



# **The effect of International Logistics, Free Trade Agreements and Distance on International Trade, the case of Panama**

Master degree in International Business

Juan Carlos Albarracín Gavilanes

Leiria, September of 2021



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Leiria, September of 2021

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# Dedication

This work is dedicated to two very special persons in my life, my grand mommy Esther and my cousin Andrea, they have become my angels and guardians. Thank you for always guiding me and giving me the strength to continue.

For being part of all my achievements and triumphs, for being by my side in every step that I have taken, for being my support when I have needed it; for teaching me to appreciate and embrace life and instil in me values that have made me the person I am today, for all this and more I dedicate this work and achievement to my parents and my brothers. I love you so much.

Juan Carlos

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Este trabajo está dedicado a dos seres muy especiales en mi vida, mi abuelita Esther y mi prima Andrea, quienes se han convertido en mis ángeles y guardianes. Gracias por siempre guiarme y darme la fuerza para continuar.

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# Abstract

This study aims to determine the effect of International Logistics, Free Trade Agreements and Distance on International Trade in Panama. In terms of Distance I decided to include three dimensions, Geographical, Cultural and Institutional Distance in order to define the effect of each dimension on International Trade. Moreover, Panama was chosen since the importance of Latin American countries on International Trade has been recognized. However, countries from this region tends to present totally different behaviours. Further, this country has proved to be an open economy promoting International Trade. Nevertheless, within the literature still remains a lack of studies addressing Latin American countries. Thus, this study aims to help filling that void in the literature. Additionally, I focused on one specific country to obtain more precise results related to the country. Gravity model is the framework I used to develop the hypotheses, since it has been well-recognized, acknowledged and widely used in the literature. The hypotheses were tested using a sample covering Panama and 85 trade partners in specific years from 2007 to 2018. Data were taken from official secondary sources resulting in 510 observations and were analysed using Ordinary Least Squares (OLS) linear regression. The results of this study confirm the positive effect that International Logistics and FTAs have on International Trade, also the negative effect of Geographical Distance was confirmed. However, no effect was found for Cultural Distance and regarding Institutional Distance a positive effect was found, contrary to the literature. Thus, this study contributes to the literature by empirically testing that for Panama as Latin American country, the improvement of Logistics and liberalization of trade due to FTAs have a positive impact. Moreover, the different behaviours on International Trade were also corroborated since Panama tend to trade most with far countries and highly different in terms of Institutions, stressing the importance of study individually countries from this region and also Distance dimensions.

**Keywords:** “International Trade”, “International Logistics”, “Free Trade Agreements”, “Distance”, “Latin America”, “Panama”.

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# List of Abbreviations and Acronyms

CD	Cultural Distance
e.g.	<i>example gratia</i> (for example)
FTAs	Free Trade Agreements
GATT	General Agreement on Tariffs and Trade
GD	Geographical Distance
GDP	Gross Domestic Product
ID	Institutional Distance
i.e.	<i>id est</i> (it means)
IL	International Logistics
IMF	International Monetary Fund
IT	International Trade
LPI	Logistics Performance Index
Max.	Maximum
Min.	Minimum
OLS	Ordinary Least Square
RGDP	Real Gross Domestic Product
Std. Dev.	Standard Deviation
VIF	Variance Inflation Factor
WTO	World Trade Organization

# 1. Introduction

In an increasingly connected world, customers, companies and even governments have realized that their daily economic activities are affected in huge extend by what happens worldwide as result of globalization (Suranovic, 2010). Therefore, due to this effect, in the last decades International Trade (IT) have experienced a remarkable increase (Zhang, 2008), as proof of it, world's exports have triplicated from USD 6,9 trillion in 1990 to USD 25,8 trillion in 2018 (Hatzigeorgiou & Lodefalk, 2021, p. 320). Nevertheless, countries need to enhance their business relationships, and adapt to challenges in order to succeed (Hatzigeorgiou & Lodefalk, 2021). Historically, International Trade has been driven by developed countries, however in the last decades developing countries have gained a great participation on IT (Ciravegna, Lopez, & Kundu, 2016). Regarding developing countries, Latin American ones are a particular case due to their rapid growth and ability to adapt to highly demanding customers, despite the challenging business environment they must face, in terms of weak institutions, high levels of corruption and instable democratic system (Borda, Geleilate, Newburry, & Kundu, 2017; Carneiro & Brenes, 2014; Ciravegna et al., 2016; Cuervo-Cazurra, 2008). This is hugely attributed to their ability to manage their instable environment (Ciravegna et al., 2016), by implementing strong strategies (Malhotra, Lin, & Farrell, 2016) such as changing to a global mindset and concerning more on qualified and skilled human talent (Carneiro & Brenes, 2014). Further, Trade liberalization in Latin America has been a core part of the trade and market reforms and policies, especially regarding encouraging the improvement of International Logistics and promoting FTAs (Arvis, Alina Mustra, Ojala, Shepherd, & Saslavsky, 2010; Borda et al., 2017; Perales & Moron, 2010).

Panama as Latin American country is looking for boosting its International Trade. Hence in recent years, Panama has been set up as one of the most important logistics centres in America, due to the geographical strategic position, the simple regulations and the commercial transport systems in the country (Roldan & Henao, 2013). Moreover, Panama has the second biggest Free Zone in the world, Colon Free Zone, that can easily reach USD 12 thousand million per year (Bernal & Aguilar, 2015, p. 132). Beyond having a logistic centre, the infrastructure and means to support international trade, Panama has also boosted

trade competitiveness over the years due to its Free Trade Agreements (Parque Logístico Panamá [PLP], 2020). The Government of Panama has encouraged the integration with the global economy, thus according to the Ministry of Trade and Industry of Panama, currently the country belongs to 21 FTAs and has signed one that will enter into force soon. Thus, Panama exemplify a free-market economy (Carneiro & Brenes, 2014).

International Logistics (IL) allows countries to develop competitive advantages (Mentzer, Myers, & Cheung, 2004) since it covers the movements of goods and services in and outside the country (Hausman, Lee, & Subramanian, 2005) focusing on provide efficiency and effectiveness (Mentzer, DeWitt et al., 2001). Therefore, IL is considered a backbone for the success of International Trade (Arvis et al., 2010; Mentzer, Myers, et al., 2004). Moreover, when it comes to trade liberalization, Free Trade Agreements (FTAs) develop a setting which stimulates trade between countries due to the incentives established on such agreements and also aiding production-sharing and technology transfer (Hornbeck, 2010; Lim & Breuer, 2019). Further, FTAs are expected to reduce tariffs barriers on International Trade (Hoekman & Nicita, 2011; Saucier & Rana, 2017).

On the other hand, when countries trade internationally they must face national differences caused by the distance between them (Conti, Parente, & de Vasconcelos, 2016). Distance makes more complex the environment surrounding International Trade (Conti et al., 2016; Goerzen & Beamish, 2003) and may take out attractiveness from markets (Conti et al., 2016; Ghemawat, 2001; Miller, Lavie, & Delios, 2016). Moreover, I focus on three dimensions of Distance, namely Geographical, Cultural and Institutional (Conti et al., 2016; Goerzen & Beamish, 2003; Miller et al., 2016) since they can affect IT in different ways (Ghemawat, 2001). Thus, the literature states the following “general accepted” effects: (1) Geographical Distance (GD) is inversely proportional to trade flows, having a dampening effect on international trade, basically because GD can affect how countries make business with their partners (Ghemawat, 2001; Håkanson & Dow, 2012, Jian, 2011; Salvatici, 2013); (2) Cultural Distance (CD) places setbacks for international trade since it affects the way countries conduct business relationships with their partners resulting in lower international trade (Ghemawat, 2007; Goerzen & Beamish, 2003; Tower, Hewett, & Fenik, 2019); (3) Institutional Distance (ID) affects negatively International trade because countries with

inefficient institutions are likely to face more issues (Cho & Kang, 2001; Ghemawat, 2001; International Monetary Fund [IMF], 2001).

All of the above statements and effects were established by studying developed countries or developing countries from regions such as Asia. Nevertheless, Latin American countries tend to present different behaviours in comparison with developed countries (Arvis et al., 2010; Malhotra et al., 2016) especially when it comes to distance and differences (Conti et al., 2016; Ramamurti, 2012) making not possible to assume the same patterns as developed countries (Casanova, 2009). Furthermore, there is still voids in the literature regarding the study of International Trade in Latin America, most of the studies have focused and limited to address the entry mode preferences (e.g. Borda et al., 2017; Carneiro & Brenes, 2014; Cuervo-Cazurra, 2008; Hsieh, Shen, & Lee, 2010; Malhotra et al., 2016) or have addressed developed countries but from other regions, especially Asia (e.g. Doan & Xing, 2018; Jiang & Wu, 2017; Lim & Breuer, 2019; Saucier & Rana, 2017) or when studying Latin American countries scholars have addressed them into groups (e.g. Martí & Puertas, 2017; Martí, Puertas, & García, 2014a; 2014b). Nonetheless, in order to obtain more precise results, it is necessary to study one country at the time (e.g. Hennart & Zeng, 2002; Jiang & Wu, 2017; Lim & Breuer, 2019). Thus, this study pretends to contribute to the International Trade Literature by answering the following questions: (1) What is the effect of International Logistics on International Trade in Panama, (2) what is the effect of Free Trade Agreements on International Trade in Panama, and (3) what are the effects of (3a) Geographical Distance; (3b) Cultural Distance; and, (3c) Institutional Distance on International Trade in Panama.

Gravity model was used as framework to develop the hypotheses which helped me to answer the proposed research questions in this study. This model has been highly applied in order to study and understand International Trade (e.g. Anderson, 1979; Arvis et al., 2010; Feenstra, Markusen, & Rose, 2001; Glick & Rose, 2002; Kimura & Lee, 2006; Martí & Puertas, 2017). Moreover, the sample for this study consists in bilateral trade between Panama and 85 trade partners around the world on 2007, 2010, 2012, 2014, 2016 and 2018. The data for the sample were taken from official secondary sources such as The International Monetary Fund, The World Bank Indicators, Ministry of Trade and Industry of Panama, Hofstede Insights and also from the study of Ghemawat, (2001). All of these sources have been used in previous studies providing validity to the information (e.g. Arvis et al., 2010;

Malhotra et al, 2016; Martí & Puertas, 2017; Saucier & Rana, 2017). After gathering all the information, I obtained 510 observations, including data for all the variables and all the years in the study. Finally, I applied an Ordinary Least Square (OLS) linear regression in order to test the hypotheses and determine the effect of International Logistics, FTAs and Distance on International Trade in Panama.

Regarding findings, this study found evidence and corroborate the positive effect of International Logistics (i.e. Behar, Manners, & Nelson, 2013; Hoekman & Nicita, 2011) and FTAs (i.e. Dai, Yotov, & Zylkin, 2014; Saucier & Rana, 2017) on International Trade, then these assumptions are accurate for Panama. Moreover, the results also corroborated the negative effect of Geographical Distance on International Trade (i.e. Jian, 2011; Salvatici, 2013). However, interestingly, the country with which Panama traded the most is a distant country, Japan. Further, regarding Cultural Distance, the study did not find support for any effect on International Trade in the proposed model with all the variables included, this could be attributed to the combined interaction of the variables within the study (Sala-i-Martin, 1997). Additionally, in terms of Institutional Distance, the results showed evidence of a positive effect of Institutional Distance on International Trade, contrary to the negative effect expected and generally accepted (i.e. Brinkerhoff & Goldsmith, 2005; Bussche & Verbeke, 2008) This could be explained because Latin American countries are characterized by trade with different countries (Ramamurti, 2012) especially those that have strong and well established institutions (Malhotra et al., 2016). Finally, by using the selected methodology this study was able to explain around 61,20% of the International Trade in Panama.

This study contributes to the Literature in the following ways: (1), I verified the main role that International Logistics (e.g. Arvis et al., 2010; Hausman et al., 2005) and FTAs (e.g. Saucier & Rana, 2017; Schumacher, 2016) have on International Trade in Panama, since these features allow the country to stand out from the competition by decreasing cost and obtaining a process with fewer flaws; (2), I extended gravity model literature because in order to measure cultural and institutional distance I used Hofstede (1980) cultural dimensions and World Bank Governance Indicators, respectively, unlike the trend to use dummy variables (e.g. Baier, Bergstrand, & Vidal, 2007; Doan & Xing, 2018; Dow & Larimo, 2009; Martí & Puertas, 2017) obtaining significant but contrary results, stressing the importance of measure distance individually and in further ways. By including CD and

ID I also addressed a managerial perspective instead of an econometric one; (3), I studied Panama as Latin American country since this region still has a lack of studies regarding International Trade behaviours (Conti et al., 2016; Hsieh et al., 2010) and although the country encourages International Logistics and FTAs in concordance with developed countries when it comes to Distance, especially Cultural and Institutional the country shows different behaviours when facing distance on International Trade; (4), I also contribute to the literature by acknowledging some insights of International Trade theories, such as the importance of having Free Trade as Smith proposed (as cited in Bobulescu, 2002; Zhang, 2008), and the crucial role that Logistics and Institutions have for International Trade as Porter proposed (as cited in Clark, 1991; Davies & Ellis, 2000).

This study is organized as follows: Chapter 2 addresses the relevant literature related to International Trade as well as the effects of International Logistics, Free Trade Agreements (FTAs) and Distance. Chapter 3 covers the conceptual development including the five hypotheses proposed in the study. Then, in Chapter 4, the methodology applied in the study is described including the statistical techniques and procedures. Chapter 5 describes the results obtained after have run the OLS linear regression. On Chapter 6, discussion section is presented including limitations and future lines of research. Finally, Chapter 7 presents the conclusions of my study.

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## 2. Literature Review

The purpose of this chapter is to cover the related literature as well as the theoretical perspectives and foundations regarding International Trade, International Logistics, Free Trade Agreements and Distance.

### 2.1. International Trade (IT)

Globalisation has changed the world rapidly and has developed a framework in which companies play a core role on the development of International Trade (Surugiu & Surugiu, 2015). Hence, they need to enhance their business relationships, and easily adapt to changes while overcoming all type of boundaries (Hatzigeorgiou & Lodefalk, 2021). Surugiu and Surugiu, (2015, p.132) defines International Trade (IT) as the exchange of goods and services across the border of a country. Thus, in short, IT refers to the exports and imports between countries (Borad, 2018). The constant search for achieving IT is motivated to get growth, profitability, diversification of markets and customers, knowledge transfer, expand products portfolio, positioning and increase company's name abroad, among others (Carneiro & Brenes, 2014; Czinkota & Ronkainen, 2009; Fanjul, 2017; Surugiu & Surugiu, 2015).

Eventually, it is inevitable that companies take the chance to trade internationally due to their differences in production capacities and to get advantage of scale economies (Arnold, 2013), as well as reduce dependence on domestic markets (Ciravegna et al., 2016; Surugiu & Surugiu, 2015). Thus, placing IT as an important part of growth in a country regardless of the country economic size. In this line of thought, Eaton and Kortum (1997) point out that even the strongest economy in the world, United States, could have not reached the growth it currently has if it had focused only in fill its domestic markets needs and remains isolated from IT (p. 254).

Once companies are part of International Trade, they must compete with international goods (Suranovic, 2010). Nonetheless, many of these same companies also benefit by having the chance to sell their products to customers in countries in the entire world (Surugiu & Surugiu, 2015), consequently expanding their markets (Suranovic, 2010). Thus, obtaining a faster growth (Zhang, 2008). However, in order to have success in long-term, companies need to

acquire skills in international commerce, gather as much information as possible about the new markets, form partnerships and alliances, improve their business networks and develop and establish trust with their partners and customers (Hatzigeorgiou & Lodefalk, 2021; Surugiu & Surugiu, 2015). Moreover, companies need to be aware that when they decide to trade internationally they will face some tariff barriers such as taxes and non-tariff barriers such as social, cultural, legislative and political differences between countries (Conti et al., 2016; Surugiu & Surugiu, 2015).

