UNIVERSITY OF TURKU

ABSTRACT

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Supervisors	Dr. Anu Bask and Dr. Lauri Ojala		

Abstract

This thesis aimed to provide information on Colombia's business and trading environment for companies interested in the market. The main focus of the analysis was on logistics performance. To put Colombia's business and logistics environment in perspective, its performance was compared with that of its Latin American peers.

An important concept for the context of this thesis is trade and transport facilitation (TTF), which means improving efficiency and reducing costs of moving goods across borders. This notion as well as indicators for assessing countries' TTF performance are introduced in the theoretical framework. Also, studies on determinants of logistics performance are reviewed. Two types of factors were identified to affect countries' logistics performance: infrastructure and institutional quality. These two types of indicators were used in the analysis of this thesis.

The research approach selected for this study is descriptive and qualitative, as the objective was to create a comprehensive description of the Colombian business environment. The analysis consists of an outlook on Colombia's economy and transport sector as well as on TTF performance in international evaluations. The research data included reports, statistics, and international rankings. The research framework is unique because it combines a transport sector analysis with a greater number of TTF indicators than seen in previous studies.

The analysis covering data till the year 2020 showed that despite being ranked as one of the best business environments in Latin America, Colombia's competitiveness is hindered by poor road and railway infrastructure, border management issues, corruption and insecurity. In turn, connectedness by air and sea as well as seaport infrastructure are very good. The US market is easily reached by air. Colombia enjoys the advantage of having access to both the Atlantic and the Pacific. It also has an extensive system of navigable rivers. However, port infrastructure in the Pacific is underdeveloped and rivers are currently not used at their full potential. Significant infrastructure projects have been planned for the 2020s, including increasing the cargo capacity of the rivers and developing inactive railways to create efficient intermodal transport corridors.

Keywords	Trade and transport facilitation, business environment, logistics performance, transport infrastructure, institutional quality, Colombia, Latin America
Further information	-

TURUN YLIOPISTO

TIIVISTELMÄ

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Tiivistelmä

Työn tarkoitus oli antaa Kolumbian markkinoista kiinnostuneille yrityksille tietoa maan liiketoimintaympäristöstä erityisesti logistiikan näkökulmasta. Jotta Kolumbiaa voitaisiin tarkastella kontekstissaan, maata verrattiin latinalaisamerikkalaisiin verrokkimaihin.

Aiheen kannalta merkittävä käsite on trade and transport facilitation (TTF) eli kansainvälisen kaupan ja kuljetusten edistäminen, millä tarkoitetaan rajat ylittävien kuljetusten tehokkuuden parantamista ja kustannusten pienentämistä. Tämä käsite sekä valtioiden edistymistä alalla arvioivat mittarit ovat pääosassa työn teoreettisessa viitekehyksessä. Lisäksi tarkastellaan aiempia tutkimuksia logistiikan suorituskyvystä. Tutkimuskirjallisuudesta voitiin tunnistaa kaksi tekijää, jotka vaikuttavat maiden logistiikan suorituskykyyn: kuljetusinfrastruktuuri ja instituutiot. Näiden tekijöiden laatua mittaavia indikaattoreita käytettiin tässä tutkimuksessa liiketoiminta- ja logistiikkaympäristön analysoimiseen.

Tutkimusote on deskriptiivinen ja kvalitatiivinen, sillä tavoite oli laatia yksityiskohtainen kuvaus Kolumbian liiketoimintaympäristöstä logistiikan näkökulmasta. Tutkimuksen viitekehys on ainutlaatuinen, sillä Kolumbian ja verrokkimaiden arvioinnissa käytettiin useampia TTF-mittareita kuin aiemmissa tutkimuksissa. Lisäksi analyysia täydennettiin tarkemmalla katsauksella Kolumbian kuljetussektoriin. Tutkimusaineistona käytettiin lähinnä kansainvälisten järjestöjen ja Kolumbian ministeriöiden laatimia tilastoja, arviointityökaluja ja raportteja. Valtaosa tutkimusaineistosta ulottuu vuoteen 2020.

Vaikka Kolumbian liiketoimintaympäristö on Latinalaisen Amerikan parhaita, maan heikkouksia ovat maantie- ja rautatieinfrastruktuuri, tullimuodollisuudet, korruptio ja rikollisuus. Lento- ja meriliikenneyhteydet sekä satamainfrastruktuuri sitä vastoin ovat ensiluokkaisia. Yhdysvaltain markkinat ovat nopeiden lentoyhteyksien päässä. Kolumbialla on etunaan myös sekä Atlantille että Tyynellemerelle ulottuva rannikko ja laaja jokiverkosto. Tyynenmeren puoleinen infrastruktuuri on kuitenkin puutteellinen eikä jokien tarjoamia mahdollisuuksia ole täysin hyödynnetty. Mittavia projekteja on kuitenkin suunniteltu toteutettavaksi 2020-luvulla, kuten jokien kuljetuskapasiteetin lisääminen sekä käytöstä poistettujen rautatieosuuksien käyttöönotto intermodaalikuljetusten tehostamiseksi.

Avainsanat	Kansainvälisen kaupan ja kuljetusten edistäminen, liiketoimintaympäristö, logistiikka, kuljetusinfrastruktuuri, Kolumbia, Latinalainen Amerikka
Muita tietoja	-

UNIVERSITY OF TURKU
Turku School of Economics

COLOMBIAN BUSINESS AND LOGISTICS ENVIRONMENT BY THE YEAR 2020

Master's Thesis
in Operations and Supply Chain Management

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Supervisors:
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17.12.2021
Turku

The originality of this thesis has been checked in accordance with the University of Turku quality assurance system using the Turnitin OriginalityCheck service.

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LIST OF ABBREVIATIONS

3PL	Third-party logistics
ACI	Air Connectivity Index
Aerocivil	Unidad Administrativa Especial de Aeronáutica Civil (Special Administrative Unit of Civil Aeronautics)
ANI	Agencia Nacional de Infraestructura (National Agency of Infrastructure)
ANSV	Agencia Nacional de Seguridad Vial
APEC	Asia-Pacific Economic Cooperation
ATFI	Air Trade Facilitation Index
CAN	Comunidad Andina (Andean Community)
CGE model	Computable general equilibrium model
CPI	Corruption Perceptions Index
EDI	Electronic interchange of documents
EFFI	eFreight Friendliness Index
ELN	Ejercito de Liberacion Nacional (National Liberation Army)
ETI	Enabling Trade Index
FARC	Fuerzas Armadas Revolucionarias de Colombia (Revolutionary Armed Forces of Colombia)
FDI	Foreign direct investment
FTA	Free-trade agreement
GCI	Global Connectedness Index
GDP	Gross domestic product
GEA	Global Express Association
GVC	Global value chain
IATA	International Air Transport Association
IBD	Inter-American Development Bank
ICT	Information and communications technology
IMF	International Monetary Fund
INVIAS	Instituto Nacional de Vías (National Road Safety Agency)
ITC	International Trade Center
IP rights	Intellectual property rights
ITC	International Trade Centre
LAC	Latin America and the Caribbean
LSCI	Liner Shipping Connectivity Index

LPI	Logistics Performance Index
NAFTA	North American Free Trade Agreement
NTB	Non-tariff barrier to trade
OECD	Organisation for Economic Cooperation and Development
PCA	Post-clearance audit
RTA	Regional trade agreement
SME	Small and medium-sized enterprise
Supertransporte	Superintendencia de Puertos y Transporte (Superintendent of Ports and Transport)
STRI	Services Trade Restrictiveness Index
TEU	Twenty-foot equivalent unit
TFA	Trade Facilitation Agreement
TFI	Trade Facilitation Indicator
TTF	Trade and transport facilitation
UNCTAD	United Nations Conference on Trade and Development
UNECE	United Nations Economic Commission for Europe
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
WEF	World Economic Forum
WGI	Worldwide Governance Indicators
WTO	World Trade Organization

1 INTRODUCTION

1.1 Background

Successful logistics provide a firm with a significant competitive advantage. Companies can stand out from competitors by organizing logistics operations so that goods are transported in the right place on time and cost-efficiently, which reduces costs and improves customer service. However, poor logistics weaken a company's position in the market.

In the same way as firms, countries compete in the global marketplace. Governments usually aim to promote economic growth by creating a business environment where local companies are able to thrive. They also compete with other countries for foreign direct investments. In the same way as companies can use logistics as a competitive asset, a similar strategy can be used at the macroeconomic level. By providing a good operating environment for logistics, countries improve business conditions for local companies as well as attract foreign investments and increase trade. (See, for example, Arvis et al. 2018; Heaver 2001.)

The idea described above is the logic behind the concept of *trade and transport facilitation (TTF)*. This notion is further developed in section 2.1.1 but at this stage, it can be defined as public measures that aim to tackle all trade barriers which are not related to tariffs. The main objective of these measures is to increase prosperity through augmenting trade. Trade and transport facilitation efforts have indeed proven to be effective in increasing trade. In fact, many studies have confirmed that trade and transport facilitation correlate with trade. This relationship between TTF and international trade has been modeled by using different TTF components as determinants of trade. Institutional quality, which covers aspects like corruption, democracy, political stability and enforcement of contracts, has been shown to affect trade (see for example Álvarez Barbero, Rodríguez-Pose & Zofío 2018; Anderson & Marcouiller 2002; Groot, Linders, Rietveld & Subramanian 2004; Yu 2010). Besides institutional factors, also infrastructure-related factors have been used as trade determinants in numerous studies (see for example Iwanow & Kirkpatrick 2007; Nordås & Piermartini 2004; Portugal-Perez & Wilson 2012; Wilson, Mann & Otsuki 2005). These factors include both physical infrastructure indicators, such as quality of roads (Francois & Manchin 2013) as well as intangible ones like border and transport efficiency (Portugal-Perez & Wilson 2012). The

research results of the aforementioned studies suggest that countries with better institutions and infrastructure engage more in international trade.

Furthermore, infrastructure-related and institutional factors have also been shown to affect countries' logistics performance. Guner and Coskun (2012) compared transport infrastructure spending with scores in the World Bank's Logistics Performance Index (LPI), which assesses the quality of logistics in different countries. Wong and Tang (2018) studied the relationship between the LPI and corruption, political stability as well as infrastructure. These two studies concluded that both infrastructure and social factors affect the LPI scores. The present thesis in turn adds to the literature by analyzing the logistics performance of an individual country based on a greater number of infrastructure and institutional indicators than previous studies.

1.2 Research purpose and questions

From the perspective of individual companies, the success of trade and transport facilitation measures indicate the ease of organizing trade with and operations within a foreign country. Thus, it makes sense for companies to consider logistics and other aspects affecting the business environment of a country where they wish to establish operations or engage in trade with. The purpose of this thesis was to provide such information on Colombia's business and trading environment to serve companies interested in the market.

This study aimed to examine Colombia as a business environment with the main focus on its logistics performance. The main research question is:

RQ1: How is the Colombian business environment from the point of view of logistics?

To put Colombia's business environment and logistics in perspective, it is worthwhile to compare it to Colombia's peer countries. Thus, a second research question was set to direct the research:

RQ2: How does Colombia compare in terms of logistics performance with its Latin American peers?

To answer these questions, the logistics conditions of Colombia were explored through data retrieved from statistics and reports produced by Colombian ministries and international institutions, such as the World Bank and OECD. These data includes international comparisons that evaluate the logistics performance and competitiveness of different countries. Competitiveness is a term frequently used in this thesis and TTF literature in general. In this context, competitiveness means national competitiveness that consists of factors affecting the productivity of a country. Another aspect of a country's competitiveness is the well-being of its inhabitants. These are intertwined because usually, productivity delivers growth, which in turn, improves well-being. (Schwab, Sala-i-Martín & Samans 2017.) Competitiveness indices used in this thesis include many indicators on social well-being but the main emphasis of this study is on those indicators which cover productivity.

