance for policymakers seeking to design effective interventions. While this study has addressed some crucial welfare enhancing aspects of trade facilitation, future research could further explore the sector-specific implications of these initiatives and the potential for regional cooperation in implementing them, ultimately fostering a deeper understanding of the complex interplay between trade policy, global value chains, and economic welfare in the LAC region.

Although Doing Business Trading Across Borders (TAB) data are a very important source of information prepared by the World Bank on the administration costs of international trade, there are some aspects of this data set that limit its general applicability. The TAB data are collected by a survey/questionnaire from a country's importers/exporters, freight forwarders, customs brokers, etc. This survey aims to report the cost, the time, and the specific number of documents required to perform an import/export operation. This provides a good estimation for trade costs of finished or semi-finished goods and a fair comparison across nations, as identical surveys are used in different sectors. Imports or exports of a country that involve significant bulk traded goods will have very different trade administration costs than finished or semi-finished goods.

The analysis performed to the imports and exports side of the trade transaction costs is not entirely symmetrical in terms of welfare generating areas. For instance, the analysis method enables welfare gains from import duty revenues but the model refrains from the possibility of any sort of tax collection from exports to contribute to welfare gains. This is simply because taxing the exported merchandise is a seldom occurrence and the tax revenue collected on exported shipments is trivial in these isolated events. However, Argentina, second biggest member of MERCOSUR is an exception in this case where a considerable amount of tax revenue is collected from exports. Incorporation of welfare gains from exports tax revenue stands as a quality enhancing feature of any study looking into welfare effects of trade facilitation if applicable.

Over the years, LAC had its own challenges becoming a developed region of the world. Although the people and the leaders of LAC recorded significant reforms in certain areas like government administration and opening up to free-trade, the region as a whole is still a developing corner of the world. The unique blend of geography and history of LAC created a culture of governmental administration in which consistency in reformist actions is yet to find its place in the regimes of the region. This inevitably brings late reactions to the popular sociological, political and economic topics in trending in the modern world. This is definitely a factor leaving some of the nations in LAC lagging behind in a wide range of administrative fields. Despite the fact that the policy reform options needed to materialize the potential welfare gains from trade facilitation is a straight forward case, it is also important to note the current culture of the countries and the way of processes is a determining factor in achieving these gains. Bribery, nepotism, fraud and such socioeconomic problems exist and they definitely pose a barrier to trade. These undesirable occurrences also acts as a barrier to enjoy benefits of trade facilitation. Therefore, acknowledgement of 'way-of-things' should accompany the findings of this study if it is to be used by a policymaker. Furthermore, it has always been an interesting story to read or tell about how some nations went on to become a developed nation. Certainly it is also interesting to study as to why some countries achieved this goal while most are struggling. In this sense, LAC provides a yet another interesting field of economic research.

The microeconomic framework used in this study uses the assumption that the commodities produced in these countries under investigation are price takers in the world market. For those small countries included in the study, this assumption is a reasonable description of the reality. Although for some commodities the assumption

might not hold, as a large proportion of the benefits of trade facilitation are enjoyed by the producers and consumers of the current volume of trade of these commodities, the results of this analysis for policymaking are likely to be very robust.

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