International Trade has growth over these years due the constant decline of trade barriers, especially tariffs since the Great Depression of 1930 (Suranovic, 2010). Following this path and with the aim to stimulate IT growth, the General Agreement on Tariffs and Trade (GATT) was finally established on 1947 (World Trade Organization [WTO], n.d.). The framework of this agreement was re-establish the World's financial order, promoting economic reconstruction, and encouraging open markets through tariff concessions to country members (Santana, 2017). However, the GATT, was mainly focus on trade in goods, for that reason on 1995 was created and established the World Trade Organization (WTO) with the aim to cover trade in services and deal with intellectual property and disputes within International Trade (WTO, n.d.). As explained above, these measurements and Institutions were established with the aim of reducing tariff barriers, thereby allowing companies from country members to trade at a lower cost, thus becoming more competitive and profitable (Hatzigeorgiou & Lodefalk, 2021). Then, under this context trade is consider freer (Suranovic, 2010).

Technological advances and innovation are another factor that had contributed to International Trade growth (Eaton & Kortum, 1997). The development in telecommunications along with the use of Internet allows companies to have presence in almost every country in the world, expanding their markets even further and faster (Suranovic, 2010). In the same line, innovation and new technologies are bringing to companies the opportunity to have equipment, tools and infrastructure more sophisticated every day (Czinkota & Ronkainen, 2009). Hence, due to the rapid development in technology, currently companies have the great opportunity to modernize themselves, however it is important that they adapt their visions and operations accordingly to the new trends (Surugiu & Surugiu, 2015). Thus, when properly implement all of these innovations,

small and big companies are allowed to perform more functions at a lower cost (Czinkota & Ronkainen, 2009; Suranovic, 2010; Surugiu & Surugiu, 2015). Therefore, companies that are able to reduce trade costs can increase their productivity and consequently become more competitive (Hatzigeorgiou & Lodefalk, 2021).

International Trade has become more important in the last years not only for scholars but for practitioners as well (Czinkota & Ronkainen, 2009). On the empirical side, International Trade has a huge importance because IT accounts for a significant part in Gross Domestic Product (GDP) for countries (Surugiu & Surugiu, 2015). Which is explained since when the opportunity arises, companies then countries, trade between them (Eaton & Kortum, 2012). International Trade encourages companies to focus on activities that they do best (Eaton & Kortum, 1997), with the aim of obtaining the maximum benefits from the specialization on those activities (Eaton & Kortum, 2012). In this line, it is also necessary to add value to the goods that will be traded in order to keep competitiveness (Surugiu and Surugiu, 2015). Thus, turning these efforts into returns and profits for each company and consequently for each country (Schumacher, 2015). Nevertheless, as Bobulescu, (2002, p. 403) cites, in order to keep welfare of the trading parts it is important to constantly analyse the production size and procedures as well as customer preferences to avoid financial harms.

According to Czinkota and Ronkainen (2009) many scholars have exposed and developed their insights regarding IT. Therefore, various theoretical perspectives have been established with the aim to explain International Trade. One of the first streams was the Mercantilism, it was used to understand and practice IT throughout the 16<sup>th</sup> and 18<sup>th</sup> century (Zhang, 2008). Under this perspective, as Schumacher, (2015, p. 587) cites, the only gain from IT are exports whereas imports are seen as collateral drawbacks. In this line, the mercantilism policies were oriented to develop capitalist trade in the countries (Gaido, 2016). The objective of these policies and regulations were focused on boosting exports while taking protectionist measures to discourage and reduce imports (Gaido, 2016; Zhang, 2008). Nevertheless, since Mercantilism was based on premises promoting production overprotection, widespread of monopolies and confusion of money and power (Beuve, Brousseau, & Sgard, 2017) other perspectives were proposed.

A core part on International Trade theories is Adam Smith's perspective (as cited in Schumacher, 2016; Zhang, 2008). Smith truly believed that IT is a positive sum relation

between countries since they are trading voluntarily (Zhang, 2008). Thus, both exports and imports are benefits from International Trade (Schumacher, 2015). Furthermore, this mutual benefit is based on absolute advantages (Myint, 1977). For Smith, International Trade increases specialized companies (Bobulescu, 2002) through the division and specialization of labourers, obtaining the so called, absolute advantage (Schumacher, 2015). In this line of thought as Zhang (2008, p. 24) cites, when one company is more efficient than other company in producing a second product as result both companies gain by the specialization in the production. Consequently, companies start to produce not only for the domestic markets, but for the international markets as well, even sometimes some goods can be produced just for covering international demand (Myint, 1977). Beyond specialization, Smith's perspective states that another benefit from IT is technological transfer and knowledge improvement since the companies are constantly communicating between them (Schumacher, 2016). Hence, reinforcing the importance of free trade (Bobulescu, 2002; Zhang, 2008).

Taking into consideration some arguments from the above perspective, David Ricardo developed their own theory, which is widely recognized for scholars as the Classical Theory of International Trade (as cited in Eaton & Kortum, 2012; Golub & Hsieh, 2000; Zhang, 2008) and one of the basic pillars for general theory of IT (Suranovic, 2010; Zhang, 2008). Under this perspective, companies should benefit from the ability to make different products and specialize on them, while taking advantage of their distinctive characteristics (Eaton & Kortum, 2012). Thus, obtaining and developing comparative advantages over their competitors (Golub & Hsieh, 2000; Suranovic, 2010). Moreover, companies should also consider the differences in technology (Suranovic, 2010) since it contributes to the division of labour and consumption (Zhang, 2008). Other factors that companies should take into account are customers preferences and demand because they can be a core part of success on International Trade especially when technology and skills of companies are equal (Suranovic, 2010; Zhang, 2008). For Ricardo, all of the aspects mentioned above are important since all the parties involved in International Trade should benefit from it (Suranovic, 2010).

A more recent perspective addressing International Trade is the one presented by Michael Porter on 1985 and 1990 (as cited in Clark, 1991; Davies & Ellis, 2000). In a way, He redefined the description of advantage (Zhang, 2008). Thus, a company get competitive

advantages by applying strategies to boost its internal strengths, minimize its weaknesses while adapting to changes surrounding the company (Barney, 1991). Under this perspective, it is more important developed production factors, with added value than natural and basic resources (Clark, 1991, p. 118). In this context, a company needs a correct and proper logistics to place production factors on the right moment (Davies & Ellis, 2000). Moreover, a core part for companies when developing advantages are knowledge and skilled personal (Clark, 1991). On the other hand, it is mandatory for companies to be aware of the needs the customers have and the standards the products should to have to fill those needs (Christensen, 2001; Clark, 1991). Thus the demand for those products will encourage innovation within the companies (Davies & Ellis, 2000). Furthermore, it is important for companies to establish strong communication and distribution systems with customers and suppliers (Clark, 1991; Davies & Ellis, 2000). In this line, it is imperative for companies to correctly define and apply strategies (Davies & Ellis, 2000) not simultaneously implemented by competitors (Barney, 1991). Hence when a company is able to acquire and develop the mentioned factors, it will be able to outperform the competition (Christensen, 2001). Additionally, for achieving success in International Trade, Governments should develop a suitable environment promoting trade (Clark, 1991).

There are several models and theories regarding International Trade, nevertheless, as explained above and in concordance with Zhang (2008) some of them are advanced with some adaptations and changes. Thus, following the suggestion of Suranovic (2010) I highlighted and briefly described the above theories since they take advantages as the core part of the theories, also becoming the linkage between them. In addition, these theories address Free Trade Agreements in terms of government trade-liberalization policies and Logistics (i.e. infrastructure) as part of the advantages that a company may have. These theories also address distance in terms of barriers. Therefore, providing theoretical insights for this study.

Along with theoretical perspectives, within the literature, several studies have addressed International Trade in a variety of streams. Some of them have focused on the entry mode that companies choose when trading internationally, the environment surrounding that decision and the challenges they may face (e.g. López-Duarte & Vidal-Suárez, 2010, 2013; Malhotra et al., 2016). In this line, the factors influencing entry mode choice have been also

pointed out, highlighting cultural and institutional differences between countries, country risk, companies' experience and managers' abilities as the more representatives (Hsieh et al., 2010). Also, a comparison between the longevity of entry modes have been addressed (see Hennart & Zeng, 2002). Another topic covered in the literature is the role that Institutions play for the efficiency of International Logistics (see Heaver, 1992) and the strategies companies should implement to overcome problems and obtain the maximum benefit from the Logistics process (e.g. Cho & Kang, 2001; J. Cooper, 1993) including the implication for managers (see Sheu, 2007). Furthermore, following the line of research of the above scholars, empirical studies have been addressed to determine the impact of Logistics on International Trade (e.g. Jiang & Wu, 2017; Martí et al., 2014a, 2014b). Moreover, some other scholars have studied market integration encouraged by the implementation of Free Trade Agreements (i.e. Lim & Breuer, 2019). In this line, also has been assessed the efficiency that countries get after implement those agreements (e.g. Doan & Xing, 2018) as well as the competitiveness within logistics procedures (Park, Hong, & Li, 2016). Thus, short and long-term effects were found for countries when it comes to market integration due to Free Trade Agreements, (e.g. Baier et al., 2007; Treffer, 2004) pointing out that companies and governments should be aware that those effects can be either positive or negative for country members (see Kikuchi, Yanagida, & Vo, 2018). Although International Trade has been well documented by scholars over the years, yet those studies have focused especially on develop countries leaving aside developing countries (as stated in Ciravegna et al., 2016; Clark, 1991; Hsieh et al., 2010) and even when addressing developing countries such studies cover particularly China and India or other Asian countries (as cited in Conti et al., 2016; Ramamurti, 2012) thus overlooking and assuming the same patterns for Latina American countries (Casanova, 2009). Moreover, Latin America is a particular case, that despite having weak institutions environment, excessive bureaucratic custom procedures, fragile democracy system and poor logistics infrastructure (see Carneiro & Brenes, 2014; Ciravegna et al., 2016; Conti et al., 2016), countries from this region have proven to be dynamic enough to grow fast (Carneiro & Brenes, 2014). This has been largely due to their ability to manage the instable environment (Ciravegna et al., 2016), through the implementation of strong strategies (Malhotra et al., 2016) such as changing to a global mindset and betting on more qualified and skilled human talent (Carneiro & Brenes, 2014). Further, Trade liberalization in Latin America has been a core part of the trade and market reforms and policies during

the last years, especially regarding two aspects, on one side, promoting FTAs and on the other side encouraging the improvement of International Logistics (e.g. Arvis et al., 2010; Borda et al., 2017; Edwards, 1995; Perales & Moron, 2010). As proof of this growth, Carneiro and Brenes (2014) point out that Latin America have showed an average growth of 6,3% per year from 2009 to 2012, exceeding the average world growth of 5,7% for the same timeframe (p. 832). Then, stressing the importance that Latin American countries have for International Trade. Nevertheless, there is still a lack of information regarding International trade of Latin American countries. Therefore, it is important to study countries from this region.

## **2.2. International Logistics (IL)**

Companies need to be able to develop competitive advantages with the aim of excelling on International Trade (Carneiro & Brenes, 2014). In this line of thought, for Mentzer, Myers, et al. (2004, p. 16) Logistics is a field in which companies have the chance to stand out from their competitors by developing competitive advantages. Thus, for Sheu (2007), Logistics is the process of “planning, implementing, and controlling the efficient, effective flow and storage of goods, services and related information from the point of origin to the point of consumption for the purpose of conforming to customers’ requirements at the lowest total cost” (p. 655). In this line, for Mentzer, DeWitt et al. (2001) International Logistics (IL) is a set of entities involved in the movements of products, services, finances and information from their source to the final customer (p. 3). Moreover, the main activities included in IL are transport, warehousing, cargo consolidation, border clearance in a country, distribution and payment systems which also involve some public and private entities (Arvis et al., 2010).

Since companies are focus on International Trade as a way to increase their success and profits while becoming more globalized (Hatzigeorgiou & Lodefalk, 2021; Suranovic, 2010; Zhang, 2008), Logistics has also become a key factor in business relationships (Martí et al., 2014a, 2014b) and in companies’ overall success (Mentzer, Myers, et al., 2004). Thus, placing IL as a backbone for International Trade (Arvis et al., 2010), since International Logistics has a crucial role in the movements of goods and services around the world and in the ability of countries to attract and sustain investment (Hausman et al., 2005). Therefore, due to the growing and acknowledged importance of International Logistics (Arvis et al., 2010) and the variety of functions and processes that it involves, Logistics has been

considered as an independent stream for Business Management since 1960 (Heaver, 1992). Onwards, practitioners and scholars have realized and are aware that International Logistics has a strategic role for companies and IT (Jiang & Wu, 2017; Mentzer, Myers, et al., 2004).

International Logistics is a source of competitive differentiation between companies and countries (Mentzer, Myers, et al., 2004) which benefits all the parties involved in IT and IL activities when they understand and improve those activities (Heaver, 1992; Mentzer, DeWitt et al., 2001). In this line, IL helps companies to add value to products (Hausman et al., 2005) since nowadays delivery on time along with quality are demanded for customers (Mentzer, DeWitt et al., 2001) and companies must fill those necessities, while overcoming challenges throughout the way (Mentzer, Myers, et al., 2004). Therefore, as Mentzer, DeWitt et al. (2001, p. 15) state, IL is focus on improving efficiency (i.e. cost reduction) and effectiveness (i.e. customer service) with the aim to get satisfied customers which turns into profits for companies.

Over the years, International Logistics has benefited from the advances in technology, easy knowledge-transfer and improvement on information networks (Arvis et al., 2010; Hausman et al., 2005; Jiang & Wu, 2017). However, it has not been exempt from obstacles (Martí & Puertas, 2017; Martí et al., 2014a). IL is highly influenced by cultural and institutional environments (Mentzer, Myers, et al., 2004) as well as lead time and transportations cost (Arvis et al., 2010) within the trading countries, placing IL as a complex and sensitive area (Mentzer, Myers, et al., 2004). Therefore, for International Logistics it is necessary to anticipate to those effects (Mentzer, DeWitt et al., 2001) implementing gradually management techniques (Jiang & Wu, 2017), and logistics strategies (Mentzer, Myers, et al., 2004) oriented to look for a more effective mobility of products into and out of the company (Mentzer, DeWitt et al., 2001) with the aim to ensure that the company will have what it needs, in the correct place and time, getting as result lower costs (Martí et al., 2014b) and customer satisfaction (Mentzer, Myers, et al., 2004). Thus, companies can achieve the maximum benefit from IL (Arvis et al., 2010; Jiang & Wu, 2017; Mentzer, DeWitt et al., 2001).

Following the line of the above scholars, Hausman et al. (2005, p. 2) state that IL procedures can differ noticeable across countries, especially regarding time and cost. These differences are the result of the effect that quality of infrastructure, policies and institutions have on

logistics (Martí et al., 2014b). Furthermore, Martí et al. (2014a, p. 213) point out that companies should enhance logistics procedures in order to facilitate movements of products. This is truly important since as Mentzer, DeWitt et al. (2001) state, every company can be part of the logistics process for another company (p. 4). Hence, countries and companies are aware that it is necessary to establish policies aimed at improving logistics (Arvis et al., 2010) consequently increasing competitiveness (Hausman et al., 2005; Martí et al., 2014b) and generating more profits (Hoekman & Nicita, 2011). Moreover, for Jiang and Wu (2017) Logistics is considered as a measure of the level of modernization a country has (p. 1). Thus, in other words International Logistics matters (Arvis et al., 2010; Hausman et al., 2005; Hoekman & Nicita, 2011). Supporting what the above scholars state, empirical studies have found statistically significant results on the effect that IL has on IT (Hausman et al., 2005; Martí et al., 2014a). Limão and Venables (2001) find that the improvement in logistics infrastructure is important for exports and consequently economic growth. Following this line, Hoekman and Nicita (2011) highlight the importance that policies have on IL since through the improvement in logistics, countries gain in terms of profits especially regarding exports. Furthermore, Behar et al. (2013) conclude that logistics improvement can reduce distance in 14% and increase exports in 7,67%. In the same line, but now taking into consideration both, importer and exporter, Martí et al. (2014a) find positive and significant coefficients in the relationship between IT and IL in developing countries. However, on the other hand, Jiang and Wu (2017) using freight traffic volume and cargo handling capacity as proxy for IL, do not find significant effect of international logistics on International Trade for the case of Shandong province. Therefore, I consider it is necessary to verify the effect of International Logistics on International Trade.