The main unit of analysis of this study is the Colombian logistics environment. The logistics environment is defined broadly to cover all aspects affecting import and export as well as establishing business operations in a foreign country. The insights provided by the secondary data can help companies in planning their operations in Colombia and similar logistics environments, as well as to prepare for possible challenges and risks.

Colombia was chosen as a research target for this study because of its growing importance in international business. First, Colombia is one of the fastest-growing South American economies with enormous market opportunities for Finnish know-how (World Bank 2020a; Anttila 2015). In addition, Colombia's attractiveness for doing business has improved in recent years due to the conclusion of the peace negotiations between the Colombian government and the Marxist-Leninist guerrilla group, the FARC (Revolutionary Armed Forces of Colombia). The peace agreement was signed in November 2016 ending the world's longest ongoing armed conflict that had been an impediment to development for half a century. The president at that time, Juan Manuel Santos, was awarded a Nobel prize for reaching the peace agreement. (Brodzinsky 2016.) After the conclusion of the prolonged peace process, it is expected that the steady economic growth in Colombia will be further accelerated. Already before the peace treaty, the security situation in Colombia had improved significantly thanks to government efforts in combatting violent crimes and drug trafficking. However, changing the reputation of Colombia is a very slow process. The image of Colombia remains quite negative, one example of this is the popular TV series *Narcos* that reinforced the

reputation of Colombia as a conflict-stridden developing country ruled by drug lords and guerrillas.

In years preceding the COVID-19 pandemic, tourists started to return to Colombia in growing numbers. According to the World Bank data, in 2019, the number of visitors reached 4.5 million (3.6 million in 2017, 3.3 million in 2016, 3.0 million in 2015, and 2.6 million in 2014). There has been more than a sevenfold increase in the number of tourists arriving in Colombia since 2002. (World Bank 2021a.) Better security means less risky an operating environment for businesses. Thus, establishing business relations with Colombia has become an attractive option for foreign companies.

Indeed, there are many industries, such as education, ICT, forestry and cleantech, which are relevant from the point of view of Finnish companies. One of the investment priorities of the current government in Colombia is education, as Colombia was alarmed by its miserable performance in PISA tests. Finland is also known as a forerunner in the field of education in Colombia, which opens doors for Finnish education sector companies. Another priority is the development of digitalization, which would offer business opportunities for Finnish companies operating for example, in the field of data security and digital communication. (Kokkoniemi 2019, 27–28.)

Colombia is also expecting massive infrastructure projects in the 2020s. Colombia established a national circular economy program in 2018 and thus became a pioneer of circular economy in Latin America. In fact, Waste to Value solutions are urgently needed as the landfills are near to their end. Also, water purification is part of the program. Mining is an important sector in Colombia and the country is currently seeking greener mining technology. There is also an interest in Colombia for developing the forest sector now that the peace process calls for restructuring the agricultural sector. (Kokkoniemi 2019, 27–28.)

However, these market opportunities are largely untapped by Finnish companies. There is little trade between the two countries. The value of export to Colombia from Finland in 2019 was 80.7 million euros and imports from Colombia to Finland 102.3 million euros, which means that the share of Colombia of all imports and exports to and from Finland was between 0.1 and 0.2 percent. Colombia's share of the foreign trade total has remained about the same for the preceding 10 years. (Finnish Customs Foreign Trade Statistics 2021.)

As for the official trade and diplomatic relations, the growing importance of Colombia has been recognized by the Finnish government. One indicator of this is the

establishment of official institutions for reinforcing the relations with Colombia; the Colombian embassy was reopened in Helsinki in 2012 and the Finnish liaison office that had been established in Colombia's capital Bogotá in 2013 was upgraded to an embassy in September 2017 (Ripatti 2017, 44). In 2012, a free trade agreement between the EU and Colombia was signed, which facilitates market access for Finnish and other European companies (Kokkoniemi 2019, 26).

Considering the blooming economy in Colombia, budding interest towards the market by Finnish authorities and potential business opportunities for Finnish expertise, the topic of this thesis is very pertinent. The findings of the thesis provide valuable information for Finnish, or for that matter any other foreign, companies interested in establishing a presence in the Colombian market.

1.3 Scope of the study

As the aim of this study was to produce a thorough and detailed country analysis, only one country could be covered in the scope of this study. Colombia was chosen as such research target. Motivations for target country selection have been discussed in the previous section. To better understand the Latin American context, five other countries of the region were selected as comparator countries: Argentina, Brazil, Costa Rica, Ecuador and Peru. The analysis of these countries limited to their performance in comparison with Colombia and other peer countries. These countries were selected by using World Bank's Comparator Countries database, which is presented in section 4.2.

Trade and transport facilitation research strives to promote trade and development by making visible the importance of logistics and other business environment-related factors affecting trade. These factors are relevant for the purpose of this study as they are to be considered in evaluating the logistics environment. Another important reason for using the TTF framework in this study is the accessibility of data. There is a wide choice of reports, statistics and indices available online on the TTF performance of virtually any country in the world. This enabled a thorough analysis of Colombia and comparisons with other countries. Due to the abundance of free online data sources, the data used in this study was limited to secondary data, and no interviews were used to complement the data. The methods utilized in this thesis were purely qualitative as no statistical methods were used in analyzing the research data even though part of the data is in numeric form.

To produce an up-to-date report on Colombia, the most recent data available is presented. In most cases, also data from previous years is included to shed light on the development trends. Often the most recent data is from the year 2020, which was an exceptional year due to the outbreak of the global pandemic that has repercussions for trade and all other aspects of the business environment. However, the pandemic affects all countries and thus, does not prevent making comparisons. Besides, in many cases, the effect on indicators is not visible in the short term and does not significantly affect the 2020 indices. Having said that, the data from before COVID-19 was used for clarity in presenting tourism figures because all Colombian borders were closed to foreign travelers for months and international tourism, in general, was largely put on hold in 2020. Otherwise, the statistics of the year 2020 were used if the complete record of that year was available in the time of writing this thesis.

1.4 Research gap in previous literature

In contrast to the mainly quantitative research on determinants of logistics and trade performance briefly summarized in the first section of this chapter, this thesis uses qualitative methods and takes a descriptive approach. The empirical research referred to in the first section of this chapter aim to quantify the effect of TTF indicators, such as institutional quality and infrastructure, on trade. Typical data used in these studies include information on bilateral trade flows and individual countries' performance in specific TTF indicators. The present thesis used TTF indicators derived from the literature to describe the logistics environment of Colombia without attempting to find correlations. In the following, research on TTF, logistics and business environment is briefly reviewed to see how it differs from the approach of this thesis. In particular, the comparison involves country selection, company point of view, data and what aspects of the business environment are considered relevant for competitiveness.

The studies usually cover a large group of countries globally or regionally e.g., Wong and Tang (2018) used panel data from 93 countries and Yu, Beugelsdijk and de Haan (2015) compared data from 16 European countries. Some researchers have focused on one country's bilateral trade flows with several countries, like Depken and Sonora (2005), who studied the impact of institutional factors of the trading partners' business environment on their trade flows with the US. The current thesis in turn concentrates on

one country while comparing it to other countries in the same geographical region, Latin America.

Based on a literature search conducted on trade and transport facilitation, business environment and logistics, there seems to be little academic research about Latin America, let alone Colombia. Even though Latin America plays an important role in the world economy and three economies of the region are among the world's thirty largest by GDP, the region does not have a significant presence in management or international business literature (Carneiro & Brenes 2014, 831).

According to (Sweat 2008, 15) Latin America is also neglected in the supply chain management literature, whereas China for example is much more often discussed in the context of emerging markets. This is quite surprising considering that Latin America is geographically and culturally much closer to the world's biggest economy, the United States, than China. In a review article on academic research on supply chain management and logistics in Latin America, the authors covered 90 journal articles concerning the topic. Some of these studies were case studies set in one specific country, some comparative studies of several Latin American countries and others treated general issues in the region's logistics. None of the studies had Colombia as the main focus of the study. The majority of the studies on one single country focused on Brazil, Mexico or Chile. (Bookbinder & Mant 2013.)

It seems that a lot of Latin American and Colombian business environment related research approach the topic from the point of view of small and medium-sized enterprises (SMEs). This reflects the fact that the share of SMEs is particularly high in Colombia and Latin America in general. The proportion of SMEs is larger in Latin America than in any other region of the world (Yang 2017, 525). One example of research on obstacles in the business environment for SMEs is a study by Yang (2017), which examined how the governance environment affects company performance by using informal payments and quality of court system as indicators of governance. The study covered several Latin American countries, including Colombia.

Bookbinder and Mant (2013) listed country characteristics for selecting the top-performing Latin American countries that companies wishing to conduct operations in the region should consider as possible points of entry. The selection criteria included only facts related to infrastructure, economy and industry, such as highway kilometers, inflation and main industries. However, aspects related to the ease of doing business should also be considered when deciding which country to enter. These aspects are

completely overlooked in the study of Bookbinder and Mant. Vokoun and Daza Aramayo (2017) in turn, developed an index for assessing the business environment in Latin American countries using economic, social and institutional factors as evaluation criteria. Data for the index was collected from international organizations' databases. The performance of Latin American countries in the suggested index was compared with their rankings in similar indices of the World Economic Forum (WEF) and World Bank.

Unlike the two studies mentioned in the previous paragraph, Montenegro (2017) concentrated specifically on Colombia. The study provides a descriptive and analytical framework of the country's business environment from the perspective of international business. Aspects considered include competitiveness, economic, socio-cultural and political factors. Data for the study was collected from academic papers as well as international organizations' reports and indices, like the World Bank's Doing Business index and the World Economic Forum's (WEF) Global Competitiveness Index. The current thesis is, in the same way, descriptive and has the same unit of analysis, the Colombian business environment. It also includes same elements, competitiveness and economic factors as well as same data sources. What is different is the main focus of interest. This thesis concentrates on transport and logistics related competitiveness factors while covering institutional issues as well because they are considered to be an essential part of the logistics environment.

To summarize the above, the present thesis aims to fill a gap in the previous research on business and logistics environment by analyzing a less-studied market. Second, to the author's knowledge, there is no prior research on this topic that would cover so many indicators on both transport and institutional issues. In addition to a greater number of TTF indicators used, what makes the research framework of this thesis unique is that the comparison of international TTF indicator results is complemented by an analysis of the current state of the Colombian economy and transport sector based on Colombian ministries' reports.

1.5 Structure of the thesis

The main focus of the theoretical framework presented in Chapters 2 and 3 is on defining the key concepts relevant to this study. At the beginning of the conceptual framework, the most essential concept for the context of this study, trade and transport facilitation (TTF), is discussed. TTF is defined through its components; which topics it covers and

how these different dimensions are measured by different models and performance indicators. Also, motivations for TTF measures are reviewed.

The next part of the theoretical framework provides an overview of the research literature on logistics performance (Chapter 3). This section explores what factors have been shown to affect countries' logistics and trade performance. Then, two of these factors, infrastructure and institutional quality, are discussed on a more practical level.

The methodological part of the thesis describes the research design, process and data collection methods. The purpose of the study was to provide a detailed description of the Colombian business environment from the point of view of logistics. The data for the study was collected from databases, reports and evaluations of the Colombian business and logistics environment. The research strategy of this thesis can be defined as a qualitative case study. The methodological part also includes an assessment of the trustworthiness of the research, which was conducted by evaluating the fulfillment of the following criteria: credibility, transferability, dependability and confirmability.

In the analytical part of the thesis, Colombia is evaluated through different indicators and compared with its peer countries. This part also includes an overview of the current economic situation and state of logistics in Colombia. Finally, the thesis concludes with a summary of the findings as well as with a discussion on research contributions, limitations and future research topics. Figure 1 illustrates the contents of the thesis and linkages between different sections.

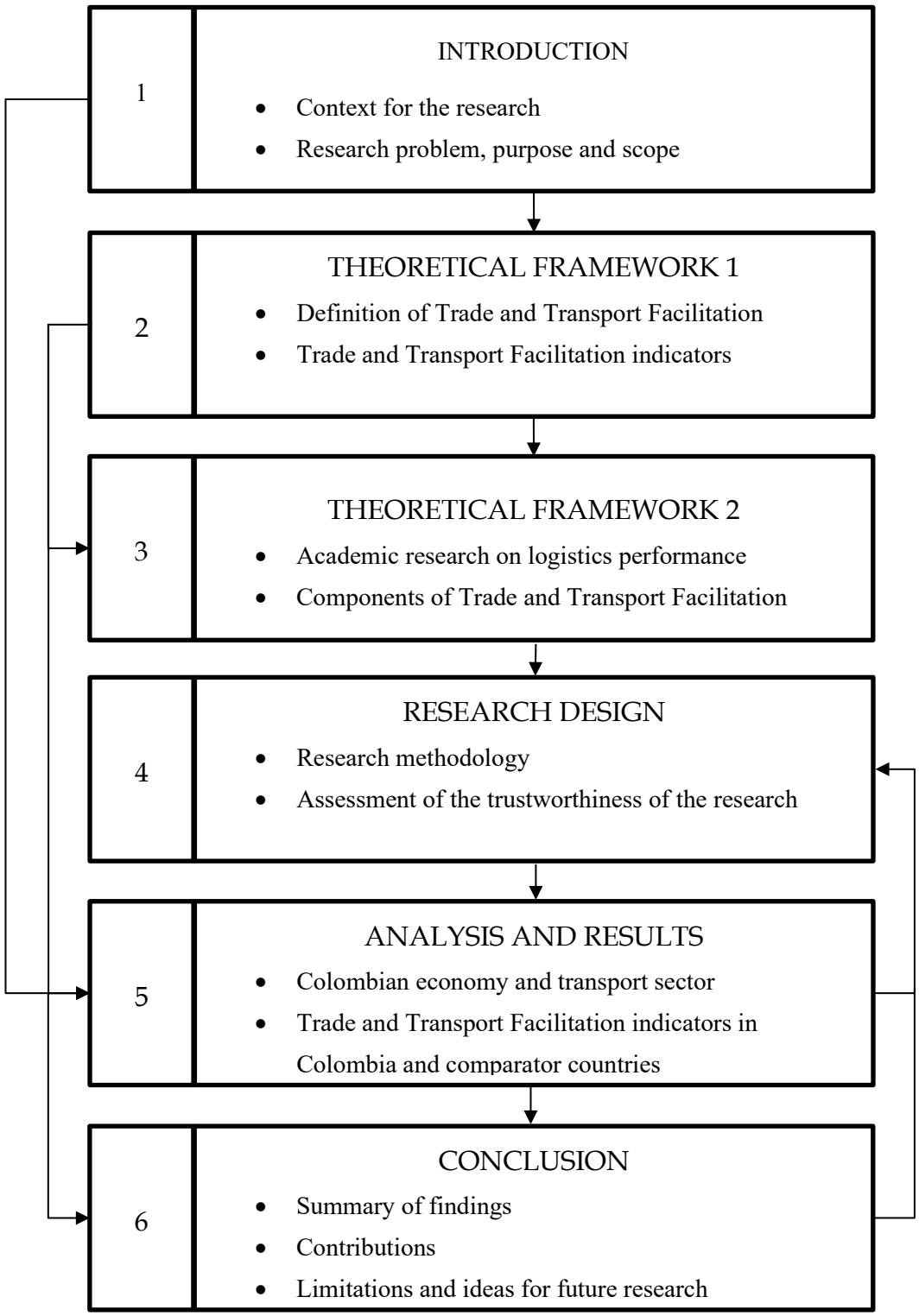

Figure 1. Structure of the thesis and relations between the chapters

The arrows in the figure illustrate linkages between the chapters. Sections 2.1 and 2.2 present the key concept of the study, Trade and Transport Facilitation, as well as two approaches for measuring Trade and Transport Facilitation of countries: quantitative

models and performance indicators. Chapter 3 contains an overview of how these models and indicators have been used as research methods and data in academic literature. Chapter 5 entails the analysis of the Colombian business and logistics environment by using the trade and transport facilitation indicators presented in Chapter 2 and including elements that have been defined as components of trade facilitation and logistics performance in previous research presented in Chapter 3. The purpose of Chapter 5 is to answer the research problem. Chapter 6 summarizes the findings of the preceding chapter. The trustworthiness of the findings is evaluated in Chapter 4.

2 TRADE AND TRANSPORT FACILITATION

The theoretical framework for this study starts by introducing the key concept of the study: *trade and transport facilitation*. After defining what trade facilitation is, the benefits of trade facilitation are discussed. Then, different methods for measuring trade and transport facilitation are presented. These methods include the performance indicators used for evaluating trade and transport conditions in different countries. These same indicators were used for analyzing the Colombian logistics environment.

The last part of this chapter presents an overview of empirical research on determinants of logistics performance. The purpose of this literature review is to shed light on which factors influence a country's logistics performance and see how empirical evidence is aligned with the trade facilitation framework. In concrete terms, this section provides examples of how trade facilitation indicators have been used as data in previous research on trade and logistics performance. The conceptual framework concludes with a discussion on determinants of logistics performance that are the most relevant for the context of this study.

2.1 Introduction to trade and transport facilitation

Governments have increasingly started to acknowledge the role of logistics in contributing to national competitiveness (Arvis et al. 2016, 1). The importance of the efficiency of international logistics has been growing especially due to the increasing share of international trade in economic activities (Heaver 2001, 12). According to the World Bank's statistics, the share of merchandise trade of the GDP (gross domestic product) has grown from 30–35% of the 1990s to up to 51.5% of the record year 2008 after which the share plummeted because of the economic crisis (World Bank 2021a).

In the latest figures, the share was at 41.6% in 2020 and there was a decline from the previous year, as the share was 44.0% in 2019 (World Bank 2021a). As a consequence of the growing importance of logistics generated by the increase in global trade, the most developed nations and emerging economies alike are implementing policies to promote efficient supply chain operations as an engine of growth (Arvis et al. 2016, 1). These policy measures for facilitating trade are the focus of this chapter.

The macro-environment is especially important in supply chain management because logistics is a sector that is strongly influenced by public investments and regulations. For

this reason, the logistics performance of individual companies and the whole supply chain is strongly influenced by the economy within which the companies operate. It is thus crucial for companies and countries to pay attention to the macro-level logistics performance. (Heaver 2001, 11–12.) This interdependence of micro-and macro-economic factors in defining competitiveness sets the premises for this study. For a company that wishes to set foot in the Colombian market, the analysis of the country's logistics environment is essential.

2.1.1 Defining trade and transport facilitation

Several definitions for the concept of *trade facilitation* have been provided by international organizations (see, for example, WTO 2012; UNECE 2012a) and developed in the academic literature (see, for example, Grainger 2011; Portugal-Perez & Wilson 2012). What all the definitions have in common is that trade facilitation aims to improve the conditions for trade. Essentially, trade and transport facilitation means the efforts for reducing or removing trade barriers by making trade transactions more efficient, simpler and less costly. The term *trade facilitation* implicitly includes the action of improving the transport infrastructure and operations as it is one way of facilitating the trade itself. This aspect is emphasized in the extended form of the term – *trade and transport facilitation*. (Batista 2012, 125.)

The various definitions of trade and transport facilitation differ, for example, in their scope and the nature of infrastructure investments. Trade facilitation in the *narrow sense* means reducing non-tariff-related transaction costs at the border, for example, by simplifying customs formalities and administrative procedures related to international trade. In a *broader sense*, trade facilitation is extended to behind-the-border issues, such as business environment and quality of infrastructure. On the other hand, trade facilitation measures can be realized along two dimensions. *Hard infrastructure* includes investments in tangible infrastructure, such as roads, ports and information and communications technology (ICT), whereas *soft infrastructure* means intangible aspects, such as customs management and government regulation. (Portugal-Perez & Wilson 2012, 1295.)

The United Nations Economic Commission for Europe (UNECE) defines trade facilitation in the following way:

> *Trade facilitation is the **simplification**, **standardization** and **harmonization** of procedures and associated information flows required to move goods from seller to buyer and to make payment [emphasis added]. (UNECE 2012a)*

The World Trade Organization (WTO) refers to:

> ***Simplification** and **harmonization** of international trade procedures [emphasis added]. Trade procedures include the activities, practices and formalities involved in collecting, presenting, communicating and processing data and other information required for the movement of goods in international trade. (WTO 2012)*

The definition of the United Nations Conference on Trade and Development (UNCTAD) states that:

> *Trade facilitation measures seek to establish a **transparent**, consistent and predictable environment for border transactions based on **simple** and **standardized** Customs procedures and practices, documentation requirements, cargo and transit operations, and trade and transport conventions and arrangements [emphasis added]. (UNCTAD 2005, 6)*

The definitions quoted above reflect the key elements of trade facilitation measures: *simplification*, *standardization*, *harmonization* and *transparency*. In practice, the measures involve (Batista 2012, 125; Grainger 2011, 45–49; Swedish National Board of Trade 2008, 9):

- *simplification* – elimination of unnecessary administrative formalities, procedures and documents
- *standardization* – creation of international standards and formats and the use of ICT for efficient exchange of information
- *harmonization* – alignment of national laws and practices with international norms and conventions
- *transparency* – ensuring that information, requirements and processes for crossing borders are clear, specific and easily accessible.

One critical aspect of trade facilitation measures is that they call for international cooperation. While all countries benefit individually from more simple customs procedures and efficient ICT systems, the advantages are more important if the reforms are realized multilaterally creating international standards that ease the administrative burden of trade transactions. (WTO 2015, 34–35.) The advantages along with the growing importance of trade facilitation efforts are discussed more in detail in the next section.

2.1.2 Importance of trade and transport facilitation

This section discusses the role of trade facilitation in reducing trade costs and increasing global trade. The objective of trade and transport facilitation is to reduce trade costs, which can be broadly defined as all costs incurred in getting the product to the end user excluding the manufacturing costs. These costs include tariffs and non-tariff measures, freight costs, time costs and information costs. (Anderson & Wincoop 2004, 691.) Trade costs matter because they account for a major share of the price of imported products even though the tariffs have been diminished in many countries by trade agreements. The WTO estimated based on the data from Arvis, Duval, Shepherd and Utoktham (2013) that in 2010, trade costs were as high as 219% *ad valorem* in developing countries, meaning that for a product that costs 1 dollar to produce 2.19 dollars are added to cover the trade costs. Trade costs remain high in high-income countries as well and ad valorem trade costs were estimated to be 134%. (WTO 2015, 75.) According to Arvis et al., transport and logistics performance affect trade costs at least as much as geographical distance (2013, 6).

Trade and transport facilitation has been in the spotlight as protective tariff rates have fallen and thus, it is seen as the next step in further reducing trade costs (Wilson, Mann & Otsuki 2005, 841). Measures to reduce non-tariff barriers to trade (NTB) have also become more important because of the increased dependency on imported components in global value chains. For global value chains (GVCs), risk and cost management is crucial, which means that transport costs, times and uncertainty have to be minimized (OECD & WTO 2013, 17). Countries that are not able to provide reliability and predictability of supply chains will increasingly be left outside the global market. (Arvis et al. 2016, 23.) In fact, reliability is usually appreciated much higher than speed (Arvis et al. 2018, 2). Good logistics, including streamlined import and export procedures, good connectivity as well as low cost of logistics services, in turn, improve the country's opportunities to take part in GVCs. (Taglioni & Winkler 2016, 12.)