International Logistics as Jiang and Wu (2017) states, is highly settled in developed countries (p. 2) however in the case of developing countries, they still are facing inefficient logistics procedures resulting in constraints for International Trade (Hausman et al., 2005). Thus, originating a remarkable logistics gap between developed and developing countries (Arvis et al., 2010, p. 1). Bearing in mind this gap, many developing countries started to pursue the improvement of logistics, by investing on the procedures involved in IL while at the same time trying to reduce unnecessary costs (Arvis et al., 2010; Hoekman & Nicita, 2011). Furthermore, developing countries have made a great effort for establishing logistics reforms promoting especially exports, in particular Latin America has progress significantly on this

field (Martí et al., 2014a). All of these measures have been taken in order to recover from the crisis on 2009 in the region (Arvis et al., 2010) through the improvement of competitiveness and consequently International trade (Martí & Puertas, 2017). Some empirical studies have proved the effect that IL has on IT for developing countries. Martí et al. (2014b) conclude that as a whole, International Logistics has gained importance over the years, they found in their study that the statistical coefficient for IL increased from 2005 to 2010 for developing countries. In the same line but dividing countries in two groups (i.e. high-income and middle-and-low-income), Behar et al. (2013) state that International Logistics increases developing countries exports in around 8%. Furthermore, Martí et al., (2014a) classify developing countries in 5 groups (i.e. Latin America, Africa, Middle East, Far East and Post-soviet states) showing in the results that IL is significant in 2005 and 2008 with a coefficient in both years of 0,389 for all the countries, thus confirming the importance of International Logistics. Nonetheless, as Martí and Puertas (2017, p. 22) state, it is not possible to define a standard pattern for all developing countries since the environments in which they interact are different in terms of culture, economy, politic and institutions. Thus, following these authors suggestion and the line of Jiang and Wu (2017) I consider it is necessary to verify the effect that International Logistics has on International Trade but taking into consideration just one country from Latin America.

### **2.3.Free Trade Agreements (FTAs)**

Companies and countries around the world are increasingly becoming part of International Trade and Logistics networks (Mentzer, DeWitt et al., 2001; Surugiu & Surugiu, 2015) largely due to globalization, technological advances and with the aim of achieving trade liberalization (Hausman et al., 2005). Nowadays companies are more focus on International Trade, consequently countries are implementing trade-liberalization policies (Lim & Breuer, 2019). For the purpose of this study, trade-liberalization policies are addressed as Free Trade Agreements (FTAs). Thus, W. Cooper (2014) defines FTAs as “arrangements among two or more countries under which they agree to eliminate tariffs and nontariff barriers on trade in goods among themselves. However, each country maintains its own policies, including tariffs, on trade outside the agreement” (p. 2). Additionally, FTAs create an environment and framework more suitable for trade and investors due to the incentives involved as well as facilitating production-sharing and technology transfer (Hornbeck, 2010).

Since these agreements address decision-making processes regarding policies involving several countries, the General Agreement on Tariffs and Trade (GATT) and the World Trade Organization (WTO) were established on 1947 and 1994 respectively, with the aim to help administer FTAs while creating a discussion and mediating space for members (IMF, 2001; Lim & Breuer, 2019; Suranovic, 2010). At the beginning FTAs were exclusively regional, however over the last decades, countries have also negotiated FTAs with adjacent countries and major trading partners, thus involving countries or even groups of countries from all over the world (Saucier & Rana, 2017; Suranovic, 2010). That is why there are over 300 FTAs in force registered in the WTO (Dai et al., 2014; IMF, 2001; Suranovic, 2010). Furthermore, Baier et al. (2007, p. 1347) point out that Latin American countries has been active part of the extensive number of FTAs.

FTAs are expected to reduce in large extend tariffs barriers on International Trade (Hoekman & Nicita, 2011) especially in agriculture and manufacture (Suranovic, 2010), and at the same time reducing cost related to International Logistics (Lim & Breuer, 2019; Park et al., 2016). Furthermore, Hoekman and Nicita (2011, p. 2077) point out that low income countries could increase their exports around 10% if they reduce tariff barriers. In the same line, The IMF (2001) highlights that if tariff barriers on trade were eliminated totally, the estimated gains could range from USD 250 billion to USD 680 billion per year. Historically developing countries, especially those from South Asia and North Africa, tended to be more restrictive regarding International Trade (Hoekman & Nicita, 2011). Indeed, their tariff barriers are around three times the barriers in developed countries (IMF, 2001). Nevertheless, Lim and Breuer (2019, p. 241) state that over the last decades, developing countries have boosted the removal of International Trade barriers by signing FTAs. More in detail Hoekman and Nicita (2011, p. 2071) remark the effort of East Asian and Latin American countries, because they have reduced tariffs the most.

Smith's theory supports and can be considered as the early foundation for Free Trade Agreements (Suranovic, 2010) because as cited in Zhang (2008, p. 3), Smith points out that countries could gain for free trade, by allowing better division of labour (Bobulescu, 2002) and efficient allocation of resources (Myint, 1977). Hence, in some extent FTAs add competitive advantages to companies and countries (Park et al., 2016). Moreover, FTAs promote bilateral trade among country members (Dai et al., 2014; Schumacher, 2016), and

in the case of countries that are involved in reciprocal FTAs they tend to have around 20% more trade (Hoekman & Nicita, 2011). For these reasons, FTAs have become policy instruments focused on reduce of tariff, but including also regulations for trade such as safeguard provisions, standards, custom administration among others (Saucier & Rana, 2017). Furthermore, FTAs allow countries to attract foreign direct investment (Park et al., 2016) and enable the development of international Logistics networks (Osgood, 2018). In addition of reductions of tariffs and costs, FTAs enlarge economies of scope and scale thus expecting to reduce the gap between cross border differences on International Trade (Lim & Breuer, 2019). Moreover, Hoekman and Nicita (2011, p. 2070) state that International Trade has been considerably liberalized in recent years due to the implementation of FTAs around the world. In this line of thought, for Park et al. (2016) FTAs have a huge influence on the flow of commodities and component parts, location decision of companies and implementation of strategies (p. 4). Hence, with the current increase of FTAs, almost all International Trade flows are affected by some type of tariff preferences (Hoekman & Nicita, 2011).

Empirical studies have addressed FTAs trying to determine the different effects they have on International Trade. Thus, Saucier and Rana (2017) found evidence that FTAs boost international trade by favouring labour mobility and dealing with environmental issues. In the same line, Baier et al. (2007) use econometric methods and suggest that country members of FTAs have increased significantly international trade between 1960 and 2000. Following this line, Kikuchi et al. (2018) conclude that Vietnam has improved its economy by increasing Gross Domestic Product (GDP) around 13,2% after the implementation of FTAs. Additionally, Lim and Breuer (2019) found that after FTAs, South Korea has decreased trade costs around 50% with its FTAs country partners. Moreover, Osgood (2018, p. 20) state that FTAs have a positive and significant effect on logistics which turns into more possibilities for finding suppliers around the world. Nevertheless, Saucier and Rana (2017, p. 41) point out that FTAs can be very different in terms of scope, coverage and frameworks depending mostly on the interests of the countries, making the results non-generalizable for every country. Thus, Lim and Breuer (2019) tried to overcome this issue addressing just one country in order to better understand the effect of FTAs on International Trade in this specific country, however they studied an Asian country, South Korea. Moreover, Hoekman and Nicita (2011) highlight America Latina as the region with the most effective agreement in

terms of preferences, since countries in this region could have a relative preferential margin of about 3% (p. 2073). Furthermore, Park et al. (2016) suggest that it would be interesting to analyse the effect of FTAs and Logistics on International trade since the formers support the development of competitive advantages on companies and countries. Therefore, I consider it is important to include FTAs in this study to determine its effect on International Trade and study one country from Latin America.

## **2.4. Distance**

International Distance hereinafter referred as Distance, is defined as the differences between countries that may take out attractiveness from markets when trading internationally (Conti et al., 2016; Ghemawat, 2001; Miller et al., 2016). Originally, Distance was addressed within International Trade as a part of Gravity Model (Conti et al., 2016; Ghemawat, 2007) becoming a core part for understanding IT (Miller et al., 2016), especially when it comes to location and entry mode decision (as stated in Conti et al., 2016; Ghemawat, 2007; Goerzen & Beamish, 2003). In this line Goerzen and Beamish (2003, p. 1291) cite, countries see International Trade as a step-by-step process and usually in a first stage, they prefer to trade with similar and closer partners.

Once companies and countries become part of International Trade they must face and deal with the national differences caused by the distance between countries (Conti et al., 2016). All these differences make more complex the environment surrounding International Trade (Conti et al., 2016; Goerzen & Beamish, 2003). Thus, those differences are reflected as costs (Miller et al., 2016), being the most representative, costs related with communication, knowledge transfer, transportation, processes involving customers, suppliers, governments and employees, among others (see Conti et al., 2016; Goerzen & Beamish, 2003; Miller et al., 2016). In this line, Goerzen and Beamish (2003) point out that the more different the countries are, the higher the cost will be (p. 1291). Moreover, Ghemawat, (2007, p. 12) state that international trade flows are more sensitive to the effect of distance than foreign direct investment. Furthermore, aiming to mitigate the effect of distance, efficient International Logistics improves companies' competitiveness by helping them to add value to their products developing better relationship with customers and suppliers (Zeng & Rossetti, 2003). Additionally, FTAs help reducing the effect of distance by decreasing trade barriers, in a way making differences weaker (Ghemawat, 2007; W. Cooper, 2014). On the other

hand, when managed properly, distance can also bring some benefits for IT, thus Miller et al. (2016, p. 912) point out, companies and consequently countries have the chance to gain from resources available only in specific places helping also logistics process. Following this line of thought, Goerzen and Beamish (2003) state that distance pushes companies to use their specific advantages in combination with country-specific advantages to obtain competitive advantages to stand out on International Trade (p. 1293).

International Trade gives to companies the opportunity to grow. However, sometimes they become dazzled by the potential benefits of being present in countries around the world, underestimating the effect of the differences between countries (Ghemawat, 2001). Another common misjudge for companies is to assume that geographically close countries have the same patterns when it comes to international trade, overlooking the effect of distance (Miller et al., 2016). Moreover, it is generally accepted that technology advances have helped to improve International Trade (Zeng & Rossetti, 2003). Nonetheless, an unaccepted assumption is to believe that nowadays the world is homogenous dismissing the effect of distance, indeed having this way of thinking can cause problems and loses for companies when trading internationally (Ghemawat, 2001). Furthermore, following the line of previous scholars (i.e. Conti et al., 2016; Ghemawat, 2001; Goerzen & Beamish, 2003; Miller et al., 2016), when I talk about distance I do not only refer to geographic distance but Cultural and Institutional as well. I address these dimensions because as Ghemawat, (2001, p. 138) state, they can affect IT in different ways, basically because they have different bases, resulting in diverse challenges and opportunities (Ghemawat, 2007). For instance, geographic distance can influence the speed of international trade, cultural distance can be affected by technology advances, and entry mode choice affected by institutional distance (Conti et al., 2016).

Although Distance has been addressed in the literature, most of the studies have focused on developed countries, basing their frameworks on assumptions for those countries (Ghemawat, 2001, 2007; Zeng & Rossetti, 2003). Nevertheless, companies from developing countries have a different background, and they experience different challenges when it comes to International Trade (Miller et al., 2016). Moreover, developing countries, especially those from Latin America are characterized by being highly influenced by government, religion, corruption, political instability, among others, and each country deal with this reality the best way possible (Conti et al., 2016). Hence the assumptions and

patterns from developed countries are not really accurate for Latin American countries. Therefore, I consider it is necessary to verify the effect of Distance on International Trade in a Latin American country.

Since the aim of this study is to determine the different effects that distance has on International Trade, below I cover related literature regarding Geographic, Cultural and Institutional Distance in an individual way, in studies addressing also International Logistics and FTAs.

#### **2.4.1. Geographical Distance (GD)**

In the most extended perspective, Geographical Distance is the physical separation between countries, which is the most evident dimension regarding distance (Lankhuizen, De Groot, & Linders, 2011; L'Hostis, 2020). However, as Ghemawat, (2007, p. 12) states, geographical distance is more than physical distance, then other geographic attributes should be considered such as: the presence or absence of a common land border and differences in time zones. Moreover, Geographical distance reduces the personal contact between buyers and sellers then having an impact on Logistics and consequently on International Trade (Håkanson & Dow, 2012). Additionally, geographical distance enforces trade barriers between countries (Lankhuizen et al., 2011; Ren & Yang, 2020). Such barriers are represented mostly in terms of higher transportation and communication costs (Ghemawat, 2001, 2007).

Companies are more likely to have higher international trade flows with other companies abroad that are geographically closer (Goerzen & Beamish, 2003). Furthermore, when companies become part of international trade by exporting, their target markets usually are closer countries as well (Hsieh et al., 2010). In the same line, Ghemawat, (2001, p. 144) points out that in general, the farther you are from a country, the harder it will be to develop business in that country. This is based on the premise that short distances facilitate communication and knowledge exchange through face-to-face interaction and personal relations (Bignami, Mattsson, & Hoekman, 2020). Hence, when companies find geographical distance as a huge barrier on international trade they tend to choose direct investment instead of exports (Ghemawat, 2001). Nonetheless, exports are still the main stream when it comes to international trade, especially for developing countries (Czinkota

& Ronkainen, 2009). Thus, in order to achieve trade liberalization and dismiss the effect of Geographical Distance, countries tend to form FTAs (Osgood, 2018; W. Cooper, 2014). Furthermore, GD loses effect on trade between countries when the countries manage to improve Logistics infrastructure within an environment under the effects of FTAs, because when logistics infrastructure is effective, logistics costs are low, then increasing international trade and dismissing geographical distance (Banomyong, Wasusri, & Kritchanhai, 2006).

Companies from developing countries have improved their capabilities in order to be more competitive in comparison to companies from developed countries (Czinkota & Ronkainen, 2009). Nowadays, companies especially from Latin America are involved in huge international trade flows, including but not limiting industries such as mining, food and cement (Malhotra et al., 2016). Hence, Latin American countries have caught the attention of scholars, however regarding geographical distance basically it has been addressed the effect on GD on entry mode choice. In this line, Conti et al. (2016) state that the results regarding the effect of geographical distance are inconclusive, since as they point out, scholars have found that most of the companies from Latin America prefer to go into closer markets but some other companies also chose to go first into farther markets (p. 1981). Therefore, I consider it is important to take into consideration Geographical Distance.

#### **2.4.2. Cultural Distance (CD)**

Countries have their own background and history, this frame is called culture, which influences people, companies and institutions' behaviours (Ciravegna et al., 2016; Ghemawat, 2001; Tower et al., 2019). Hofstede (1984, p. 21) defines culture as the collective programming of the mind shared by a group of people. In this line of thought, Czinkota and Ronkainen (2013, p. 61) state that Culture is an integrated system of learned behavioural patterns that distinguish the characteristics of members of any give society. Hence, when it comes to International Trade, Cultural Distance represents the extent of the cultural differences between trading countries (Ghemawat, 2001; Shenkar 2001). Moreover, cultural distance influences aspects such as values, norms, perspectives, policies, rules among others that are involved in the environment in which companies develop their economic activities (Ghemawat, 2001; Hsieh et al., 2010).