Besides the interdependency of supply chains, another factor causing severe constraints on production is the so-called spaghetti bowl effect, which is a term used to describe the increased complexity of the international trade regime caused by the multiplication of free trade agreements (FTAs) (Zaki 2015, 157). Overlapping and contradictory trading rules create confusion, costs and slow down trade.

The importance of trade facilitation was affirmed when the WTO members adopted the Trade Facilitation Agreement (TFA) negotiated in the 2013 Bali Ministerial Conference within the latest round of trade negotiations, the Doha Round. The TFA stepped into force on February 22, 2017, after two-thirds of the WTO members had ratified the agreement. The purpose of the agreement is to promote global trade by expediting the movement, release and clearance of goods at the customs. (WTO 2017.)

Trade facilitation measures increase trade flows, economic growth, attractiveness to foreign direct investments (FDIs) as well as export diversification allowing, in particular, the developing countries to export new products to new markets (Arvis, Mustra, Ojala, Shepherd & Saslavsky 2012, 1; OECD & WTO 2013, 25). Due to sectoral and regional variation of trade costs, certain business sectors and regions benefit more than others from trade facilitation efforts.

The popular saying “time is money” is especially true in sectors with time-sensitive products, such as perishable agricultural products, electronics, rapidly changing fashion items and intermediate products of GVCs. Thus, these sectors benefit especially from tackling trade barriers, such as customs delays or transport infrastructure problems. (Zaki 2015, 168.) According to Hummels and Schaur (2013, 2936), long shipping times cause inventory-holding and depreciation costs that entail spoilage of fresh products and technological obsolescence of such goods as consumer electronics. Also, interruptions in production lines caused by the lack of components have particularly high costs.

2.2 Measuring trade and transport facilitation

The measurement of trade facilitation has been approached from two different perspectives in the literature. The first approach uses models of international trade for explaining trade and the economic effects of trade facilitation. These models concentrate on the relationship between transport costs, trade facilitation and trade volume, thus measuring the impact of trade facilitation. The second approach measures the performance of trade and transport facilitation efforts on different dimensions of trade

facilitation. The next two sections explore both of the approaches, the main emphasis being on the latter, trade facilitation indicators because they are more relevant for the methodology of this study.

2.2.1 Models of international trade

This section briefly reviews economic models that aim to quantify the impact of trade facilitation. Estimating the impact is a difficult task because real trade costs are hard to evaluate as they include various indirect and direct costs. According to Grainger (2011, 52), trade transaction costs have mainly been quantified by using indirect economic models. This section gives a brief review of these models. Two of the most typical models for estimating the impact of trade facilitation are gravity and computable general equilibrium (CGE) models (Wilson et al. 2003, 368).

The idea behind the gravity model is that trade costs must be relatively low between countries that have an important bilateral trade. Thus, the magnitude of trade costs can be deduced from trade flows. (WTO 2015, 74, 79.) Traditionally, the gravity model has been used for modeling bilateral trade flows. In the model, trade flows between two countries are explained by variables such as trading partners' gross domestic product (GDP), the distance between the countries and other geographical characteristics, regional trade agreements (RTAs) or cultural and linguistic similarities. (Wilson et al. 2005, 849.) For example, the gravity model of Limão and Venables (2001) uses geographical features (shared border, being landlocked or island, distance between countries) as determinants of transport costs and infrastructure measures (road and rail network, number of telephone lines per person) as variables.

Wilson et al. (2003, 370–371) were the first to use several trade and transport facilitation indicators in their gravity model to estimate the impact of TTF measures on trade performance. These indicators included port efficiency, customs environment, regulatory environment and e-business usage. The indicators were based on survey data on the performance of the member countries of APEC (Asia Pacific Economic Cooperation). The objective of the study was to help policymakers to decide on which aspects of trade facilitation they should concentrate to increase trade the most efficiently.

CGE models are computer-based simulations used to estimate how changes in trade policy would affect trade flows. The idea is to adjust the values of a variable to answer what-if questions (WTO 2015, 79). For example, Zaki (2014, 117–118, 121) used a CGE

model to estimate the effects of partial removal of administrative barriers on welfare, trade and exports diversification. In the model, the reduction of administrative barriers is proxied by reducing *red tape costs* (i.e., costs related to excessive regulation and bureaucracy) by 50%. In addition, the effect of this shock is compared with a shock caused by a 50-percent decrease in tariff rates to compare the effects of TF measures with those of trade liberalization. The results of these two simulations indicated that trade facilitation has a stronger impact on trade than trade liberalization.

2.2.2 Trade and transport facilitation indicators

Numerous indicators for measuring trade and transport facilitation have been developed within international organizations and academia. The variety in the scope of indicators reflects different definitions of trade and transport facilitation, some covering a broader set of issues of trade and transport facilitation and others concentrating on specific border crossing processes. Both soft and hard infrastructure issues are covered by different performance indicators. Often, the indicators are derived from country-specific survey data from trade and transport facilitation performance assessments. In this section, key performance indicators are presented. These same indicators were used in this study for analyzing Colombia in the area of trade and transport facilitation performance.

Logistics Performance Index (LPI)

The World Bank's **Logistics Performance Index (LPI)** is a benchmarking tool that ranks countries based on questionnaire data that assesses the logistics environment of countries. The survey respondents are logistics professionals working in multinational freight forwarders and the main express carriers. The LPI comprises an international and domestic part. In the international part of the LPI, the respondents are asked to evaluate the trade logistics of eight preselected countries on six different dimensions (Arvis et al. 2018):

1. efficiency of customs and border management clearance
2. quality of trade and transport infrastructure
3. ease of arranging competitively priced international shipments
4. competence and quality of logistics services

5. ability to track and trace consignments
6. frequency with which shipments reach consignees within schedule or expected delivery times.

The first three components (customs, infrastructure and services) can be considered as areas of policy regulation, thus *inputs* to the supply chain, and the last three as supply chain performance *outcomes* that indicate time and reliability of international shipments. In general, the sixth component of the LPI, timeliness, outperforms the other dimensions, whereas the customs are seen as the most problematic by the respondents (Arvis et al. 2018, 14).

The domestic part of the LPI is based on logistics professionals' assessments of the logistics environments of their country of employment. The determinants of logistics performance studied in the domestic survey include (Arvis et al. 2018):

1. infrastructure
2. services
3. border procedures
4. supply chain reliability.

The LPI report has been published every second year since 2007. As in the previous reports, the 167 countries covered in the 2018 edition are divided into categories based on their perceived logistics friendliness. *Logistics-unfriendly* countries suffer from severe logistics constraints and include the countries of the bottom quintile of the countries covered in the LPI. *Partial performers* consist of the third and fourth LPI quintiles. *Consistent performers* correspond to the second-best quintile and include countries that outperform their income group peers. *Logistics-friendly* countries represent the top-performing quintile and are typically high-income countries. A significant logistics gap persists between high- and low-income countries. On average, high-income countries score 48% higher in the LPI scores. (Arvis et al. 2018, 8–15.)

The logistics gap is particularly visible in the overall supply chain efficiency and reliability as the high-performing countries rarely fail in quality criteria, whereas respondents were especially dissatisfied with the quality of shipments in low-performing countries. As for infrastructure, there was less variation between different quintiles. All

quintiles performed particularly well in ICT infrastructure, whereas rail infrastructure generally caused dissatisfaction in all quintiles.

Trade Facilitation Indicators (TFI)

The OECD **Trade Facilitation Indicators (TFI)** is a set of 11 indicators concentrating on the simplification and harmonization of international trade processes. The indicators correspond to the policy areas included in the WTO Trade Facilitation Agreement that entered into force in 2017 and are related to border procedures and other trade-related policies and regulations. The data for the indicators is collected from publicly available data sources, such as customs websites and public databases. Like the LPI, the Trade Facilitation Indicators are updated every two years. The first set of Trade Facilitation Indicators was published in 2013. (OECD 2019.) The TFIs cover over 160 countries and evaluate the following aspects (Moïsé & Sorescu 2013):

1. advance rulings (existence and possible characteristics of a mechanism for advanced rulings)
2. appeal procedures (transparency, fairness, accessibility, timeliness and effectiveness of the applicable rules and outcomes)
3. external border agency cooperation (cooperation with neighboring and third countries)
4. internal border agency cooperation (cooperation between various border agencies of the country, delegation of control to Customs authorities)
5. fees and charges (availability of information on fees and charges, level of fees and charges)
6. formalities – automation (automated procedures, electronic interchange of documents (EDI), risk management procedures)
7. formalities – documents (extent of harmonization of trade documents, through reliance on international standards and the simplification of documentary requirements and the reduction of the number and complexity of required documentation)
8. formalities – procedures (single windows, pre-arrival processing, physical inspections, post-clearance audits (PCAs), separation of release from clearance and the concept of authorized traders)

9. governance and impartiality (clearly established and transparent structure and functions of the Customs administration, the existence of Code of Conduct and an ethics policy, internal audits and transparent provisions for financing and for internal sanctions in the Customs administration)
10. information availability (publicly available information about Customs and border-related rules and procedures in online or in other forms as well as enquiry points)
11. involvement of the trade community (measures that ensure the involvement of the trade community to the design and everyday operation of border-related policies and procedures refer mainly to the consultations between traders and the government, their scope, contents and outcomes).

The TFI indicators include altogether 100 variables that describe trade policies on a detailed level. For example, *appeal procedures* comprise of questions about judicial independence and the availability of information on the motives of the administration's decisions, among other things. (Moïsé & Sorescu 2013, 39–51.) Even though the TFIs provide detailed information about the existence of adequate trade regulation there is no indication if these regulations are actually enforced and effective. It has been considered that having good regulations in place does not necessarily go hand in hand with good performance. (Geiger et al. 2016, 21.) The Enabling Trade Index that will be discussed next, complements the TFI indicators with opinion-based survey data on actual trade performance.

In addition to providing information on countries' performance on the different dimensions of trade facilitation, the TFI report estimates the impact that actions in these policy areas would have on trade volumes and trade costs. This quantitative analysis relies on the gravity model that has been described in the previous section. The analysis aims to give governments insight on which trade facilitation areas should be prioritized to gain the highest impact. (Moïsé & Sorescu 2013, 5-6, 11.)

Enabling Trade Index (ETI)

The World Economic Forum (WEF) has been publishing the Global Enabling Trade Report, which is based on the **Enabling Trade Index (ETI)**, since 2008. The ETI evaluates the policies, institutions, infrastructure and services that countries have

established for facilitating the cross-border flow of goods to their destination. (Geiger, Di Battista, Doherty & Soininen 2016, 13.) The ETI comprises seven pillars that are grouped under four sub-indexes (*market access*, *border administration*, *infrastructure* and *operating environment*) as illustrated in Figure 2 (Geiger et al. 2016, 14–15).

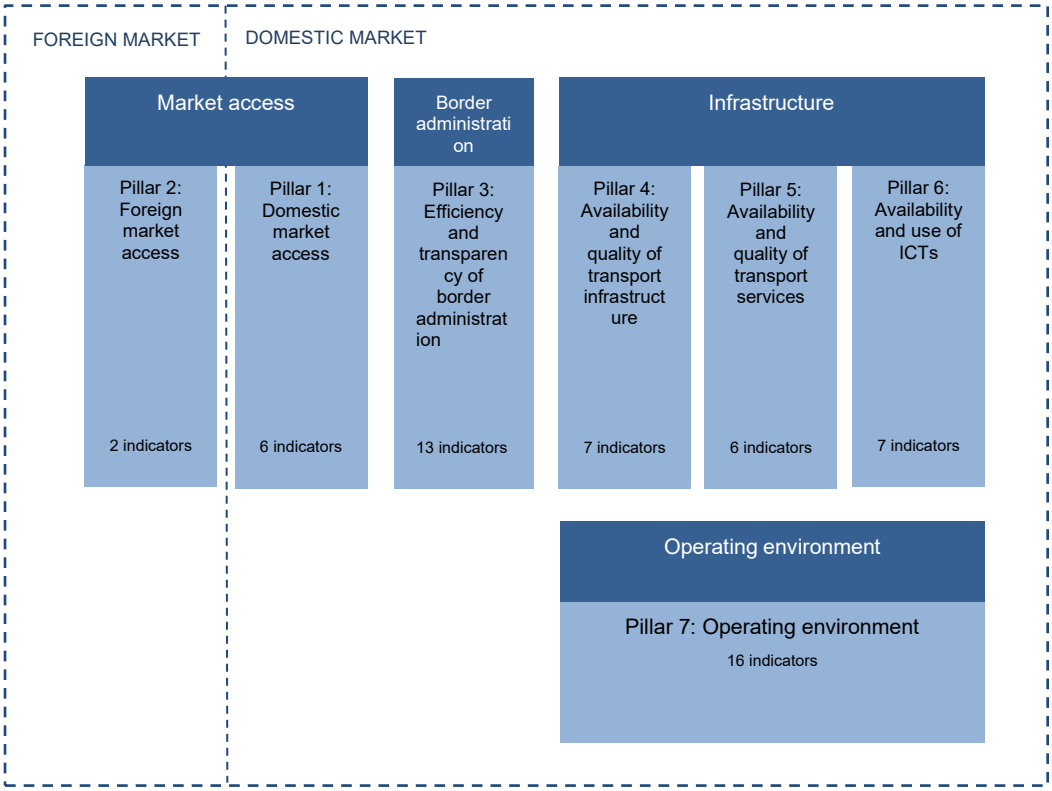

Figure 2. The Enabling Trade Index framework (Geiger et al. 2016, 14)

Most of the indicators included in the ETI are sourced from datasets of international organizations like the Global Express Association (GEA), UNCTAD, the WTO and the World Bank. The remaining indicators, which account for 36% of the ETI score, are based on the WEF's Executive Opinion Survey. Altogether 136 countries are covered in the latest ETI published in 2016. Not surprisingly and in line with the LPI report, the ETI report concludes that enabling trade performance is strongly correlated with a country's income level. At a regional level, North America and Europe remain best in enabling trade followed closely by East Asia and the Pacific region. (Geiger et al. 2016, 15, 23.)

One of the key insights of the 2016 report is that millions of businesses and entrepreneurs are still excluded from globalization. Poor connectivity, regulatory and logistical constraints affect especially micro-enterprises and SMEs making it difficult for them to take advantage of the positive effects of globalization. The report also highlights

the untapped potential of border administration, which is considered to be a low-hanging fruit of trade facilitation due to its political and economic feasibility as well as its potential for increased revenues. (Geiger et al. 2016, 21, 32.)

Global Competitiveness Index

The World Economic Forum also publishes the **Global Competitiveness Index (GCI)**, which ranks economies based on indicators affecting productivity and long-term prosperity. The Global Competitiveness report that includes the GCI has been issued every year since 1979. The Global Competitiveness Report 2019 assesses 141 countries. Besides productivity and economic growth, the latest report especially highlights the role of sustainability and social inclusion in addressing such questions as climate change and global poverty. According to the report, East Asia and the Pacific countries on average achieve the highest overall GCI score followed by Europe and North America. It is also emphasized that there are significant performance gaps across regions and even though developing and emerging economies are slowly converging, large competitiveness gaps remain. (Schwab 2019.)

The GCI is composed of 12 pillars covering altogether 103 indicators, which are based on the WEF's Executive Opinion Survey and data from other international organizations. Currently, the index has four themes: *enabling environment*, *human capital*, *markets* and *innovation ecosystem*. The pillars of the index are (Schwab 2019):

Enabling environment

1. institutions
2. infrastructure
3. ICT adoption
4. macroeconomic stability

Human capital

5. health
6. skills

Markets

7. product market
8. labor market
9. financial system

10. market size

Innovation ecosystem

11. business dynamism
12. innovation capability.

The GCI has many similar components with WEF's Enabling Trade index but it includes factors related to countries' business and economy as well as social conditions, whereas the ETI has a stronger focus on importing, exporting and border administration. In the same way as the Global Competitiveness Index, most of the following indices discussed here do not assess exclusively trade and transport facilitation but take a wider perspective to the overall business environment, while containing indicators that are very relevant for the purpose of this study.

Doing Business Index and Enterprise survey

The World Bank's **Doing Business** report provides information on the ease of doing business in different countries. It assesses the regulatory environment of countries from the point of view of local entrepreneurs covering 12 areas of business regulation. The Doing Business Index and ranking cover 10 areas (World Bank 2019):

Opening a business

1. starting a business

Getting a location

2. dealing with construction permits
3. getting electricity
4. registering property

Accessing finance

5. getting credit
6. protecting minority investors

Dealing with day-to-day operations

7. paying taxes
8. trading across borders

Operating in a secure business environment

9. enforcing contracts

10. resolving insolvency.

Also *employing workers* and *contracting with the government* are assessed in the Doing business report but these two indicators are not included in the index. Data for the Doing business report is collected from local experts working in both the private sector and government as well as from local laws and regulations. The data reflects the local business regulation affecting small and medium-sized companies operating in the largest business city of the country, for some countries two such cities are included. (World Bank 2019, 18–22.)

The **Enterprise Survey** is another diagnostic tool developed by the World Bank for complementing the Doing Business Index. It is a firm-level survey that covers 12 topics measured by more than 100 indicators. Areas covered by the survey are (World Bank 2020b):

1. corruption
2. crime
3. finance
4. firm characteristics
5. gender
6. informality
7. infrastructure
8. innovation and technology
9. performance
10. regulation and taxes
11. trade
12. workforce.

Both the Enterprise Survey and Doing Business report cover 12 areas but approach the business environment from different points of view. The Doing Business has a strong focus on the regulation of the business environment whereas, the Enterprise survey covers a broader perspective of the business environment including more societal indicators, such as empowerment of women, crime and the existence of informal economy. (World Bank 2020c.)

Index of Economic Freedom

The Heritage Foundation defines *economic freedom* as an individual's freedom to work, produce, consume and invest how they wish (Heritage Foundation 2021a). It has been shown that economic freedom correlates strongly with the GDP per capita and overall well-being, including such values as health, education, democracy, environment and societal progress (Miller, Kim, Roberts & Tyrrell 2020, 53). The Heritage Foundation measures the economic freedom of countries by evaluating their performance on four categories of economic freedom, which are further divided into 12 indicators in the following way (Heritage Foundation 2021a):

Rule of law

1. property rights
2. judicial effectiveness
3. government integrity

Government size

4. tax burden
5. government spending
6. fiscal health

Regulatory efficiency

7. business freedom
8. labor freedom
9. monetary freedom

Market openness

10. trade freedom
11. investment freedom
12. financial freedom.

The overall **Index of Economic Freedom** is calculated as an average of these indicators each of which have equal weight in the index. However, countries are encouraged to focus on improving those indicators in which they perform the worst because addressing issues in those areas offers the biggest opportunities for boosting economic freedom, which would in turn generate economic growth and prosperity. The index has been published since 1995 and the 2020 index global average was the highest

score ever. However, the index score remained the same in 2021. Most likely the ongoing pandemic has already taken its toll on the upward trend. Regional differences in the index remain significant. The average score of Europe is substantially above the global average, whereas Sub-Saharan Africa lies far below the world average. In other regions of the world, regional averages are close to the global average. (Miller, Kim & Roberts 2021, 1, 33; Miller et al. 2020, 2, 51, 63.)

Corruption Perceptions Index

Transparency International's **Corruption Perceptions Index (CPI)** ranks countries by their perceived scale of public sector corruption. Data for the index are collected from expert assessments and surveys. Also, in this index, Europe, or actually Western Europe and the EU, has the highest average score and Sub-Saharan Africa the lowest. In general, the results show that despite some improvement, most countries still fail to address public sector corruption effectively. (Transparency International 2020.)

The CPI and the report Global Corruption Barometer have been used as a source in many TTF indicators, such as the Global Competitiveness Index and Customs Capabilities Database. This highlights the significance of corruption in the context of global trade. Corruption is further discussed as a separate topic in section 3.3.1.

Worldwide Governance Indicators

The **Worldwide Governance Indicators (WGI)** is a set of governance indicators that assess the established traditions and institutions that exercise authority in a country. The data for evaluating the quality of governance has been collected from business, expert and citizen surveys and reports since 1996. Like several other indicators mentioned before, the WGI project is also managed by the World Bank. (Worldwide Governance Indicators 2020.) The governance indicators comprise of six dimensions of governance (Kaufmann, Kraay & Mastruzzi 2010, 4):

1. voice and accountability (to which extent citizens can participate in selecting their government and freedom of expression and association as well as free media)

2. political stability and absence of violence (likelihood that the government will be overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism)
3. government effectiveness (quality of public services and the degree of its independence from political pressures, the quality of policy formulation and implementation)
4. regulatory quality (the ability of the government to implement regulations that permit and promote private sector development)
5. rule of law (to which extent people have confidence in and obey the rules of the society, including especially such areas as contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence)
6. control of corruption (to which extent public power is exercised for private gain).

The Worldwide Governance Indicators have been used in academic research to measure countries' institutional quality, which is further discussed in the following chapters.

Customs Capabilities Database

The Global Express Association's (GEA) **Customs Capabilities** database contains information on countries' customs-related practices and performance. The country reports are divided into five dimensions (Global Express Association 2019):

1. transparency
2. customs efficiency
3. post-release processes
4. ranking in relevant indices
5. TFA.

The *transparency* component includes information about the accessibility of information on new laws and regulations as well as online accessibility of up-to-date information on customs procedures, appeal procedures and import and export documents.

Customs efficiency entails for example questions about local customs' capabilities to process data needed for the release of shipments electronically and customs operating hours. *Post-release processes* involve for example possible processing fees for EDI links and express clearance. *Ranking in relevant indices* includes the above-mentioned Transparency International's Corruption Perceptions Index, LPI and the *trading across borders* component of the World Bank's Doing Business Index. The *TFA* component includes questions about ratification and implementation of the WTO Trade Facilitation Agreement.

Global Connectedness Index

DHL's **Global Connectedness Index** evaluates the degree of globalization. It analyzes flows of *trade*, *capital*, *information* and *people* for the world and individual countries. Trade flows include merchandise and services trade. Capital includes FDI stocks and flows as well as portfolio equity stocks and flows. Information flows are measured by international internet traffic, telephone calls and printed publications trade. People flows include tourists, university students and migrants. In analyzing cross-border flows, the *depth* of international flows is taken into account by comparing each cross-border flow to a corresponding domestic activity, for example by comparing exports to the total economic output. This gives perspective on how important the respective international flow is. Also, the *breadth* of international flows is considered in the analysis, meaning that it is evaluated to what extent flows are distributed globally instead of being concentrated between specific origins and destinations. (Altman & Bastian 2020.)

One of the takeaways of the recent Global Connectedness Index reports is that even though the evolution of transportation and communications technology has made distance less relevant, international relations remain more significant between countries that are closer to each other. In addition to physical distance, cultural, political and economic differences play an important role in defining flows between countries. As for the depth and breadth of cross-border flows, most business still takes place domestically rather than across borders and most international flows happen with countries and their top partner countries. More than 40% of all flows are between countries and their top 3 trading partners, as most countries do not have strong connections to a great number of other countries.