As mentioned before, scholars and practitioners are aware that International Trade needs to overcome some barriers (Conti et al., 2016; Goerzen & Beamish, 2003), Cultural Distance is one of them. Thus, companies face the difficulty to achieve new markets due to the effect that culture has on the potential customers (Lankhuizen et al., 2011; López-Duarte & Vidal-Suárez, 2010) since culture has a huge impact on customer preferences, for instance colour and tastes are highly related with culture (Ghemawat, 2007), then industries such as food or marketing depend greatly on culture impact (Ghemawat, 2001). Furthermore, as any service, International Logistics is influenced by organizational policies and behaviours which are also affected by Cultural Distance, that is why managing International Logistics in new countries can be very challenging (Cho & Kang, 2001; Mentzer, Myers, et al., 2004; Tower et al., 2019). Hence it is important for companies to consider culture when they are defining strategies to positioning in new markets (Surugiu & Surugiu, 2015).

In the International Business Literature, scholars have addressed Cultural Distance effect on different countries around the world, nonetheless they have focus mainly in entry mode decision and level of control in acquisitions abroad. Thus, Hsieh et al. (2010) point out that in banking sector in Latin America and Asian countries CD makes that companies tend to choose a low-control entry mode in order to reduce possible setbacks in the internationalization process. In the same line, regarding experience when entering new markets, Dow and Larimo (2009) demonstrate that CD affects choosing entry mode in countries sharing same cultural background. Moreover, López-Duarte and Vidal-Suárez (2013) state that Spanish companies prefer to have a share or low ownership when CD increase and high political risk is involved. In the same line, Hennart and Zeng (2002) conclude that regarding American and Japanese companies, when they decide to merge in a new company, is more likely to dissolve faster the merge due to the highly cultural differences the formers have. On the other hand, Malhotra et al. (2016) found evidence that Latin American countries are more likely to choose total or more control in an environment surrounded by high levels of cultural distance when entering new markets. Furthermore, as previously mentioned, Distance has the origin on Gravity models (Conti et al., 2016; Ghemawat, 2007). Nevertheless, most of the scholars that apply gravity models to conduct their studies, include cultural aspect by using dummy variables (e.g Baier et al., 2007; Dow & Larimo, 2009; Martí & Puertas, 2017; Martí et al., 2014a, 2014b; Saucier & Rana, 2017) and they do not really take into consideration the results from these variables. Moreover, in

order to extend the results obtained for the mentioned scholars, I will apply cultural dimensions from the Hofstede approach (1980), which despite its year of publication is still of great importance and one of the main approaches used when conducting studies of cultural distance. The importance, relevance and managerial impacts of Hofstede dimensions were addressed and supported in the study carried out by Kirkman, Lowe, and Gibson (2006) which is one of the most know studies regarding Hofstede approach. However, since the aim of this study is not to prove the relevance of Hofstede dimensions, I do not get deeply on that matter.

**Table 1.** Cultural Dimensions, Hofstede (1980)

1. Individualism (Ind)	Individualism	Framework in which people are supposed to take care of themselves and of their immediate families only.
	Collectivism	Characterized by a tight social framework in which people distinguish between ingroups and outgroups, they expect their ingroup to look after them, and in exchange for that they feel they owe absolute loyalty to it.
2. Power Distance (PD)		The extent to which a society accepts the fact that power in institutions and organizations is distributed unequally.
3. Uncertainty Avoidance (UA)		The extent to which a society feels threatened by uncertain and ambiguous situations and tries to avoid these situations by providing greater career stability, establishing more formal rules, not tolerating deviant ideas and behaviours, and believing in absolute truths and the attainment of expertise.
4. Masculinity (Mas)	Masculinity	The extent to which the dominant values in society are “masculine” that is, assertiveness, the acquisition of money and things, and not caring for others, the quality of life, or people.
	Femininity	The opposite of Masculinity.

**Source:** Kirkman et al. (2006, p. 286)

#### 2.4.3. Institutional Distance (ID)

Institutional Distance refers to the extent of similarity or dissimilarity between the regulatory, cognitive, and normative institutions of two countries (Kostova & Zaheer, 1999). These institutions represent the set of rules, policies and regulations that companies must follow when they are trading (Cho & Kang, 2001) and it is the government that usually

mandated and enforced that set of regulations (Ghemawat, 2007). Moreover, regarding International Trade and International Logistics the main institution involved is Custom Authority since it is responsible for regulate most of international trade procedures in a country (Heaver, 1992). In the same line, Martí et al. (2014b, p. 2983) point out that International Trade flows are greatly impacted by these institutional differences between countries.

International Trade and Logistics have benefited by globalization and technological advances (Zeng & Rossetti, 2003; Zhang, 2008). However, companies still need to deal with the conflicts caused by Institutional Distance in home and host countries (Brinkerhoff & Goldsmith, 2005; Ren & Yang, 2020), because these differences produce higher costs (Heaver, 1992) and increase time on procedures, thereby reducing competitiveness for companies and countries (Martí et al., 2014b). Thus, when it comes to international trade and logistics, ID is mostly represented as tariff barriers and quotas applied on international trade flows and investments (Cho & Kang, 2001; Heaver, 1992; Martí et al., 2014b). Furthermore, although these barriers are usually implemented as protection measures in host countries, especially when importing products (Beuve et al., 2017; Gaido, 2016; Zhang, 2008), in some cases exporting companies' home country can establish these barriers as well (Ghemawat, 2001).

Institutions should provide a safe and a lower risk environment by investing on education and infrastructure, establishing pro-trade regulations and standards, among others, in order to boost International Trade (Clark, 1991; Czinkota & Ronkainen, 2009). On the other hand, inefficient institutions dampen international trade because they can generate unnecessary procedural red tape, delays in customs, delays at ports and border crossings and highly restrictive protocols on movement of cargo (Hausman et al., 2005). Hence it is considered that Institutions are more helpful staying away from direct interact on International Trade and just controlling and monitoring it (Clark, 1991). In this line of thought, Ghemawat, (2001, p. 144) highlights that companies prefer to make business with countries with well-established and efficient Institutions and avoid making business with countries with high rates of corruption or social conflicts. Unfortunately, developing countries, especially those from Latin America are characterized by being highly influenced by government, institutions, corruption and political instability, hence challenging companies to overcome

this reality (Conti et al., 2016). Therefore, assumptions regarding Institutional Distance based on developed countries are not really accurate when it comes to Latin American countries since the environment surrounding these countries are different (Casanova, 2009; Miller et al., 2016).

Scholars have proved that Institutional Distance has effect on International Trade and Logistics, nonetheless their studies have focused mainly on the impact that ID has on entry mode choice or the level of control that companies have on acquisitions abroad, following the trend of Cultural Distance. Thus, it has been proved that when ID between countries is high, European companies prefer low or share control on companies abroad, (e.g. Bussche & Verbeke, 2008; Trąpczyński, Halaszovich, & Piaskowska, 2020). In this line of thought but addressing South Asian countries, De (2011) concludes that in order to get as much advantages as possible from FTAs, Institutions needs to be efficient, lending to improve logistics, then allowing countries to get competitive advantages on International Trade. However, Malhotra et al. (2016) concluded in their study that Latin American countries usually adopt a full control method when entering new markets if the environment surrounding the business has huge levels of institutional distance. Furthermore, regarding gravity models, scholars have arrived to similar conclusions but representing ID as dummy variables (e.g. Cho & Kang, 2001; Doan & Xing, 2018; Egger, 2002; Wilson, Mann, & Otsuki, 2003). However, all these studies have addressed developed countries or developing countries but from Asia, remaining a lack of evidence for Latin American countries. Moreover, in order the extend these results I will use the World Bank six dimensions of Governance Indicators, that attempt to capture the efficiency of Institutions in a country, following the line of previous studies (De Groot, Linders, Rietveld, & Subramanian., 2004; Kaufmann, Kraay, & Mastruzzi, 2009; Malhotra et al., 2016).

**Table 2.** Governance Indicators

Control of Corruption	Captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.
Government Effectiveness	Captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.
Political Stability and Absence of Violence/Terrorism	Measures perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism.
Regulatory Quality	Captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.
Rule of Law	Captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.
Voice and Accountability	Captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.

**Source:** Kaufmann, Kraay, and Mastruzzi (2010)

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### **3. Conceptual Development**

In this chapter I will develop the conceptual model, addressing the relationship between International Trade, and the other variables for the study, it means, International Logistics, FTAs and Distance, in order to determine which is the effect they have on International Trade and propose the hypotheses that are the groundwork of this study.

In the International Business Literature, one of the most employed models to understand and estimate International Trade flows is Gravity Model, which is founded on Newtonian theory, as stated in Anderson (1979), Cafiero (2005) and Ghemawat (2007). Thus, in its simplest form, gravity model suggests that IT depends on the attraction between two parties, buyers and sellers, thus, it is directly proportional to the size of their economies and inversely proportional to the distance between them (e.g. Jian, 2011; Rose, 1999; Salvatici, 2013). Hence, considering just this base, gravity model can explain at least a half of the international trade flows between two countries (Ghemawat, 2001, 2007) then becoming a very useful model for scholars and practitioners as well. Furthermore, as cited by some scholars (e.g. Baier & Bergstrand 2009; Kimura & Lee, 2006; Rose, 1999), this model has been used for almost sixty years since the first implementation on 1962 by Tinbergen and on 1963 by Pöyhönen. It has been used to address various topics such as trade agreements, national borders, currency unions, logistics infrastructure and other representations of costs and distance (e.g. Anderson, 1979; Baier & Bergstrand, 2009; Rose, 2000). Moreover, the results obtained through gravity model are well recognized among scholars and practitioners since as cited in various studies (e.g. Anderson, 1979; Feenstra et al, 2001; Glick & Rose, 2002; Kepaptsoglou, Karlaftis, & Tsamboulas, 2010; Kimura & Lee, 2006), theoretical foundation for this model has been found. Additionally, according to Jian (2011, p. 417) and De Groot et al., (2004, p. 104) the model has been supported within the international trade theories including Ricardian theory. Therefore, following the line of the above scholar I conduct this study through a gravity perspective.

#### **3.1. International Logistics.**

International Trade (IT) and International Logistics (IL) have a complementary relationship since IL is emerged because the success of IT and at the same time IL pushes the latter into

a better future (Jiang & Wu, 2017). Furthermore, while international trade increases, international logistics becomes more important for companies and countries (Heaver, 1992). However, IT is still sensitive and influenced but the environment surrounding international logistics (Mentzer, Myers, et al., 2004). In the same line, Arvis et al. (2010, p. III) point out that an efficient international logistics is the main core of international trade. Hence IL has a significant effect on IT competitiveness (Hausman et al., 2005) because IL facilitates export diversification and attract foreign direct investments (Arvis et al., 2010).

Bearing in mind the above scholars, Jiang and Wu (2017) analyse the situation in Shandong Province in China, concluding that in long-term, the relationship between international trade and international logistics is inseparable since by increasing IT will increase also GDP in a country, which in turn improves IL as a whole, letting international trade continues its growing path. Moreover, Banomyong et al. (2006) through their analysis about the situation for Asean Countries (Association of Southeast Asian Nations) after implement a FTA with China, conclude that International Logistics has a positive effect on International Trade since in order to respond to changes, International Logistics must be upgraded. Following this line of thought, Lee, Lee, & Yang (2013) studied the maritime trade flows of Korea and conclude that beyond applying FTAs it is necessary to improve international logistics in order to meet requirement for the increased international trade flows.

Over the last decades developing countries have promoted policies in order to improved International Logistics and boost International Trade (see Arvis et al., 2010; Hoekman & Nicita, 2011). Furthermore, Martí and Puertas (2017) conclude that developing countries should continue to rely on improving international logistics not only to increase international trade but also to improve their competitiveness. In the same line, Behar et al. (2013) have found evidence that exporters' logistics increases exports, more precisely they state that improvements in logistics could increase exports in around 7,67%. Moreover, Martí et al. (2014a) prove that the most efficient international logistics for a product is, the most barriers it overcomes. Hausman et al. (2005) arrive to the same conclusion. Additionally, Pagano, Light, Sánchez, Ungo, & Tapiero (2012) conclude that the expansion in the Canal of Panama has effect on logistics services, transportation and infrastructure, in short has an effect on international logistics, leading to increase international trade flows for the country. Supporting this conclusion Barría (2019) cites that at the end of 2019, 450 million tons of

cargo crossed through the canal and the revenues for these flows reached USD 3.365 million which is the highest amount since it started its operations about a century ago, amount reached after the mentioned expansion was made.

The above arguments lead me to propose the following hypothesis:

*H1: International Logistics has a positive effect on International Trade.*

### **3.2.Free Trade Agreements**

Free Trade Agreements (FTAs) set a rule-based framework which provides more welfare, safety and incentives for International Trade (Hornbeck, 2010). Thus, FTAs enhance the environment for international trade providing advantages to member countries (W. Cooper, 2014) such as increase production-sharing technology transfer between countries (Hornbeck, 2010) and remove trade barriers (IMF, 2001) which have been proven to be setbacks for international trade (Park et al., 2016). Hence, by decreasing trade barriers, FTAs encourage the specialization of countries in producing cheaper goods which turns into benefits for all country members (Suranovic, 2010). However, bilateral FTAs reduce these barriers faster than regional FTAs, in a way because in a bilateral FTA it is easier to manage and align the involved parties' interests (Lim & Breuer, 2019). Thus countries tend to negotiate FTAs with strategic trade partners (Suranovic, 2010).

In the line of thought of the above scholars, Beck (2020), conclude that international trade increased significantly for European Union country members when they became part of this union, due to the dismissed trade barriers. Lim and Breuer (2019) arrive to a similar conclusion and state that FTAs decrease trade barriers favouring economic integration and increasing international trade flows considerably for South Korea. Following this line of thought, Kikuchi et al. (2018) show in their empirical study that as countries sign more FTAs, barriers are weakened thus increasing international trade. Moreover, in the study carried out by Park et al. (2016) the authors highlight that International Trade is greatly benefited by the combination of FTAs with well-managed maritime international logistics. Furthermore, Doan and Xing (2018) conclude that FTAs extend international trade potential for countries, especially for exports, however, countries do not usually take advantage of the generated potential, as the case of Vietnam. Following the line of thought of the above scholars, Castro (2010) conclude that in order to enhance International Trade and achieve a better economic

integration, Panama should improve the commercial free zone and the common external tariffs, in short the country should work more in detail on its FTAs. Additionally, the Minister of Trade and Industry of Panama, in his interview documented in Ferrer (2006) states that FTAs play a key role for International Trade since as mentioned in this interview, on 2003, before the conclusion of the Free Trade Agreement with China-Taiwan, Panama exported USD 6.6 million, one year after the entry into force, exports totalled USD 11 million, and by 2005 the country managed to export USD 20 million. This means that in less than two years Panama has managed to triple its exports to the Republic of China. Therefore, as stated by IMF (2001), FTAs increases international trade and consequently incomes within country members.

The above arguments lead me to propose the following hypothesis:

*H2: Free Trade Agreements have a positive effect on International Trade*

### **3.3. Geographical Distance**

Geographical Distance (GD) is inversely proportional to trade flows (Jian, 2011; Salvatici, 2013), since as Ghemawat, (2001, p. 145) states, GD has a dampening effect on international trade, basically because GD can affect how countries make business with their partners (Håkanson & Dow, 2012), affecting international trade flows for services and products (Ghemawat, 2001) as GD reduces personal contact and can raises issues when transporting goods and transferring knowledge (Bignami et al., 2020; Ghemawat, 2007; Hsieh et al., 2010) then it can turn into higher logistics costs, influencing particularly transportation costs (Ghemawat, 2001; Mentzer, Myers, et al., 2004) having a huge impact on international logistics (Arvis et al., 2010) and consequently resulting in lower International Trade (Lankhuizen et al., 2011; Ren and Yang, 2020). Then, is expected to have a negative effect on International Trade flows.