As mentioned, the choice of trading partners is largely explained by geographical and cultural proximity. It can be stated that sharing a common language doubles the trade and FDI flows. The report updated in 2019 also highlights that despite recent surges of protectionism, such as Brexit, the election of President Trump and the trade war between the US and China, global connectedness is still on the rise and is higher than at almost any point in history. (Altman & Bastian 2020, 23–26; Altman & Bastian 2019, 10, 24, 26–27.) While the ongoing corona pandemic has affected businesses worldwide, it has not destroyed the fundamentals of globalization. The international flows of people have plummeted due to travel restrictions but all other flows have resisted the crisis surprisingly well. Trade and capital flows suffered at the start of the pandemic but have already recovered. Digital information flows on the other hand have peaked, as people and businesses have urged to stay connected digitally. (DHL 2021.)

Liner Shipping Connectivity Index

Containerization of the cargo has revolutionized cargo transport as it allows the manufacturer to send goods to the consumer even if it would not be economically justified to charter a ship to realize individual transactions. Today, the network of regular container shipping services with transshipment operations in hub ports connects basically all countries to each other. (Fugazza & Hoffmann 2016, 1.) UNCTAD's **Liner Shipping Connectivity Index** evaluates container traffic capacity and container ship services in different countries. The current index consists of six components (UNCTAD 2021a):

1. number of scheduled ship calls per week
2. deployed annual capacity in twenty-foot equivalent units (TEU) / total deployed capacity offered to the country
3. number of regular liner shipping services from and to the country
4. number of liner shipping companies that offer services from and to the country
5. average size in TEU of the ships deployed by the scheduled service with the average largest vessel size
6. several other countries that are connected to the country through direct liner shipping services.

The last component was added in 2019. In practice, it covers countries that can be reached without the need for transshipment. Using direct regular shipping connections help reduce trade costs and increase trade volumes. China leads by far the Liner Shipping Connectivity Index. Also, four other Asian countries are in the top 10 list that also includes the United States and four European countries. Countries at the bottom of the index rank are small island developing states where shipping goods remain problematic and results in high trading costs. (UNCTAD 2019.) As has been mentioned before, distance still matters. This is supported by UNCTAD's research that indicates that bilateral maritime connectivity is the strongest in intra-regional routes (Fugazza and Hoffmann 2016, 1).

Air Connectivity Index, Air Trade Facilitation Index and eFreight Friendliness Index

If containers have revolutionized maritime transport, air freight plays an important role in world trade as well. When products have a high value-to-weight ratio, such as electronic components, companies are willing to pay a premium for fast transport and use air freight instead of slow but less costly ocean cargo, which is better suited for cheap and heavy products (Bhatnagar & Teo 2009, 208). This finding is supported by the estimation that 35% of the value of global trade is carried by air cargo, but this share represents only 1% of the volume (Shepherd, Shingal & Raj 2016).

The equivalent of the Liner Shipping Connectivity Index for air transport is the **Air Connectivity Index (ACI)**. Arvis and Shepherd have used network analysis and gravity modeling to measure air transport connectivity between 211 countries and territories and created the Air Connectivity Index. Data used for the analysis is bilateral scheduled air services data that include passenger, cargo and mixed services. A higher ACI score indicates stronger integration into world trade. According to the Index, the United States is the most connected country. The top ten ranking is otherwise dominated by European countries. Most of the lowest ranking countries are isolated Oceanian island states. (Arvis & Shepherd 2016.)

Other air cargo specific indices include the **Air Trade Facilitation Index (ATFI)** and **eFreight Friendliness Index (EFFI)**. These two indices have been commissioned by the International Air Transport Association (IATA). The Air Trade Facilitation Index is constructed from a variety of data sources relevant from the point of view of facilitation

of trade via air cargo by using a weighted average method. Particularly, the use of ICT in facilitating air cargo transactions is measured. Data sources include the already mentioned Global Express Association's Customs Capability Database and the OECD's Trade Facilitation Indicators as well as information about the signature of relevant international conventions and about equivalent domestic regulation. Of the 124 countries that the ATFI evaluates, the top-ranked ones are all high-income countries according to the World Bank's classification, and most of them are located in Europe. In contrast, the lowest-ranked countries are mainly the least developed. (Shepherd et al. 2016, 22–28.)

The eFreight Friendliness Index provides more detailed information on the role of ICT in air cargo facilitation than ATFI, which also covers some of these aspects. The index is based on IATA's data on the use of electronic processes (electronic air waybills and eFreight transactions) as well as relevant data from the Customs Capability Database. The EFFI measures the performance of 135 countries. The top ten countries are more geographically dispersed than in the ATFI and include countries from the Middle East, Europe, Asia and North America. Again, there is a strong correlation between the performance and national income. (Shepherd et al. 2016, 22–28.)

Freight Transport and Logistics Yearbook

At the regional level, the Inter-American Development Bank (IDB) has assembled a wide set of indicators and statistics on the state of the freight transport and logistics sector in the **Freight Transport and Logistics Yearbook** published in 2015. The data covers 26 borrowing countries of the bank and is organized into 7 indicator groups (IDB 2015):

1. general indicators (i.e., export and import volumes, size of transport sector)
2. road transport (i.e., paved network, number of trailers)
3. railway transport (i.e., railway freight companies, train engine productivity)
4. air transport (i.e., cargo facilities area in international airports, air freight)
5. water transport (i.e., port container traffic, inland waterway traffic)
6. logistics activities (i.e., logistics center surface, position in LPI ranking)
7. calculated indicators (i.e., heavy vehicles / 1000 inhabitants, railroad density).

Some trade facilitation indices, such as Services Trade Restrictiveness Index (STRI), have been excluded from this study because Colombia is not among the countries studied in the index.

2.2.3 Summary of the indicators

Table 1 summarizes all the indicators presented above. The third column in the table indicates the main focus area of the indicator. A rough division has been made by grouping the indicators based on whether they concentrate on evaluating countries' performance in transport infrastructure and logistics or government policies and institutions. These indicators are labeled as INFRA or INSTITUTIONS. In this thesis *infrastructure*, covers both transport infrastructure and services. Customs management as well as business and regulatory environment that are considered to be part of *soft infrastructure*, as defined in Portugal-Perez & Wilson 2012, is included in *institutions*. However, the use of ICT in customs procedures, such as electronic waybills, falls into the category of (hard) infrastructure.

Some indicators fall into both categories and are marked as BOTH. The Global Connectedness Index was left uncategorized as it investigates trade and other international flows and based on this defines how well countries are connected, whereas other indicators evaluate how well-equipped countries are for trade. In other words, Global Connectedness measures the realized impact of countries' trade and transport facilitation efforts, while other indicators put a stronger focus on describing and evaluating these efforts as such.

Table 1. Summary of trade and transport facilitation indicators

Indicator	Organization	Topic / Category	Dimensions	Data source
Logistics Performance Index (LPI)	World Bank	Logistics / BOTH	1. Customs 2. Transport infrastructure 3. Availability of logistics services 4. Quality of logistics services 5. Tracking and tracing 6. Timeliness	Survey for logistics professionels
Trade Facilitation Indicators (TFI)	OECD	Trade facilitation / BOTH	1. Advance rulings 2. Appeal procedures 3. Cooperation 4. Fees and Charges 5. Formalities (automation, documents and procedures) 6. Governance and impartiality 7. Information availability 8. Involvement of the trade community	Reports, databases and TTF indices
Enabling Trade Index (ETI)	WEF	Trade facilitation / BOTH	1. Domestic market access 2. Foreign market access 3. Border administration 4. Transport infrastructure 5. Transport services 6. ICT 7. Operating environment	Reports, databases, TTF indices and Executive Opinion Survey as well as other surveys
Global Competitiveness Index (GCI)	WEF	Business environment / BOTH	1. Institutions 2. Infrastructure 3. ICT adoption 4. Macroeconomic stability 5. Health 6. Skills 7. Product market 8. Labor market 9. Financial system 10. Market size 11. Business dynamism 12. Innovation capability	Reports, databases, TTF indices and Executive Opinion Survey as well as other surveys
Doing Business Index	World Bank	Business environment / INSTITUTIONS	1. Starting a business 2. Dealing with construction permits 3. Getting electricity 4. Registering property 5. Getting credit 6. Protecting minority investors 7. Paying taxes 8. Trading across borders 9. Enforcing contracts 10. Resolving insolvency	Survey for private and public sector respondents as well as local legislation
Enterprise Survey	World Bank	Business environment / BOTH	1. Corruption 2. Crime 3. Finance 4. Firm characteristics 5. Gender 6. Informality 7. Infrastructure 8. Innovation and technology 9. Performance 10. Regulation and taxes 11. Trade 12. Workforce	Survey for business respondents

Table 1. ***Continued***

Index of Economic Freedom	Heritage Foundation	Governance / INSTITUTIONS	1. Property rights 2. Judicial effectiveness 3. Government integrity 4. Tax burden 5. Government spending 6. Fiscal health 7. Business freedom 8. Labor freedom 9. Monetary freedom 10. Trade freedom 11. Invest freedom 12. Financial freedom	Reports, databases and TTF indices
Corruption Perceptions Index	Transparency International	Corruption / INSTITUTIONS	Perceived corruption in the public sector	Expert assessments and surveys
World Governance Indicators (WGI)	World Bank	Governance / INSTITUTIONS	1. Voice and accountability 2. Political stability and absence of violence 3. Government effectiveness 4. Regulatory quality 5. Rule of law 6. Control of corruption	Reports and surveys for business, expert and citizen respondents
Customs Capabilities Database	Global Express Association	Customs / BOTH	1. Transparency 2.Customs efficiency 3. Post-release processes 4. Ranking in relevant indices 5. Trade Facilitation Agreement	Survey for local professionals and TTF indices
Global Connectedness Index (GCI)	DHL	Globalization	1. Trade flows 2. Capital flows 3. Information flows 4. People flows	Reports, databases and investment survey
Liner Shipping Connectivity Index	UNCTAD	Container traffic / INFRA	1. Number of scheduled ship calls per week 2. Deployed annual capacity in twenty-foot equivalent units (TEU) / total deployed capacity offered to the country 3. Number of regular liner shipping services from and to the country 4. Number of liner shipping companies that offer services from and to the country 5. Average size in TEU of the ships deployed by the schedules service with the average largest vessel size 6. Number of other countries that are connected to the country through direct liner shipping services	Statistical data
Air Connectivity Index (ACI)	World Bank	Air freight / INFRA	Bilateral scheduled air services for passengers and cargo	Statistical data
Air Trade Facilitation Index (ATFI)	IATA	Air freight / BOTH	Air cargo related trade facilitation	Customs Capabilities Database, TFI and international agreements
eFreight Friendliness Index (EFFI)	IATA	Air freight / INFRA	Use of electronic processes in air cargo	Customs Capabilities Database and statistical data
Freight Transport and Logistics Yearbook	IDB	Freight and logistics / INFRA	1. General indicators 2. Road transport 3. Railway transport 4. Air transport 5. Water transport 6. Logistics activities	Customs Capabilities Database, LPI and statistical data

Some trade facilitation indicators are partially overlapping as the data often comes from the same sources. For example, some of the indicators of the World Economic Forum's Enabling Trade Index are based on the World Bank's Logistics Performance Index and the Doing Business database (Geiger et al. 2016, 324). Similarly, the Trade Freedom component of the Index of Economic Freedom of the Heritage Foundation is, among other sources, based on the WEF's Global Enabling Trade Report and the World Bank's Doing Business (Heritage Foundation 2015, 464).