In the line of thought of the above scholar, Kristjánisdóttir, Guðlaugsson, Guðmundsdóttir, & Aðalsteinsson (2020) conclude that Geographical Distance is the main constraint for International Trade flows in United Kingdom. Furthermore, despite countries have formed some currency unions with the aim to boost international trade flows, still geographic distance has effect on international trade flows, since the more distant a pair of countries is, the less they trade (Glick & Rose, 2002). Moreover, Martí et al. (2014b) prove that for

emerging countries, Geographical distance affects negatively international trade flows, since GD makes more difficult and expensive the logistics process. Following this path, Dimitratos, Amorós, Etchebarne, and Felzensztein (2014) find that for Chilean small exporting companies, GD is crucial when trading internationally because they prefer to avoid risky decision and are oriented to cultivate networks with partner companies. Additionally, Cafiero (2005) concludes that Argentina has higher international trade flows with closer countries (i.e. Latin America Region) than with other regions due to the proximity and easier logistics processes. Conclusion that according to Goerzen and Beamish (2003, p. 1291) is founded on international trade theory, since companies often prefer to trade first with closer countries.

The above arguments lead me to propose the following hypothesis:

*H3: Geographical Distance has a negative effect on International Trade*

### **3.4. Cultural Distance**

Culture involves attributes related to people's behaviour (Ciravegna et al., 2016) that influence the interaction between them (Ghemawat, 2007). Hence, Cultural Distance (CD) affects the way companies and countries conduct business relationships with their partners (Tower et al., 2019) triggering a huge impact on international trade (Ghemawat, 2001). Moreover, despite culture within countries has been highly influenced by globalization (Surugiu & Surugiu, 2015), people intuitively still protect it and at its base it remains the same (Czinkota & Ronkainen, 2009). Thus, CD can place setbacks for international trade (Goerzen & Beamish, 2003) consequently resulting in lower international trade between countries (Ghemawat, 2007). Therefore, it is important for companies and countries to consider culture distance when establishing and developing strategies for achieving success on international trade (Surugiu & Surugiu, 2015).

Cultural distance (CD) includes attributes easily identified such as language (Surugiu & Surugiu, 2015) and other subtler such as principles and preferences (Ghemawat, 2001). Thus, bearing in mind the above scholars, Dow and Larimo (2009) found evidence that Cultural Distance (i.e. language and religion) has a great impact on the way that Nordic European companies trade internationally. Moreover, countries are likely to trade ten times more with a country that is a former colony, or trade three time more with a country that

share the same language than with countries without these attributes in common (Ghemawat, 2001). Following this line of thought, Saucier and Rana (2017) arrive to the conclusion that FTAs increase international trade around the world, yet this effect is higher when country member share culture attributes such as language and colony-colonizer and it is opposite otherwise. Furthermore, Baier et al. (2007) conclude that on bilateral trade, if a pair-country speaks the same language and shares borders, international trade flows increase between them. Additionally, International Trade is positively affected when a pair country has efficient international logistics and at the same time share cultural attributes like official and second languages and common colonizer (Martí et al., 2014a). All of the mentioned results are in concordance with international trade theory, since as Clark (1991, p. 118) states, countries may benefit the most from international trade when they are culturally similar and in geographic proximity.

The above arguments lead me to propose the following hypothesis:

*H4: Cultural Distance has a negative effect on International Trade*

### **3.5. Institutional Distance**

International trade is surrounded by a set of regulations and laws imposed by Institutions within countries (Brinkerhoff & Goldsmith, 2005; Kostova & Zaheer, 1999) designed to control procedures when companies are trading internationally (Cho & Kang, 2001; Heaver, 1992). Moreover, institutions should work in a way to keep international trade procedures as flawless as possible (Czinkota & Ronkainen, 2009). Nevertheless, institutions can vary in some degree between countries (Saucier & Rana, 2017). Thus, while quality of institutions improve performance regarding international trade (De Groot et al., 2004), countries with inefficient and weak institutions are likely to face more issues (Ghemawat, 2001; IMF, 2001). Additionally, it is important to highlight that even low income countries with efficient institutions can boost international trade (Arvis et al., 2010). Hence companies interested in international trade should develop a program aimed to deal with Institutional distance (Surugiu & Surugiu, 2015) since as Hoekman and Nicita (2011, p. 2077) point out, paying attention on policies imposed by institutions could increase gains on international trade.

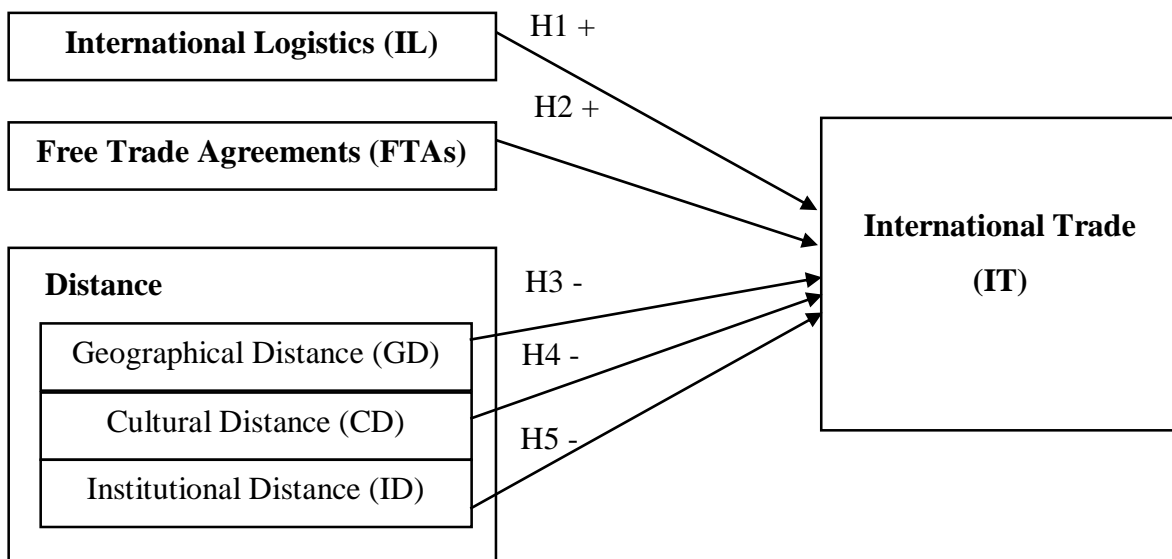
The administrative and political integration of countries which aim to diminish institutional distance can increase international trade between countries for around 300% (Ghemawat,

2001). In this line, Egger (2002) concludes that the most opened regulations and laws a European country has, the most international trade the country will have. Wilson et al., (2003) found a similar result for Asian Pacific countries, concluding that the most efficient Institutions are in a country (represented as port efficiency, customs and regulatory environments) the higher the international trade. On the other hand, Cho and Kang (2001) found that institutional distance affects negatively International trade, because it turns into higher logistics costs when companies are importing. Moreover, Doan and Xing (2018) arrive to a similar conclusion, they represent ID with Rules of Origin, tariff and Non-Tariff barriers between pair-countries with the aim to determine trade liberalisation in Vietnam, concluding that despite FTAs can increase International trade, if Institutions are not efficient, International trade and International logistics procedures can be expensive then holding back bilateral international trade.

The above arguments lead me to propose the following hypothesis:

*H5: Institutional Distance has a negative effect on International Trade*

**Figure 1. Conceptual Model**



**Source:** Author

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## 4. Methodology

In this chapter I will describe the sample and timeframe for the study specifying the selection criteria, as well as the measurement and source for each variable. Additionally, I will explain the model I chose and the statistical techniques run in order to test the hypotheses previously developed in Chapter 3.

### 4.1. Sample

The sample for this study consists in bilateral trade between Panama and 85 trade partners around the world (see the list in Table 9) in specific years from 2007 to 2018 (i.e. 2007, 2010, 2012, 2014, 2016, 2018). I chose to study Panama because as explained previously (in Introduction) the country meets the necessary characteristics to serve as a representative sample for the study of the effects of International Logistics, Free Trade Agreements and Distance (i.e. Geographical, Cultural and Institutional) on International Trade.

The data for the study was obtained by following the criteria described below:

First, taking into consideration that one objective of this study is to determine the effect of International Logistics on International Trade, I took as initial sample the countries included in the Logistics Performance Index (LPI), as previous studies (e.g. Martí & Puertas 2017; Rezaei, van Roekel, & Tavasszy, 2018), obtaining 166 countries, excluded Panama as it is the country under study. Moreover, LPI established the timeframe for this study, since the results for this index are available only for 2007, 2010, 2012, 2014, 2016 and 2018. Therefore, I decided to include these six years in order to avoid bias data due to specific events in a determined year. Second, I took out the countries that were not included in one or more years for the LPI results. Third, I included Bilateral Trade between Panama and all the remaining countries. Finally, I included all the lasting Independent variables, it means FTAs, GD, CD, ID and therefore I had to excluded the countries for which the data were not available, being CD the variable with the most missing values. The procedure led to 510 observations for all six years, with data for all the variables.

## 4.2. Variables

### 4.2.1. Dependent Variable

The Dependent Variable for the study is *International Trade*, this variable is measured as Bilateral Trade, it means, the sum of annual exports and imports between Panama and each country (see Beck, 2020) and in order to avoid heteroscedasticity I use the natural logarithm of that sum, following the line of Baier et al., (2007). I take data from the International Monetary Fund, Direction of Trade Statistics database (IMF DoTS, <https://data.imf.org>) following the line of thought of Saucier & Rana (2017), since this date base contains bilateral trade flows for all International Monetary Fund (IMF) member countries since 1960.

### 4.2.2. Independent Variables

The Independent Variables in the study are: *International Logistics (IL)*, *Free Trade Agreements (FTAs)* and *Distance* (i.e. Geographical, Cultural and Institutional). The description, measurement and source will be explained individually.

#### – *International Logistics*

International Logistics (IL) is represented by using the World Bank Logistics Performance Index (LPI) as a proxy. I decided to use this index since it has organized information in a statistical way and rates the countries, from 1 to 5, according to 7 indicators which attempt to capture the main components regarding IL procedures. Thus, gathering the information in aspects such as Custom clearance processes, transport infrastructure, international shipment, logistics quality and competence, ability to track and trace, domestic logistics costs and time, all of these aspects are involved in the definition of Logistics used in this study. For this Index, the higher the score a country has, the more efficient the IL process in the country (Arvis et al., 2010). The Index is available in The World Bank web site (<https://lpi.worldbank.org/>). Some scholars have previously used this proxy within International Business literature to evaluate the importance of IL (e.g. Arvis et al., 2010; Behar et al., 2013; Martí & Puertas, 2017; Rezaei et al., 2018). Moreover, I measure this variable as the product of the overall LPI score of Panama and the overall LPI score of each country, following the line of thought of previous scholars (e.g. Glick & Rose, 2002; Rose, 2000; Rose, Lockwood, & Quah, 2000).

– Free Trade Agreements

Free Trade Agreements (FTAs) are measured as a dummy variable, taking value of 1 if a country has a FTA with Panama and 0 otherwise. This way to represent FTAs has been used in Gravity Equation previously within the literature (e.g. Beck, 2020; Glick & Rose, 2002; Kapatoglou et al., 2010). The information regarding FTAs of Panama currently into force comes from the Ministry of Trade and Industry of Panama, information available on the official web site (<https://www.mici.gob.pa/>) and from the Foreign Trade Information System, Organization of American States (SICE OEA the acronym in Spanish), available on official web site (<http://www.sice.oas.org>). For this study I take into consideration FTAs into force from 2007 until 2018 (see more information on Table 8), also no FTAs was ended during this timeframe.

– Distance

This variable has been divided in three dimensions of distance, namely: geographical, cultural and institutional, in order to determine the possible effect each dimension cause on IT, therefore the description of each one is below.

– Geographical Distance

For this study I measure Geographical Distance as the kilometres between main cities in Panama and each country respectively, for this variable I use the natural logarithm in order to avoid possible heteroscedasticity (e.g. Jiang & Wu, 2017; Saucier & Rana, 2017). The source for this variable is CAGE framework database from Ghemawat (2001).

– Cultural Distance

Cultural Distance is measured by employing Hofstede (1980) four dimensions: Power Distance, Individualism, Masculinity and Uncertainty Avoidance, the reason why I chose only these four dimensions is due to data availability. Furthermore, this way to address Cultural Distance has been used in some previous studies (e.g. Farías, 2016; Hsieh et al, 2010; López-Duarte & Vidal-Suárez, 2010; Malhotra et al., 2016). The scores for the dimensions is taken from Hofstede Insights website (<https://www.hofstede-insights.com/>). Moreover, following the line of the mentioned scholars I use the Kogut and Singh's (1988)

index to represent the four dimensions' scores of this framework in one statistical useful value.

$$CD_{ij} = \left\{ \sum_{d=1}^{n=4} \left( \frac{(I_{dj} - I_{di})^2}{V_d} \right) \right\} / n$$

Where,  $CD_{ij}$  is the cultural distance of Panama and each country;  $I_{dj}$  and  $I_{di}$  represent the index of each cultural dimension for country and Panama respectively;  $V_d$  is the variance of the index of each dimension; and  $n$  the number of cultural dimensions. For this index the higher the result, the most cultural difference between two countries.

– Institutional Distance

In order to measure Institutional Distance, I use the World Bank's World Governance Index (WGI), that attempt to capture the efficiency of Institutions in a country, ranking them in a scale of -2,5 to 2.5 in aspects such as: control of corruption, government effectiveness, political stability, regulatory quality, rule of law and voice and accountability, thus the higher the score the country gets, the more efficient institutions the country has (Kaufmann et al., 2009). I decided to use this ranking following the line of thought of Malhotra et al. (2016). The data for these dimensions are available for more than 200 countries on The World Bank website (<https://info.worldbank.org/governance/wgi/>) within the Worldwide Governance Indicators. Furthermore, following the line of thought of the mentioned study, I apply Kogut and Singh's (1988) index to capture these six dimensions' scores in a statistical value.

$$ID_{ij} = \left\{ \sum_{d=1}^{n=6} \left( \frac{(I_{dj} - I_{di})^2}{V_d} \right) \right\} / n$$

Where,  $ID_{ij}$  is the institutional distance of Panama and each country;  $I_{dj}$  and  $I_{di}$  represent the index of each institutional dimension for country and Panama respectively;  $V_d$  is the variance of the index of each dimension; and  $n$  the number of institutional dimensions. For this index the higher the result, the most different two countries are regarding institutions efficiency.

### 4.2.3. Gravity Variables

Taking into consideration the framework chosen for this study it is necessary to include some Gravity Variables that try to capture the main principle of the Gravity model, which is: bilateral trade is directly proportional to economic size in countries and inversely proportional to the distance between them as stated in previous studies (e.g. Cafiero, 2005; Rose, 1999; 2000; Salvatici, 2013). Therefore, I include real Gross Domestic Product (RGDP) and Populations in order to capture Economic Size. Nonetheless since Distance was taken as independent variable in a widely perspective I do not consider it as gravity variable.

- Economic Size

In order to represent Economic Size as variable for this study I use two indicators, real GDP and Population, which are described below:

- Real Gross Domestic Product

This variable is used to capture economic size within the countries. Thus, following the line of previous scholars (e.g. Beck, 2020; Glick & Rose, 2002; Rose, 2000; Rose et al., 2000) this variable is the product of real GDP of Panama and real GDP of each country. Moreover, in order to avoid skewing data and as used in gravity studies (e.g. Baier et al, 2007; Doan & Xing, 2018; Rose 1999) I use the natural logarithm of the product between real GDPs. This data is taken from World Bank, Development Indicators, information available in the official web site (<https://data.worldbank.org>). Furthermore, according to the gravity literature (e.g. Martí & Puertas, 2017; Martí et al., 2014a, 2014b), real GDP should have a positive effect on International Trade since the greater the economy the more bilateral trade flows.