As was mentioned at the beginning of this section, the differences in scope and areas of the TTF indicators reflect the different definitions of trade and transport facilitation. Some indicators measure trade facilitation defined in the narrow sense, such as the LPI component *efficiency of customs and border management clearance* and others extend the scope to cover outside-the-border issues such as another LPI component *ability to track and trace consignments*. Indicators also cover both soft and hard infrastructure issues. For example, Trade Facilitation Indicators of the OECD almost exclusively include soft infrastructure indicators, such as *information availability*, but the component *formalities – automation* partly falls into the category of hard infrastructure as it entails the use of automated ICT systems in customs procedures. Whereas, the Enabling Trade Index of the WEF includes both soft (e.g., *efficiency and transparency of border administration*) and hard infrastructure variables (e.g., *availability and quality of transport infrastructure*).

3 DETERMINANTS OF LOGISTICS PERFORMANCE

This section aims to define what affects logistics performance by presenting different factors in the business environment that facilitate or hinder logistics efficiency. These factors define countries' competitiveness as well as the ease of doing business and organizing logistics operations in these countries. After a review of the literature about these factors, some of them are discussed more in detail to cover practical issues related to these themes.

3.1 Literature review on logistics performance

It has been shown in the literature that economic and social factors are associated with logistics performance. The study of Wong and Tang (2018) reveals that institutional quality and other social, as well as economic factors, correlate with logistics performance. The results suggest that a low level of corruption and stable political environment are associated with high logistics performance and that better infrastructure, technology, labor and education enhance logistics performance (Wong & Tang 2018, 439). The impact of economic and social factors on logistics performance has also been studied by Guner and Coskun (2012). Economic indicators used in this study were spending on transportation infrastructure, gross domestic product and growth rate, whereas social indicators included political risk, democracy index and human development index. Some of the indicators used in the study were the same as in Wong and Tang (2018): political risk included dimensions, like political stability and control of corruption, and human development index was comprised of several education-related factors. Surprisingly, there was no connection between economic factors and logistics performance, whereas there was a significant positive correlation between social factors and logistics performance. (Guner & Coskun 2012, 335–336.) These results, as well as the study of Wong and Tang (2018) underscore the importance of institutional quality as a determinant of logistics performance and the fact that economic factors, even high investments in transport infrastructure, alone cannot improve logistics performance of a country if the quality of institutions is low.

The literature on major factors directly affecting logistics performance is scarce (Wong & Tang 2018, 432). However, there is abundant research on determinants of trade. Since it has been shown that logistics performance correlates positively with international

trade flows (see, for example, Hausman, Lee & Subramanian 2013), it is worthwhile exploring literature on factors affecting trade in the context of this study. Empirical research evidence suggests that institutional quality fosters trade in general. According to Anderson and Marcouiller (2002), the logic behind this is that insecurity of international trade, including corruption, defective contract enforcement and even cargo thefts, causes hidden transaction costs, which reduces trade. They argue that insecurity explains why high-income countries, with good institutional support for trade, trade disproportionally among themselves. (Anderson & Marcouiller 2002, 343.) Next, studies that focus on estimating the impact of institutional quality on trade will be reviewed.

Álvarez et al. (2018) studied the effect of institutional quality on bilateral trade by using six Worldwide Governance Indicators: *control of corruption, government effectiveness, political stability and absence of violence, rule of law, regulatory quality* as well as *voice and accountability*. Of these indicators, *regulatory quality* seemed to have the highest positive impact on trade (2018). The same Worldwide Governance Indicators were used to explain trade flows in Groot et al. (2004). Their study finds that all governance indicators substantially enhance bilateral trade and that countries that have similar institutional quality trade more between themselves than with countries that differ significantly in terms of the effectiveness of institutions.

Other measures of institutional quality used in the research literature include *government transparency*, *democracy* and *economic freedom*. Anderson and Marcouiller (2002) estimated the effects of *government transparency* and *enforceability of contracts* on imports and confirmed that inadequate institutions impede trade. Yu's study confirmed that *democracy* fosters trade by constructing a gravity model that combined a country's imports and level of democracy. The results indicated that 3–4% of the increase in bilateral trade would be contributed to the democratization of the trading countries (Yu 2010.) Depken and Sonora (2005) examined the impact of *economic freedom* on US consumer goods trade. They found that the trade flows were strongly correlated with institutional quality and that better economic freedom of the trading partner increased in particular exports from the US to that country.

The connection between institutional quality and bilateral trade patterns is under investigation also in Yu et al. (2015). What makes their research different from the abovementioned literature is that in addition to formal institutions (*rule of law*), the focus of the study is on informal institutions, the *trust towards the trading country*. The trust

data was based on a Eurobarometer survey, which measures the opinions of Europeans on the trustworthiness of other European nations.

Besides institutional quality, trade determinants have evidently been approached from the point of view of *logistics performance* and *infrastructure*. Behar and Manners (2008) confirmed the importance of *logistics quality* to bilateral exports by using the LPI as a measure. They concluded that the logistics performance of both the exporter and the importer correlates positively with trade and that for land-locked countries, neighboring countries' logistics quality is even more important than their own.

Francois and Manchin (2013) investigated the impact of *infrastructure* and *institutional quality* on bilateral trade and concluded that trade volumes depend on the *institutional quality* as well as on the availability of good *transport* and *communications infrastructure* of both the exporter and the importer. Shepherd (2016) analyzed the relationship between *trade facilitation*, *infrastructure* and value chain participation and found that trade facilitation in general and especially, improvements in *maritime* and *air connectivity* would enhance trade performance. Portugal-Perez and Wilson (2012) examined the impact of the so-called *soft* (*business environment* and *border and transport efficiency*) and *hard infrastructure* (*ICT* and *physical infrastructure*) on the export performance of developing countries and confirmed that infrastructure quality correlates positively with export. They found that of the four indicators used in the study, *physical infrastructure* seemed to be the most important.

Iwanow and Kirkpatrick (2007) showed that while trade facilitation that covers only on-the-border measures, such as *customs* and *trade administration*, contributes to improving export performance, quality of the *regulatory environment* as well as *transport* and *communications infrastructure* are even more important in promoting export growth.

Wilson et al. (2005) estimated the impact of four TTF measures, *port infrastructure*, *customs environment*, *regulatory environment* and *e-business infrastructure*, on bilateral trade flows of 75 countries. The results suggested that improving all four measures would increase world trade by 9.7%, *e-business infrastructure* having the biggest contribution to the growth and that in most countries, the exports would grow more than imports.

By using a variety of infrastructure indicators, Nordås and Piermartini (2004) showed that the quality of *infrastructure* has a significant impact on bilateral trade flows. Of the indicators studied, *airports, roads, telephone lines, port efficiency and the median port clearance tim*e, it was suggested that *port efficiency* contributes the most to trade performance. The study also analyzed different sectors separately and one of the

conclusions was that for the clothing sector, customs clearance time and airport density are of particular importance. This finding underlines the time sensitivity of the current fashion industry (Nordås & Piermartini 2004, 18).

The studies summarized above show that the research literature offers strong evidence on the influence of infrastructure on trade. A great variety of infrastructure and trade facilitation indicators have been used in research with different emphases. Many of these studies highlight the importance of physical transport infrastructure as well as communications infrastructure. However, some studies find soft infrastructure measures, such as regulatory environment or port efficiency, to be at least as important as hard infrastructure measures in improving trade performance.

The following table provides a summary of the research literature focusing on social and economic factors affecting the trade and logistics performance of countries. The data for variables measuring different factors used in these studies are based on indices created by international organizations. The same indicators have been discussed more in detail in section 2.2.2.

Table 2. Empirical research on determinants of logistics performance and trade

Study	Explanatory variable	Dependent variable	Data
Àlvarez et al. (2018) Does institutional quality matter for trade? Institutional condition in a sectoral trade framework. *World Development*, Vol. 103, 72–87.	**Institutional quality** 1. Control of Corruption 2. Government effectiveness 3. Political stability and absence of violence 4. Rule of law 5. Regulatory quality 6. Voice and accountability	Bilateral tradeflows	- Institutional Quality: World Governance Indicators, WGI (World Bank) - Trade: Commodity trade database, COMTRADE and Service trade database (UN)
Wong & Tang (2018) The major Determinants of Logistic Performance in a global perspective: evidence from panel data analysis. *International Journal of Logistics: Research and Applications*, Vol. 21 (4) 431–443.	**1. Institutional quality** - Corruption - Political stability **2. Infrastructure** **3. Technology** **4. Labor** **5. Education**	Logistic performance	- Institutional quality: WGI (World Bank) and Corruption perceptions index (Transparency international) - Infrastructure and other: Global competitiveness report (World Economic Forum) - Logistic performance: Logistic Performance index (LPI) (World Bank)
Shepherd (2016) Infrastructure, trade facilitation and network connectivity in Sub-Saharan Africa. *Journal of African Trade*, Vol. 3, 1–22.	**Infrastructure and trade facilitation** 1. Infrastructure 2. Liner shipping connectivity 3. Air connectivity 4. Road network length 5. Trade facilitation (soft infrastructure)	Value added trade	- Infrastructure: Infrastructure component of the LPI (World Bank) - Liner shipping connectivity index (UNCTAD) - Air Connectivity Index (World Bank) - Road network: CIA World Factbook - Trade facilitation: Trade Facilitation Indicators, TFI (OECD), - Trade: value added exports in the textile and clothing as well as agriculture sector (UNCTAD Eora Global value chain database)
Yu et al. (2015) Trade, trust and the rule of law. *European Journal of Political Economy*, Vol. 37, 102–115.	**Institutional quality** 1. Rule of law: Effectiveness of property rights protection and contract enforcement 2. Bilateral trust between countries	Bilateral tradeflows	- Rule of law: Rule of law component of the WGI (World Bank) - Trust: Eurobarometer survey - Trade: Comtrade (UN)

Table 2. ***Continued***

Francois & Manchin (2013) Institutions, infrastructure and trade. *World Development*, Vol. 46, 165–175.	**1. Infrastructure** - Freight of air transport - Fixed mobile subscribers - Mobile phones - Paved roads - Telephone mainlines - Total road network **2. Institutional quality** - Size of government - Legal structure and protection of property rights - Access to sound money - Regulation of labor, credit and business - Freedom to trade internationally	Bilateral tradeflows	- Infrastructure: World Development Indicators database (World Bank) - Institutional quality: Economic Freedom of the World EFW (Fraser Institute) - Trade: World Integrated Trade Solution (UN/World Bank)
Guner & Coskun (2012) Comparison of impacts of economic and social factors on countries' logistic performances: A study with 26 OECD countries. *Research in Logistics & Production*, Vol. 2 (4), 329–343.	**Economic** 1. Transport infrastructure spending 2. GDP 3. Growth rate **Social** 4. Political risk - Voice and accountability - Political stability and absence of violence - Government effectiveness - Regulatory quality - Rule of law - Control of corruption 5. Democracy - Electoral process and pluralism - Civil liberties - Functioning of the government - Political participation - Political culture 6. Human development - Life expectancy at birth - Mean years of schoolin - Expected years of schooling - Gross national income per capita	Logistics performance 1. Customs 2. Infrastructure 3. International shipments 4. Logistics competence 5. Tracking and tracing 6. Timeliness	- Economic data: OECD and World Bank - Political risk (Political risk services) - Democracy: Democracy Index (Economist Intelligence Unit) - Human development: Human Development Index (UN) - Logistics performance: LPI (World Bank)