- Population

In order to help measuring Economic Size, I decided to add Population as variable for the study as used for previous scholars such as Egger, (2002), Doan and Xing, (2018) and Martí et al. (2014b). Therefore, following the line of previous scholars (e.g. Beck, 2020; Glick & Rose, 2002; Rose, 2000; Rose et al., 2000) Populations is the natural logarithm of the product of Population in Panama and Population in each country. The data for this variable is taken from World Bank, Development Indicators, available in the official web site

(<https://data.worldbank.org>). Moreover, according to the literature (e.g. Martí & Puertas, 2017; Martí et al., 2014a, 2014b), Population could either have a positive or negative effect on international trade depending on whether the most populated country export less due to domestic consume or exports more due to infrastructure and technology in the country

**Table 3.** Summary of the Variables

Type	Variable	Measurement		Source
Dependent	International Trade	Bilateral Trade = Sum Exports and Imports		IMF Direction of Trade Statistics (DoTS) database from <a href="https://data.imf.org">https://data.imf.org</a>
Independent	International Logistics	Product of the overall LPI score of each pair-country		World Bank Logistics Performance Index from <a href="https://lpi.worldbank.org/">https://lpi.worldbank.org/</a>
Independent	Free Trade Agreements	Dummy variable with value of 1 if a country has a FTA with Panama and 0 otherwise.		Ministry of Trade and Industry of Panama from <a href="https://www.mici.gob.pa/">https://www.mici.gob.pa/</a> and Foreign Trade Information System, Organization of American States from <a href="http://www.sice.oas.org">http://www.sice.oas.org</a>
Independent	Distance	Geographical Distance	kilometres between the main city in Panama and each country	Ghemawat (2001).
		Cultural Distance	Differences in terms of culture and values using Hofstede dimensions (1980) and Kogut and Singh's (1988) index	Hofstede Insights from <a href="https://www.hofstede-insights.com/">https://www.hofstede-insights.com/</a>
		Institutional Distance	Differences in terms of institutions' efficiency using Governance Indicators and Kogut and Singh's (1988) index	World Bank's World Governance Index indicators (WGI) from <a href="https://info.worldbank.org/governance/wgi/">https://info.worldbank.org/governance/wgi/</a>

Gravity	Economic Size	Real Gross Domestic Product	Product of real GDP of Panama and real GDP of each country	World Development Indicators from <a href="https://data.worldbank.org">https://data.worldbank.org</a>
		Population	Product of population in Panama and population in each country	World Development Indicators from <a href="https://data.worldbank.org">https://data.worldbank.org</a>

**Source:** Author

### 4.3. Procedure

For this study I used an extended gravity equation following the line of previous scholars (i.e. Beck, 2020; Glick & Rose, 2002; Rose, 1999, 2000; Rose et al., 2000). Then, in order to solve the gravity equation, I applied Ordinary Least Squares (OLS) linear regression to determine the effects of International Logistics, Free Trade Agreements and Distance (i.e. Geographical, Cultural and Institutional) on International trade at the same time. I chose OLS since the data I used is cross-sectional and according to the literature (e.g. Behar et al., 2013; De Groot et al., 2004; Feenstra et al., 2001; Frankel, Stein, & Wei, 1997; Martí & Puertas, 2017; Rose, 1999) OLS is the technique fitting the best to this kind of data, since it determines the effect of a variable keeping constant the other variables (Frankel et al., 1997). For this study the analysis is at country level since I was studying international trade between Panama and each country. Additionally, I used IBM SPSS Statistics version 27 in order to run the OLS linear regression since this software includes features which allows me to test the model. Moreover, after apply the technique the signs of the resulted coefficients will automatically show the effect each independent variable has on the dependent variable. Furthermore, the use of OLS as linear regression requires the validation of some assumptions, such as absence of multicollinearity, no autocorrelation, the normality of the residuals and homoscedasticity (Novales, 2010).

The multicollinearity refers to a situation in which two or more independent variables are very similar and, therefore, it is difficult to measure their individual effects on the dependent variable (Buenaño-Cordero, de la Cruz-Cedeño, & Zurita-Herrera, 2011). To verify multicollinearity assumption I used two methodologies: (a) the Pearson correlation, which values should be less than 0,8 (Quesada, 2011) all variables in this study meet this criteria, and (b) Variance inflation factor (VIF) which values should be less than 10 (James, Witten, Hastie, & Tibshirani, 2013), I obtained values less than 5 for all variables. The results suggest that there is no multicollinearity in this data (See Table 5. Correlations). Moreover, following the line of previous scholars (i.e. Martí & Puertas, 2017; Martí et al., 2014a, 2014b) in order to test the assumptions of the normality of the residuals and the homoscedasticity, I used graphic methods. Thus, in Figure 2 it is showed through the Histogram that the residuals in a way follow the normal distribution curve, validating the normality assumption (Quesada, 2011). Regarding homoscedasticity in Figure 3 it is showed that the variance of the error is

constant validating homoscedasticity assumption (Buenaño-Cordero et al., 2011). In order to test autocorrelation, I used Durbin-Watson test, and I obtained a value of 0,727, result that suggests there is a positive autocorrelation, since the value is close to 0 (Quesada, 2011). However, as Frankel et al., (1997, p. 50) point out, due to the nature of gravity equations is expected to have correlated variables and it does not invalidate the results. Furthermore, these critical limits can be nuanced depending on each model, since statistical theory in this field is complex and it is not easy to base the validity of a model on certain limits (Quesada, 2011). Thus, studies such as the one carried out by Miller et al. (2016) did not fully meet the above assumptions, still the results are well recognised due to the technique used (i.e. OLS) and the model specification (i.e. extended gravity equation).

The empirical part of the study follows the line of thought of Sala-i-Martin (1997). Despite its publication date, this work has been used in more recent literature (e.g. Cohen & Soto, 2007; Rodriguez & Rodrik, 2000; Sachs & Warner, 2001) remarking the validity of the work. Thus, Sala-i-Martin argued that in order to test the effect of specific variables, different models can be run including such variables, but these effects may change when the variables interact in other models with other variables. For instance, when you run model 1, variable A could have a X effect, but when you run model 2, including variables A and B, variable A can either keep effect X or may have effect Y.

Therefore, I propose 5 models which help to preliminary confirm the 5 hypotheses of this work. Then, I have:

Model 1 includes Gravity Variables, it means Economic Size (i.e. real GDP, Population) and Geographical Distance (kilometres between main cities), I run first this model as the original gravity equation, which at a first stage also helps me to test Hypothesis 3.

Model 2 includes Gravity Variables (i.e. RGDP, population and GD) and an Independent Variable (i.e. International Logistics) which helps me to test Hypothesis 1 at a first stage.

Model 3 includes Gravity Variables (i.e. RGDP, population and GD) and an Independent Variable (i.e. Free Trade Agreements) which helps me to test Hypothesis 2 at a first stage.

Model 4 includes Gravity Variables (i.e. RGDP, population and GD) and an Independent Variable (i.e. Cultural Distance) which helps me to test Hypothesis 4 at a first stage.

Model 5 includes Gravity Variables (i.e. RGDP, population and GD) and an Independent Variable (i.e. Institutional Distance) which helps me to test Hypothesis 5 at a first stage.

Taking into consideration that the objective of this study is to determine the effect of International Logistics, FTAs, and Distance (i.e. GD, CD and ID) on International Trade at the same time, I propose a 6<sup>th</sup> model, which includes all the variables of the study and represents the extended gravity equation whose results will be the final output of this study and the final confirmation or not for the 5 hypotheses.

Thus, Model 6 and the extended gravity equation for this study is defined as follows:

$$NL(BT_{ij}) = \beta_0 + \beta_1 NL(PRODRGDP_{ij}) + \beta_2 NL(PRODP_{ij}) + \beta_3 (PRODLPI_{ij}) \\ + \beta_4 (FTA_{ij}) + \beta_5 NL(GD_{ij}) + \beta_6 (CD_{ij}) + \beta_7 (ID_{ij}) + \mu_{ij}$$

Where:  $\beta_0$  is the constant;  $\beta_{1-7}$  are the coefficient for each independent variable;  $NL(BT_{ij})$  is the natural logarithm of bilateral trade between Panama and each country;  $NL(PRODRGDP_{ij})$  is the natural logarithm of the product of real GDP of Panama and each country;  $NL(PRODP_{ij})$  is the natural logarithm of the product of population of Panama and each country;  $(PRODLPI_{ij})$  is the product of LPI scores for Panama and each country;  $(FTA_{ij})$  represents a dummy variable for Free trade agreements between Panama and each country;  $NL(GD_{ij})$  is the natural logarithm of geographical distance between Panama and each country;  $(CD_{ij})$  represents the cultural distance between Panama and each country;  $(ID_{ij})$  represents the institutional distance between Panama and each country and  $\mu_{ij}$  is the standard error.

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## 5. Results

This chapter describes the results obtained in the empirical part of this study, after run the Ordinary Least Square (OLS) as linear regression to test the hypotheses. Descriptive Statistics and Correlation are also included.

### 5.1. Descriptive Statistics and Correlation

#### 5.1.1. Descriptive Statistics

The results regarding the descriptive statistics namely: mean, minimum, maximum and standard deviation for the variables used in this study are presented in Table 4. Thus, International Trade, measured as the bilateral trade between Panama and each country has a mean of 597,72 (millions USD), a minimum of 0.00 (millions USD) and a maximum of 15848,41 (millions USD) showing that Panama did not trade at all with Burkina Faso (2007,2010,2014), Egypt (2016), Nepal (2007,2018) and Saudi Arabia (2016) and traded the most with Japan (2010). Moreover, International Logistics resulted in a mean of 9,8061 on a range from 0,0000 to 14,1056, showing that the pair country in the sample with the lower LPI is Panama-Montenegro (2007) and the pair country in the sample with the higher LPI is Panama-Germany (2016). With regard to FTAs the mean obtained was 0,31, showing that only 31% of the countries in the sample have a FTA with Panama during the timeframe of this study. When it comes to a geographical distance the mean observed was 9509,86 Km on a range from 514 Km to 19276 revealing that Costa Rica is the nearest country to Panama and Indonesia is the farthest one. In terms of cultural distance, the mean shows a value of 2,2517 with a minimum of 0,0938 and a maximum of 8,3737, showing that the most similar pair country in the sample is Panama-Bosnia and Herzegovina, and the most different is Panama-Denmark. Furthermore, regarding institutional distance, the mean was 1,1630 on a range from 0,0241 to 4,1478 revealing that Bulgaria (2014) was the most similar country to Panama and Singapore (2018) the most distant one. Additionally, the number of observations (N) for each variable can be found in the same table. Then it is showed that for all the variables the total of 510 observations were available and used.

**Table 4.** Descriptive Statistics

<b>Variables</b>	<b>N</b>	<b>Min.</b>	<b>Max.</b>	<b>Mean</b>	<b>Std. Dev.</b>
Bilateral Trade (millions USD)	510	0,00	15848,41	597,72	1956,0957
Real GDP in millions USD (product between pair countries)	510	6754,86	81590466,65	2592594,11	7679502,7651
Population (product between pair countries)	510	1657739824275	5817256333290000	262576443135178	780464197933838
International Logistics	510	0,0000	14,1056	9,8061	1,8921
Free Trade Agreements	510	0	1	0,3100	0,4610
Geographical Distance (KM)	510	514	19276	9509,86	4436,1500
Cultural Distance	510	0,0938	8,3737	2,2517	2,1465
Institutional Distance	510	0,0241	4,1478	1,1630	1,0090

**Source:** Author

### **5.1.2. Correlations**

The correlation and VIF values for all the variables included in this study are showed in Table 5. Thus, as presented in the table, I obtained VIF values ranging between 1,045 (for Geographical distance) and 2.945 (for International Logistics), which are below 10 that is the suggested threshold (James et al., 2013) indicating that there is no multicollinearity issues in the first 5 models. Furthermore, when running model 6 (i.e. all variables included), the VIF values of each variable did not exceed the maximum threshold of 10, therefore, no multicollinearity suggested in this model.

Pearson's test was run in order to determine the correlation of the coefficients, and in a scale of 0 to 1 all the variables in this study presented a value below 0,70 as suggested in the literature (Marôco, 2018). Moreover, when all the models described in section 4.3 were run, the Pearson's test showed also values lower than 0,70 for all the variables. Therefore, there are not correlations issues in the models proposed. Furthermore, from this results we already have previous support for hypothesis 1, 2 and 3.

**Table 5. Correlations**

	VIF	1	2	3	4	5	6	7	8
<b>1</b> International Trade		1							
<b>2</b> International Logistics	2,945	0,357***	1						
<b>3</b> Free Trade Agreements	1,379	0,303***	0,284***	1					
<b>4</b> Cultural Distance	1,526	0,272***	0,615***	0,136**	1				
<b>5</b> Institutional Distance	1,497	0,219***	0,596***	0,062	0,656***	1			
<b>6</b> Geographical Distance	1,045	-0,332***	0,247***	-0,446***	0,063	0,230***	1		
<b>7</b> Real GDP	1,788	0,588***	0,665***	0,065	0,402***	0,390***	0,204***	1	
<b>8</b> Population	1,733	0,500***	0,085	-0,116**	-0,063	-0,052	0,105*	0,650***	1

\*\*\* Correlation is significant at the 0.001 level (2-tailed).

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

**Source:** Author

## 5.2. Linear Regression Results

In order to evaluate the significance of the 6 models presented in section 4.3, I used F-test of the ANOVA table which validates the model in an overall way (Pestana & Gageiro, 2005). Thus, as showed in Table 6, all models present F-values with p-value  $< 0,001$  showing significance. Then, allowing me to conclude that overall, all 6 models have statistical significance.

To verify the significance of the models more in detail, I also take into consideration the analysis of the determination of coefficient or  $R^2$ , which measures how much of the variance of the dependent variable is explained by the independent variables used in the model. The obtained value should be higher than 0,3 (Pestana & Gageiro, 2005). Then, as presented in Table 6, Model 6 has a  $R^2$  of 0,612 which is higher than 0,3 therefore showing that the proposed model for the present study is statistically significant. Moreover, when checking the  $R^2$  of the first 5 models we can see in Table 6 that all models have  $R^2$  higher than 0,3 being the lower value 0,578 from model 1, including just gravity variables, and the higher value 0,598 from model 5, which includes gravity variables and Institutional Distance. Thus, all models present statistical significance, then suggesting that the models are good predictors for the effect that International Logistics, FTAs and Distance have on International Trade in Panama.

Table 6 also presents the results obtained from the linear regression from the 6 models which tested the proposed hypotheses in Chapter 3. Thus, Model 1 gives us insights for the original gravity model, it means Economic Size (i.e. real GDP and Population) and Geographical Distance and also preliminary tests hypothesis 3. In the following models, 2 to 5, I added one by one the independent variables. Thus, Model 2 includes Gravity Variables and International Logistics in order to preliminary test hypothesis 1. Model 3 includes Gravity Variables and Free Trade Agreements, for preliminary testing hypothesis 2. Model 4 includes Gravity Variables and Cultural Distance to preliminary test hypothesis 4. Model 5 includes Gravity Variables and Institutional Distance in order to preliminary test hypothesis 5. Finally Model 6 includes all the variables of this study and presents the final and conclusive results for the Extended Gravity Model presented in section 4.3.

Hypothesis 1 (H1) states, International Logistics has a positive effect on International Trade. This hypothesis was preliminary supported in Model 2 which included the variables for the original gravity model (i.e. RGDP, population and GD) and International logistics, obtaining a positive and significant (p-value < 0,001) coefficient of 0,385 for international logistics. Further, in model 6, H1 was fully supported since the results show a positive and significant (p-value < 0,05) coefficient of 0,209 for international logistics. Then the results show: International Logistics has a positive effect on International Trade in Panama.

Hypothesis 2 (H2) states, Free Trade Agreements have a positive effect on International Trade. This hypothesis was preliminary supported in Model 3 which included the variables for the original gravity model (i.e. RGDP, population and GD) and Free Trade Agreements, resulting in a positive and significant (p-value < 0,001) coefficient of 0,729 for FTAs. Moreover, in model 6, H2 was totally supported since the results show a positive and significant (p-value < 0,05) coefficient of 0,478 for FTAs. Then the results show: Free Trade Agreements have a positive effect on International Trade in Panama.

Hypothesis 3 (H3) states, Geographical Distance (GD) has a negative effect on International Trade. This hypothesis was preliminary supported in Model 1 which included the variables for the original gravity model (i.e. RGDP, population) and Geographical Distance, given as result a negative and significant (p-value < 0,001) coefficient of -1,812 for GD. Furthermore, in model 6, H3 was completely supported since the results show a negative and significant (p-value < 0,001) coefficient of -1,790 for GD. Then the results show: Geographical Distance has a negative effect on International Trade in Panama.

Hypothesis 4 (H4) states, Cultural Distance (CD) has a negative effect on International Trade. Taking into consideration model 4, which included the variables for the original gravity model (i.e. RGDP, population and GD) and Cultural Distance, the results preliminary found a positive and significant (p-value < 0,001) coefficient of 0,187 for cultural distance, resulting in a contrary effect (i.e. sign) from what I expected. Then, this hypothesis was preliminary not supported. However, in model 6, the results show a positive but not significant coefficient for cultural Distance of 0,051. Then the final results show: No effect found of Cultural Distance on International Trade in Panama.

Hypothesis 5 (H5) states, Institutional Distance (ID) has a negative effect on International Trade. The result from model 5, which included the variables for the original gravity model (i.e. RGDP, population and GD) and Institutional Distance, gave me a result a positive and significant (p-value < 0,001) coefficient of 0,523 for ID, resulting in a contrary effect (i.e. sign) from what I expected. Thus, Hypothesis 5 was preliminary not supported. Furthermore, in model 6, the results also showed a positive and significant (p-value < 0,01) coefficient of 0,381 for ID. Thus, H5 definitely was not supported, meaning that for this study, Institutional Distance has positive effect on International Trade in Panama.

Moreover, model 1, preliminary tested the significance for the economic size variables (i.e. RGDP and population) resulting in a positive and significant (p-value < 0,001) coefficient of 0,944 for real GDP and a positive and significant (p-value < 0,001) coefficient of 0,362 for population. These results remain the same in terms of significance through all the models (i.e. model 2 to model 5). Finally, in model 6, the results show the same trend, obtaining a positive and significant (p-value < 0,001) coefficient of 0,484 for real GDP and a positive and significant (p-value < 0,001) coefficient of 0,728 for population, then the significance for these two variables was supported. Thus, International trade in Panama is positive related with economic size (i.e. RGDP and population) of trading partners.

**Table 6.** Results of the Regression Analysis

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>	<b>Model 6</b>
(Constant)	-4,298*	-10,823***	-7,583**	-7,305**	-7,080***	-12,843***
International Logistics		0,385***				0,209*
Free Trade Agreements			0,729***			0,478*
Cultural Distance				0,187***		0,051
Institutional Distance					0,523***	0,381**
Geographic Distance	-1,812***	-1,904***	-1,603***	-1,794***	-1,908***	-1,790***
Real GDP	0,944***	0,532***	0,879***	0,774***	0,742***	0,484***
Population	0,362***	0,644***	0,427***	0,509***	0,541***	0,728***
N	510	510	510	510	510	510
F-Value	231,166***	187,410***	179,397***	181,266***	187,912***	113,139***
R <sup>2</sup>	0,578	0,597	0,587	0,589	0,598	0,612
Adjusted R <sup>2</sup>	0,576	0,594	0,584	0,586	0,595	0,607
Durbin-Watson	0,653	0,743	0,682	0,664	0,668	0,727

a) Dependent Variable: International Trade

\*\*\* Significant at the 0.001 level (2-tailed).

\*\* Significant at the 0.01 level (2-tailed).

\* Significant at the 0.05 level (2-tailed).

**Source:** Author

In the bellow table (Table 7. Summary of the results) is presented a summary of the hypotheses proposed and the respective results obtained from the models I run.

**Table 7.** Summary of the Results

N°	Hypotheses	Source	Preliminary Results	Preliminary Conclusion	Source	Final Results	Conclusion
H1	International Logistics has a positive effect on International Trade	Model 2	Positive and significant	Supported	Model 6	Positive and significant	Supported
H2	Free Trade Agreements have a positive effect on International Trade	Model 3	Positive and significant	Supported	Model 6	Positive and significant	Supported
H3	Geographical Distance has a negative effect on International Trade	Model 1	Negative and significant	Supported	Model 6	Negative and significant	Supported
H4	Cultural Distance has a negative effect on International Trade	Model 4	Positive and significant	Not supported	Model 6	Positive and not significant	No effect found
H5	Institutional Distance has a negative effect on International Trade	Model 5	Positive and significant	Not supported	Model 6	Positive and significant	Not supported

**Source:** Author

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## 6. Discussion

### 6.1. Discussion

Recognizing, on one side, the importance of Latin American countries and the impact they have on International Trade (e.g. Borda et al., 2017; Carneiro & Brenes, 2014; Malhotra et al., 2016) and, on the other side, the remaining lack of studies within the literature addressing countries from this region (e.g. Ciravegna et al., 2016; Cuervo-Cazurra, 2008; Hsieh et al., 2010; Ramamurti, 2012) this study aims to contribute to the Literature by examining the effect that International Logistics, Free Trade Agreements and Distance has on International trade in Panama. Furthermore, when it comes to Distance I present more detailed results since I cover three dimensions of distance namely, Geographical, Cultural and Institutional as previous scholars have made (e.g. Conti et al., 2016; Ghemawat, 2001). Thus, the main objective of this study is to determine the specific effect that each independent variable has on International Trade in Panama. I used gravity model as framework in order to develop the hypotheses which helped me to analyse the objective of my study. Thus, according to the literature, overall I expected to find a positive effect of International Logistics and Free Trade Agreements on International Trade and a negative effect of Distance (i.e. Geographical, Cultural and Institutional).

This study supported Hypothesis 1, it means International Logistics has a positive effect on International Trade. This finding extended previous studies such as Behar et al. (2013) and Hoekman and Nicita (2011) who also found evidence that by improving International Logistics, International Trade between countries will increase. The result of this study find a positive relationship between IL and IT in Panama, relationship supported by the results from the regression on model 2 (logistics coefficient = 0,385) and model 6 (logistics coefficient = 0,209). Furthermore, unlike Jiang and Wu (2017) the results from this study show a positive and significant effect of International Logistics on International Trade when studying just one country (in this case Panama), then also extended the study of Martí and Puertas (2017) because as these authors concluded it is not possible to generalize a pattern for the effect of International logistics in developing countries. Moreover, in concordance with Mentzer, Myers, et al. (2004) I found evidence that International Logistics is influenced by Cultural and Institutional distance, since the coefficient of International Logistics from

Model 2 decreased after have added Cultural and Institutional Distance in Model 6. Hence it is important to take into consideration these dimension of distance when establishing logistics strategies, as previous scholars have mentioned (e.g. Jiang & Wu, 2017; Mentzer, DeWitt et al., 2001; Mentzer, Myers, et al., 2004). Additionally, I extended the studies of Arvis et al. (2010) and Hausman et al. (2005) since I found evidence that International Logistics has a core role for International trade, since when all variables were included in model 6, international logistics showed a high positive coefficient while being the most significant independent variable, it can be explained because international logistics helps companies and countries to have the resources and products they need in the correct place and proper time (Martí et al., 2014b; Mentzer, DeWitt et al., 2001).

The results of this study supported Hypothesis 2, it means Free Trade Agreements have a positive effect on International Trade and by doing it also extended the work of Dai et al. (2014), Saucier and Rana (2017) and, Schumacher (2016) who also arrived to the same conclusion. According to the results of model 3 (FTAs coefficient = 0,729) and model 6 (FTAs coefficient = 0,478) in this study, there are a positive relationship between International Trade and Free Trade Agreements in Panama, because FTAs are established with the aim to reduce trade barriers and boost the growth of international trade (Hoekman & Nicita, 2011; Suranovic, 2010). I also extended the results of Park et al. (2016) because I found evidence that International Trade in Panama is positively affected by FTAs and International Logistics when they are applied effectively at the same time, the positive and significant results from model 2, 3 and 6 supported this effect. Moreover, the study also corroborated previous works such as Saucier and Rana (2017) and Suranovic (2010) because as we can see in Table 8, Panama started to have FTAs with countries in the local region such as Dominican Republic and Colombia and then expanding to farther and strategic trade country partners such as Israel, United Kingdom and the European Union.

Regarding Hypothesis 3, Geographical Distance has a negative effect on International Trade, the results obtained corroborate the studies carried out by Jian (2011) and Salvatici (2013), because I found evidence that geographical distance has a negative effect on International Trade, I based this premise on the results from model 1 to 6 because in each of these models the coefficients of Geographical Distance were negative and significant. In the same line, since I took into consideration exports and imports of Panama, values captured in Bilateral

Trade, which are one of the main representations of international trade for the country, I also corroborate the study of Czinkota and Ronkainen (2009) because the results show evidence that Geographical distance affects especially exports and imports in developing countries. The above result can be explained because GD reduces personal contact between trade partners making communication and transfer of knowledge more complex then increasing trade cost (Bignami et al., 2020; Håkanson & Dow, 2012). Moreover, these results also extended the studies of Osgood (2018) and W. Cooper (2014), because I found evidence that International Logistics and FTAs decrease the negative effect that Geographical Distance has on International trade in Panama, because the coefficient of GD decreased from -1,812 in model 1 (considering just geographical distance) to - 1,790 in model 6 (where International Logistics and FTAs were included). Furthermore, FTAs seem to decrease the negative effect of GD more than International Logistics since in model 3 (i.e. FTAs and GD included in the model) the coefficient of GD is -1,603 and in model 2 (i.e. International Logistics and GD included in the model) the coefficient of GD is -1,904. This can be explained because the effect of GD is dismissed when countries improve logistics infrastructure and procedures with the aim to be more competitive while developing a business environment positively affected by FTAs, allowing countries to reduce costs, (Banomyong et al., 2006) remarking the importance of FTAs. Additionally, even though the negative effect of GD was found, taking into consideration the results in the descriptive statistics, I was able to find out that Panama traded the most with Japan on 2010, a country which is not geographically close, then extended the work of Conti et al. (2016), since Latin American countries do not have a clear preference to trade either with near or far countries.

I proposed a negative effect of Cultural Distance (CD) on International Trade (in Hypothesis 4) based on previous studies (e.g. Ciravegna et al., 2016; López-Duarte & Vidal-Suárez, 2010; Tower et al., 2019). However, model 4 (i.e. gravity variables and CD included in the model) supported a positive effect of CD on International trade in Panama, contrary to the above authors. Nevertheless, when all variables were included in model 6, no effect was found. A possible explanation for the positive effect could be that when it comes to International Trade a cultural adjustment between countries was originated by globalization. Thus, customer preferences seem to be more similar, consequently making countries more interdependent regardless of the cultural background (Czinkota & Ronkainen, 2009; Surugiu & Surugiu, 2015). Furthermore, regarding the no effect found of Cultural distance a possible

explanation could be that some culture attributes and no-formal norms are not easily perceived, being at the end displaced by institutional background (Ghemawat, 2001, 2007). Then, as international trade in countries from Latin America is very influenced by the intervention of government (Conti et al., 2016) it could explain why the effect of CD on International Trade found in model 4, disappeared in model 6, where institutional distance was included, because in some cases a variable can “lose” the significance previously found in a model, when it is combined with other variables in the other model (Sala-i-Martin, 1997).

The results of my study showed a positive effect of Institutional Distance (ID) on International Trade, it can be check on Table 6, in model 5 and 6. Thus, these results are not in concordance with my hypothesis 5 (i.e. Institutional Distance has a negative effect on International Trade) nor with previous works such as Brinkerhoff and Goldsmith (2005), Bussche and Verbeke (2008) and Ren and Yang (2020) who found a negative effect of Institutional Distance on International Trade. A possible explanation for positive effect could be that taking into consideration that Latin American countries are characterized for having weak institutional environment, unstable exchange rates, fragile democratic system and high levels of corruption (Ciravegna et al., 2016; Conti et al., 2016; Malhotra et al., 2016) countries from this region are focus on making trade reforms oriented to boost international Trade (Borda et al., 2017) in combination with new generations of export entrepreneurs and managers with personal experience abroad and global mindset (Ciravegna et al., 2016; Carneiro & Brenes, 2014), with the aim to be more competitive and overcome their weaknesses, oriented to trade with developed and strategic trade partners with strong and well established institutions (Ghemawat, 2001; Malhotra et al., 2016; Saucier & Rana, 2017; Suranovic, 2010). Additionally, Latin American countries have been characterized for trading with different countries rather than with similar ones (Ramamurti, 2012).

The results of this study also extended previous works regarding gravity model such as Cho and Kang (2001), Doan and Xin, (2018), Egger (2002) and, Wilson et al. (2003) since these authors addressed Institutional Distance using dummy variables and in my study I applied the World Bank Governance Indicators, obtaining significant results which found a positive relationship between ID and international trade. Thus, remarking the importance of using other ways to measure the efficiency of Institutions within countries. Moreover, the results

of this study also corroborated previous research (i.e. Martí & Puertas, 2017; Martí et al., 2014a, 2014b) regarding the relationship between economic size and International Trade. Thus, the results from all the models in this study showed that the wealthier the pair countries, the more international trade between them. In the same line, the more populated the pair countries, the more international trade between them. Furthermore, the results of this study extended the work of Ghemawat, (2001, 2007) who states that Gravity model can explain at least 50% of the international trade between countries, and my model explained around 61,20% of the trade between Panama and its trade partners, result obtained from the  $R^2$  of model 6 (see table 6).

Finally, this study also corroborate some insights addressed in the International Business Literature. Thus the results of model 3 and 6 (i.e. models which included FTAs) proved the importance of having free trade between countries as Smith have stated (as cited in Bobulescu, 2002; Zhang, 2008). Moreover, the results of the study proved that International Trade offers benefits to all the parties involved in the process, as David Ricardo have stated (as cited in Suranovic, 2010) since as showed in the results of models 1 to 6 the coefficients of real GDP (variable that measure the economic growth and purchase power of each country) is always significant and positive, stressing the importance of bilateral trade for pair countries. Furthermore, in concordance with what Porter have stated and as explained above, proper international logistics is a core part of the success of International trade (as cited in Davies & Ellis, 2000). Additionally, also from a Porter's perspective, this study found evidence that institutions should create an environment which promotes international trade (as cited in Clark, 1991).

## **6.2. Contributions**

This study was conducted to determine the effects that International Logistics, Free Trade Agreements and Distance have on International Trade, focused on Panama, by doing so, I aim to contribute to the lack of studies focusing on countries from Latin America, since this region has been overlooked within the International Business Literature (Casanova, 2009). Few scholars have studied Latin American countries (e.g. Borda et al., 2017; Carneiro & Brenes, 2014; Cuervo-Cazurra, 2008; Malhotra et al., 2016; Ramamurti, 2012) however they have paid more attention to the entry mode preferences and level of control when companies are internationalizing. On the other side, my study was focused on determine what are the

effects that International Logistics, FTAs and Distance (i.e. Geographical, Cultural and Institutional) have on International Trade between Panama and each country partner. Thus, I contribute to International Trade research in the following ways.

First, I acknowledged and verified the main role and positive impact that International Logistics (e.g. Arvis et al., 2010; Hausman et al., 2005) and FTAs (e.g. Saucier & Rana, 2017; Schumacher, 2016) have for International Trade, more in detail in Panama, because the combination of these two features increases hugely the competitiveness of the country allowing it to be more efficient and effective when trading globally, then these statements can be considered relevant for both, developed and developing countries.

Second, I contribute to the gravity model literature, since in order to measure Cultural and Institutional distance I applied Hofstede (1980) cultural dimensions and World Bank Governance Indicators, respectively, instead of using dummy variables as traditionally has been applied in the literature (e.g. Baier et al., 2007; Cho & Kang, 2001; Doan & Xing, 2018; Dow & Larimo, 2009; Martí & Puertas, 2017; Wilson et al., 2003), and even though in the last model of my study, cultural distance “lost” the significance, it was significant in model 4. On the other side, Institutional distance keep the significance in model 5 and 6. Thus, stressing the importance of measure distance dimensions individually and in further ways to corroborate previous studies. Moreover, by including CD and ID in the gravity model I addressed a managerial perspective, because I tried to capture people’s behaviour using these two variables which are related with Human Resources instead of take an econometric perspective as the mentioned scholar have done.

Third, I contribute to the literature by addressing a Latin American country (i.e. Panama), since the study of these countries have been left aside in the literature (Conti et al., 2016; Hsieh et al., 2010; Malhotra et al., 2016) assuming their behaviours based on patterns of developed countries, regardless of the different background that countries from this region have (Casanova, 2009). Nevertheless, I found evidence that even though Panama follows the path of its developed partners, in aspects such as encourage the improvement of International Logistics and the implementation of FTAs, when it comes to Cultural and Institutional Distance, Panama bets for trading the most with highly different countries regarding Cultural and Institutional background, with the aim to escape from the instable environment surrounding trade within the country, unlike the generally accepted assumption to trade with

highly similar countries. Thus, this study also contributes to Distance Literature, since the results confirmed the different behaviours of Panama as Latin American country when facing distance on International Trade in concordance with Ramamurti (2012).

Fourth, I contribute to the literature by acknowledging some insights of International Trade theories based on the obtained results. Thus, I corroborate the importance of having Free Trade as Smith proposed (as cited in Bobulescu, 2002; Zhang, 2008). Moreover, from the Porter's perspective, I corroborate the importance that Logistics has for International Trade (as cited in Davies & Ellis, 2000) and the vital role that institutions play in order to motivate International Trade (Clark, 1991).

### **6.3. Limitations and Future Research**

This study has some limitations that offer opportunities for future research to extend the results. First, I used secondary data, this being one of the main limitations since I had to carry out the study using just the data available in official and well-known sites as previous scholars have made (e.g. Arvis et al., 2010; Malhotra et al, 2016; Martí & Puertas, 2017; Saucier & Rana, 2017). Then, future research could take this into consideration and conduct surveys within the sample involved in the study in order to obtain primary data.

Second, due to the nature of the variables used in this study, such as Geographical and Cultural Distance, variables that are fixed and do not change over time, I was not able to apply panel data methods in order to run the model, because when the variables are fixed they cause collinearity issues and automatically are excluded from the model, Thus, future research could consider to use other ways to measure these two dimension of distance.

Third, the timeframe for this study was limited to 6 years, defined by the availability of the proxy used to measure International Logistics, namely World Bank Logistics Performance Index (LPI). Then future authors could consider to measure International Logistics using another way or proxy in order to conduct a study in a longer or another period of time.

Fourth, I measured International trade as bilateral trade between countries, it means the sum of imports and exports, data taken from the IMF Direction of Trade Statistics. Thus, future research could consider to take information from other sources or measure International

Trade in other ways such as just Exports, Trade Balance, Foreign Direct Investment, the combination of Bilateral Trade and Foreign Direct Investment.

I also have identified some possible and interesting future research in order to extend the literature. First, I study International Trade in Panama because it is one of the main logistics centres in Latin America (Bernal & Aguilar, 2015; Roldan & Henao, 2013). However, as I previously stated and in concordance with Martí and Puertas (2017), it is not possible to generalize the results for countries from this region, since each country deals with its reality in the best way possible. Moreover, Latin American countries are also different between themselves presenting asymmetry in their behaviours (Kostova & Zaheer, 1999). Then other authors could consider to study another country from the region, and I really encourage them to address countries other than Brazil and Mexico in order to corroborate and extend the results.

Second, in gravity model framework, generally and also in this study, costs are represented by distance, however following the call of authors such as Emlinger and Lamani (2020), it could be interesting to add a proxy to measure logistics or trade costs per se, in order to verified the results obtained and extend them.

Third, I analysed the international trade of Panama, it means exports plus imports, without making a differentiation in type of industries or sectors. Then as suggested by Arvis et al. (2010), Ghemawat (2001) and Golub and Hsieh (2000), distance could have a high effect for some industries, or result in opposite effect or have no effect at all in other industries. Thus, future research could take this into consideration to verify the results.

Fourth, the current situation regarding COVID-19 must be considered to extend the results from this and similar studies, because on one side, the timeframe of this study (i.e. 2007 to 2018) includes years before the outbreak of the COVID-19 pandemic, and on the other side, the disease has imposed an unprecedented challenge for the world, forcing countries to stop temporally their economic activities and has changed the whole business dynamic (Çelik, Yilmaz, Emir, & Sak, 2020; Milea, 2020), Thus, COVID-19 is affecting and will affect trade, logistics, finance and other areas and also may change the patterns and behaviours on International Trade. Therefore, future research can address these topics, studying years after the outbreak of the pandemic.

## 7. Conclusions

This study provides insights into how International Trade in Panama behaves and after have run the proposed gravity model I argue that International trade in Panama is affected in the following ways: (1) Positively affected by International Logistics; (2) Positively affected by Free Trade Agreements; (3) Negatively affected by Geographical distance; and (4) Positively affected by Institutional Distance. In the case of Cultural Distance, this study did not find support for any effect either positive or negative since the results obtained were not statistically significant.

This study found evidence that International Logistics and Free Trade Agreements are mechanisms and policies that contribute in huge extend to the growth of International Trade in Panama. On one side, an efficient International Logistics helps the country to reduce the excess of time and resources in the logistics procedures, allowing to have what it is needed, in the correct place and proper time in order to meet customer's needs (Mentzer, DeWitt et al., 2001). On the other side, Free Trade Agreements develop an environment in which trade barriers, especially quotas and tariffs, are reduced with the aim to establish better business relationships with each trade partner (Saucier & Rana, 2017). Furthermore, the combination of International Logistics and FTAs helps to reduce the effect of geographical distance on International Trade in Panama. Thus, I argue that Panama behaves similar as developed countries in aspects such as encourage the improvement of International Logistics infrastructure and procedures, and increase the number of FTAs into force, due to the positive effects that International Logistics and FTAs have on International Trade in Panama.

Regarding Geographical Distance, this study found evidence that the physical separation between Panama and each country can reduce international trade, since communication and knowledge transfer processes are more complex between longer distances, resulting in higher costs (Bignami et al., 2020). Thus, I argue that Geographical Distance has a negative effect on International Trade in Panama. However, Panama shows a trend to trade internationally with far but developed countries such as Japan. Moreover, along with this result, when it comes to Institutional Distance, this study found evidence that Panama tends to trade more with countries highly different in terms of Institutions, with the aim to develop business relationships with more stable countries. Thus, I argue that Institutional Distance

has a positive effect on International trade in Panama unlike the negative effect generally accepted.

Finally, although in this study it was found evidence that Panama behaves similar as developed countries in some aspects, evidence of different behaviours was also found, then I can conclude that Panama as other Latin American countries does not totally follow the same trends as its developed partners regarding International Trade, since the environment within the countries and the background force them to adapt to their reality. Therefore, there is still a wide field to study regarding International Trade in Panama and the rest of Latin American countries in order to better understand these countries.

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## Appendices

### Appendices A: Free Trade Agreements in Panama

**Table 8.** Free Trade Agreements in Panama

N°	Official Name	Partner/s	Data into in Force
1	Preferential Trade Agreements between Panama and the Dominican Republic " <i>Acuerdo de Alcance Parcial entre República de Panamá y República Dominicana</i> "	Domenican Republic	08 June 1987
2	Preferential Trade Agreements between Colombia and Panama " <i>Acuerdo de Alcance Parcial Colombia - Panamá</i> "	Colombia	18 January 1995
3	Free Trade Agreement between El Salvador and Panama " <i>Tratado de Libre Comercio El Salvador – Panamá</i> "	El Salvador	11 April 2003
4	Free Trade Agreement between The Republic of China and The Republic of Panama	Taiwan	01 January 2004
5	Free Trade Agreement between The Republic of Singapore and The Republic of Panama	Singapore	24 July 2006
6	Free Trade Agreement between Chile and Panama " <i>Tratado de Libre Comercio Chile – Panamá</i> "	Chile	07 March 2008
7	Free Trade Agreement between Costa Rica and Panama " <i>Tratado de Libre Comercio Costa Rica – Panamá</i> "	Costa Rica	23 November 2008
8	Free Trade Agreement between Honduras and Panama " <i>Tratado de Libre Comercio Honduras – Panamá</i> "	Honduras	09 January 2009
9	Free Trade Agreement between Guatemala and Panama " <i>Tratado de</i>	Guatemala	22 June 2009

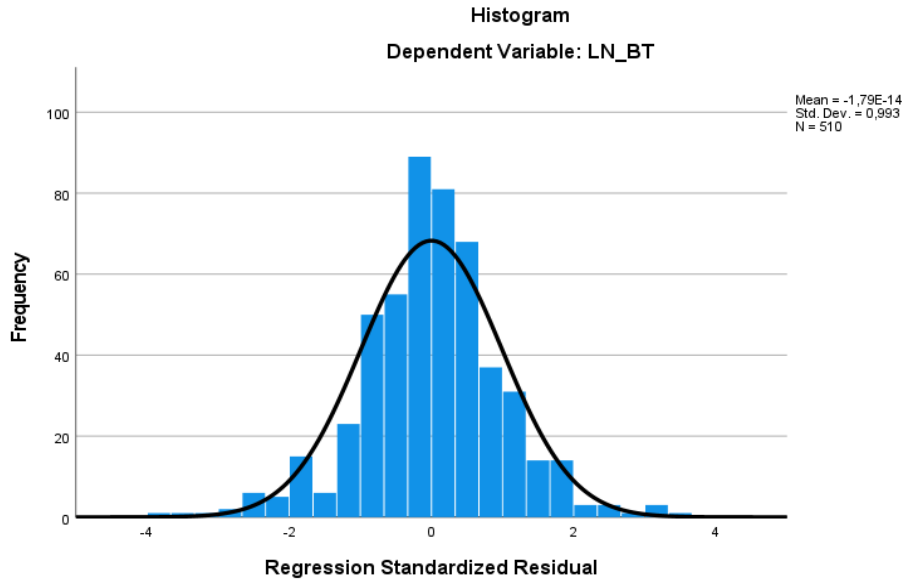
	<i>Libre Comercio Guatemala – Panamá"</i>		
10	Preferential Trade Agreements between Cuba and Panama " <i>Acuerdo de Alcance Parcial entre La República de Panamá y La República de Cuba</i> "	Cuba	23 July 2009
11	Free Trade Agreement between Nicaragua and Panama " <i>Tratado de Libre Comercio Nicaragua – Panamá</i> "	Nicaragua	21 November 2009
12	Free Trade Agreement between Peru and Panama " <i>Tratado de Libre Comercio Perú – Panamá</i> "	Peru	01 May 2012
13	Latin American Integration Association " <i>Asociación Latinoamericana de Integración</i> " ALADI	Argentina, Bolivia, Brazil, Ecaudor, Paraguay, Uruguay, Venezuela	10 May 2012
14	United States – Panama Trade Promotion Agreement	United States of America	31 October 2012
15	Free Trade Agreement between Canada and The Republic of Panama	Canada	01 April 2013
16	European Union-Central America Association Agreement	Belgium, Bulgaria, Czech Republic, Denmark, Germany, Estonia, Ireland, Hellenic Republic, Spain, France, Italy Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovak, Finland, Sweden	01 August 2013
17	Free Trade Agreement Between The EFTA States and the Central American States	Liechtenstein, Norway and Switzerland	29 August 2014
		Iceland	05 September 2014

18	Free Trade Agreement between Mexican United States and The Republic of Panama " <i>Tratado de Libre Comercio entre los Estados Unidos Mexicanos y La República de Panamá</i> "	Mexico	01 July 2015
19	Free Trade Agreement between The State Of Israel and Panama	Israel	01 January 2020
20	Agreement Establishing an Association between the United Kingdom of Great Britain and Northern Ireland and Central America	United Kingdom of Great Britain and Northern Ireland	01 January 2021
21	Free Trade Agreement Between The Republic of Korea and The Republics Of Central America	Korea	01 March 2021
22	Partial Scope Trade Agreement between The Republic of Trinidad and Tobago and The Republic of Panama	Trinidad and Tobago	Not into force

**Source:** SICE/OAS/Org from <http://www.sice.oas.org> and Ministry of Trade and Industry of Panama from <https://www.mici.gob.pa/>

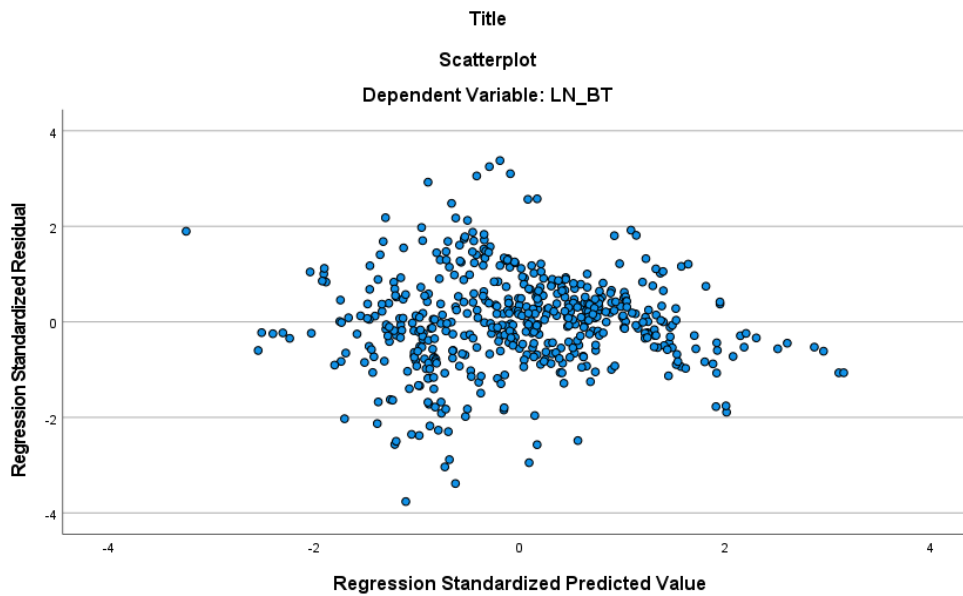
Appendices B: Statistical Graphics

**Figure 2.** Histogram of Residuals



Source: Author

**Figure 3.** Graphic of Variance of the error



Source: Author

## Appendices C: List of countries in the sample

**Table 9.** List of countries in the sample

N°	Country	N°	Country	N°	Country	N°	Country	N°	Country
1	Algeria	18	Costa Rica	35	India	52	Montenegro	69	Serbia, Rep. of
2	Angola	19	Croatia, Rep. of	36	Indonesia	53	Nepal	70	Singapore
3	Argentina	20	Czech Rep.	37	Ireland	54	Netherlands, The	71	Slovak Rep.
4	Armenia, Rep. of	21	Denmark	38	Italy	55	New Zealand	72	Slovenia, Rep. of
5	Australia	22	Dominican Rep.	39	Jamaica	56	Nigeria	73	South Africa
6	Austria	23	Ecuador	40	Japan	57	Norway	74	Spain
7	Belgium	24	Egypt, Arab Rep. of	41	Jordan	58	Pakistan	75	Sweden
8	Bolivia	25	El Salvador	42	Kazakhstan, Rep. of	59	Paraguay	76	Switzerland
9	Bosnia and Herzegovina	26	Estonia, Rep. of	43	Kenya	60	Peru	77	Thailand
10	Brazil	27	Finland	44	Kuwait	61	Philippines	78	Tunisia
11	Bulgaria	28	France	45	Latvia	62	Poland, Rep. of	79	Turkey
12	Burkina Faso	29	Germany	46	Lebanon	63	Portugal	80	Ukraine
13	Canada	30	Ghana	47	Lithuania	64	Qatar	81	United Arab Emirates
14	Chile	31	Greece	48	Luxembourg	65	Romania	82	United Kingdom
15	China: Mainland	32	Guatemala	49	Malaysia	66	Russian Federation	83	United States
16	China: Hong Kong	33	Honduras	50	Mexico	67	Saudi Arabia	84	Uruguay
17	Colombia	34	Hungary	51	Moldova, Rep. of	68	Senegal	85	Vietnam

**Source:** Author