Table 2. ***Continued***

Portugal-Perez & Wilson (2012) Export performance and trade facilitation reform: Hard and soft infrastructure. *World Development*, Vol. 40 (7) 1295–1307.	**Hard infrastructure** 1. Physical infrastructure - Quality of port infrastructure - Quality of road infrastructure - Quality of airport infrastructure - Quality of railroad infrastructure 2. ICT - Availability of latest ICT technology - Level of technical absorption - Extent of business internet use - Government prioritization of ICT **Soft infrastructure** 3. Border and transport efficiency - Number of documents to export - Number of days to export - Number of documents to import - Number of days to import 4. Business and regulatory environment - Government transparency - Public trust for government - Irregular payments in exports and imports - Irregular payments in public contracts - Measures to combat corruption - Favoritism of government to well-connected firms	Export of countries	- Hard and soft infastructure: Global competitiveness report (World Economic Forum), Doing Business index (World Bank), World Development indicators (World Bank), Corruption perceptions (Transparency International) - Exports: COMTRADE (UN)
Yu (2010) Trade, democracy and the gravity equation. *Journal of Development Economics*, Vol. 91, 289–300.	**Democracy**	Imports	Democracy: Polity IV data set (Marshall, Political Instability Task Force) - Imports: NBER-UN World Trade data (UN)
Behar & Manners (2008) Logistics and Exports. *CSAE Working Paper Series*. Centre for the study of African Economies, University of Oxford, 2018-13.	**Logistics quality**	Bilateral exports	- Logistics Quality: LPI (World Bank) - Exports: Direction of Trade statistics (IMF)

Table 2. ***Continued***

Iwanow & Kirkpatrick (2007) Trade facilitation, regulatory quality and export performance. *Journal of International Development*, Vol. 19, 735–753.	**1. Trade facilitation** - Hidden export barriers - Irregular payments in export and imports - number of all documents required to export/import goods - time necessary to comply with all procedures required to export/import goods - costs associated with all the procedures required to export/import goods **2. Regulatory quality** a) Institutional quality - control of Corruption - government effectiveness - political stability and absence of violence - rule of law - regulatory quality - voice and accountability b) Regulatory efficiency - Contract enforcement (number of procedures in a court case involving breaching a contract; time in calendar days to resolve the dispute; cost in court and attorney fees, where the use iof attorneys is common or mandatory expressed as a percentage of the debt value) - Business regulation (labor legislation index; index of business entry; bankruptcy regulations) **3. Infastructure** - share of paved roads - road and rail density - telephone and mobile phone subscribers per 1000 people	Export performance	- Trade facilitation: Global competitiveness report (World Economic Forum) and Doing Business index (World Bank) - Regulatory Quality: World Governance Indicators (World Bank) and Doing Business index (World Bank) - Infrastructure: World Development Indicators (World Bank) and International Telecommunications Union data - Export performance: Bilateral Trade in manufacturing, COMTRADE (UN)
Depken & Sonora (2005) Asymmetric effects of economic freedom on international trade flows. *International Journal of Business and Economics*, Vol. 4 (2) 141–155.	Economic freedom	Consumer goods trade flows	- Economic freedom: Economic freedom of the world index (Fraser Institute) - Trade (US Census Bureau and USA Trade Online)

Table 2. ***Continued***

Wilson et al. (2005) Assessing the benefits of trade facilitation: A global perspective. *World Economy*, Vol. 28 (6) 841–871.	**Trade facilitation** 1. Port efficiency - Port facilities and inland waterways - Air transport 2. Customs environment - Hidden import barriers - Irregular extra payments and bribes 3. Regulatory environment - Transparency of government policy - Control of corruption 4. E-business infrastructure - Speed and cost of internet access - Effect of internet on business	Bilateral trade of manufactured goods	- Port efficiency, Customs environment and E-business infrastructure: Global competitiveness report (World Economic Forum) - Regulatory environment: World competitiveness Yearbook (IMD Lausanne) and WGI (World bank) - Bilateral tradeflows: COMTRADE (UN)
Groot et al. (2004) The institutional determinants of bilateral trade patterns. *Kyklos*, Vol. 57 (1) 103–124.	**Institutional quality** 1. Control of Corruption 2. Government effectiveness 3. Political stability and absence of violence 4. Rule of law 5. Regulatory quality 6. Voice and accountability	Bilateral trade flows	- Institutional quality: WGI (World Bank) - Merchandise trade data (UN)
Nordås & Piermartini (2004) Infrastructure and Trade. *WTO Staff Working Paper*, 2004 ERSD-2004-04.	**Infrastructure**: 1. Infrastructure density - Number of paved airports per 1000 square km - Percentage of paved roads - Main telephone lines per 1000 people 2. Port efficiency index 3. Median port clearance time	Total bilateral trade flows and bilateral trade flows in automotive, clothing and textile sectors	- Infrastructure density: World Development Indicators (World Bank) and CIA World Factbook - Port efficiency: Global Competitiveness report (WEF) - Clearance time: (World Bank survey data) - Trade: COMTRADE (UN)
Anderson & Marcouiller (2002) Insecurity and the pattern of trade: An empirical investigation. *Review of Economics and Statistics*, 2002, Vol. 84 (2) 342–352.	**Institutional Quality** 1. Transparency and impartiality of government policies 2. Enforcement of commercial contracts	Imports	- Institutional Quality: Executive survey (WEF) - Import data: Directions of Trade statistics DOTS (IMF)

This literature review concludes that the quality of both infrastructure and institutions determine the conditions for trade and logistics performance. It is worthwhile looking into these determinants more in detail. The next sections thus expand on these two determinants of trade and explain from a more practical point of view how they affect logistics performance.

3.2 Infrastructure and logistics

The dimensions of *soft* and *hard infrastructure* were introduced in the context of TTF in section 2.1.1. According to Portugal-Perez and Wilson (2012) the level of hard infrastructure can be measured 1) by *physical infrastructure*, which indicates the quality and availability of ports, airports, roads and railroad infrastructure and 2) *information and communications technology*, which entails the degree to which ICT is used for improving efficiency and productivity as well as reducing transaction costs. Soft infrastructure indicators are 1) *border and domestic transport efficiency* that is measured by the time, cost, and number of documents needed for export and import procedures and 2) *business and regulatory environment* measured by the level of development of regulations and transparency. It is reflected in irregular payments, favoritism, government transparency and anti-corruption measures. (Portugal-Perez & Wilson 2012, 1298–1299.) The main focus of this section is on hard infrastructure, while essential indicators of soft infrastructure, such as corruption, are discussed in the following section.

International business is dependent on trade-related physical infrastructure and ICT infrastructure, which enable the physical movement of goods and fast exchange of information (Wong & Tang 2018, 433). A functional infrastructure is essential in creating a logistics-friendly environment for doing business (Vilko, Karandassov & Myller 2011, 1154) whereas, bad infrastructure, such as poor road, rail, port and airport infrastructure, restricts international business (Limão & Venables 2001). Low quality of roads as well as congested ports and transport infrastructure in importing or exporting countries cause delays to shipments and thus bottlenecks in supply chains (APEC 2015, 28).

In addition to physical infrastructure, the availability of logistics services and vehicles is an essential component of the logistics infrastructure of a country (Wong & Tang 2018, 434). This fact is reflected in several trade and transport facilitation indicators (see section 2.2.2) that evaluate logistics operations. The LPI, for instance, includes logistics services in its components of logistics performance and the Enabling Trade

Index has transport services as one of its infrastructure-related indicators. According to the LPI report, it has been shown that the quality of logistics services is an important driver of logistics performance for virtually all countries (Arvis et al. 2018, 3).

Even though logistics services are offered by private companies, such as DB Schenker and DHL, which are among the world's biggest third-party logistics service providers (3PLs), the service delivery and efficiency of supply chains is dependent on public policies that fund and regulate, for instance, infrastructure and border agencies. In countries with well-performing logistics services, firms can outsource logistics functions to third-party service providers and concentrate on their core business while having highly complex supply chains. The more these advanced services are available at low costs, the more manufacturers will outsource their logistics. (Arvis et al. 2016, 4–5.) The opposite situation can exist in developing countries that lack a competitive logistics market and the provision of advanced logistics services altogether. One of the reasons is nonexistent demand, which is due to low transport volumes related to low volumes of international trade. This may lead to a vicious circle, where low transport volumes hinder the development of logistics firms and make logistics markets unreliable. This in turn forces the traders to keep higher inventories, which hurts their competitiveness and makes transport costs higher and/or lowers traded volumes. (Ojala, Andersson & Naula 2008, 445.)

According to global assessments measuring hard infrastructure, satisfaction with the quality of rail and road infrastructure are particularly low in Latin America and the Caribbean. Out of different infrastructure types, the ICT infrastructure is rated the highest along with ports. The ICT infrastructure, in general, is rated higher than physical infrastructure in all other regions as well, except the Middle East and North Africa. (Arvis et al. 2018, 20.) As was mentioned in the previous paragraph, the efficiency of the supply chain relies heavily on public sector actions because logistics infrastructure is funded and regulated by the government (Arvis et al. 2016, 5). Government intervention is needed to address significant infrastructure gaps as well as the lack of modern logistics services in Latin America (García Piña & Quindimil 2016, 6). Having said that, it has been the privatization of ports in many Latin American countries that has played an important role in increasing international trade in the region. Private port operators have made significant investments in the port infrastructure and thus improved productivity and reduced operating costs. Ports are in general very important for trade in Latin America because

rail and road networks, especially cross-border networks, are often very poor. (Dresner & Grimm 2001, 372–374.)

3.3 Institutional quality

The role of institutional quality in logistics performance and trade has been discussed in section 2.2.2. It has been reviewed which indicators are used in the research literature to measure a country's institutional quality. Next, two of these indicators, *corruption* and *political stability*, are further explored. Corruption reserves a section of its own in this thesis for two reasons. First, it is included in many trade and transport facilitation indicators as it is considered an important factor in logistics performance and trade. Second, it is a significant issue for most Latin American countries.

Another important aspect in the business and logistics environment, political stability, is covered with concrete examples in the concluding section of this conceptual framework. Political stability can be defined as the certainty related to government policies on tax, property, human rights and other regulatory issues (Wong and Tang 2018, 433). Like corruption, many Latin American states have been affected by long periods of political turmoil, which makes political stability a relevant approach to institutional quality for the context of this study.

3.3.1 Corruption

Corruption is defined as "the abuse of entrusted power for private gain" and it can occur at all levels of the organization and take many forms. *Grand corruption* is referred to when heads of state, ministers and other high-ranking government officials benefit from corruption at the expense of the public interest. *Petty corruption* is defined as the abuse of power by low- and mid-ranking public officials in everyday transactions. A typical form of petty corruption is *facilitation, speed* or *grease payments* that are bribes paid to officials to assure or accelerate the procedure, such as clearance of goods at the customs. *Political corruption* involves lawmakers that manipulate policies based on their own interests. (Transparency International 2018; Finnish Chamber of Commerce 2002, 15.) Corruption becomes *systemic* when it is pervasive in all levels of society (Bhargava 2005, 2).

Studies have shown that corruption impedes a country's logistics performance, which is why it is a topic included in several TTF indicators, such as the LPI. Wong and Tang (2018) confirmed in their study that high logistics performance correlates with a low level of corruption and high political stability. They also concluded that other factors, such as infrastructure, technology and labor could have a positive effect on logistics performance only in so far as the local government is able to fight corruption and create a politically stable environment for business and trade processes. Similarly, it has been reported that solicitation of informal payments is one of the major delays of port operations in international trade. A study of logistics performance related to container traffic in selected Latin American economies and other emerging economies revealed that reduction of bribery would increase container trade (Seabra, Flores & Gomes 2016, 3029–3030).

For companies, operating in a corrupt environment means more risks. On one hand, refusing to pay bribes may slow down business operations. On the other hand, paying bribes raises costs directly and indirectly in form of higher operating costs as well as legal and reputational risks (Saenz & Brown 2018, 259). Bribery is not seen in a positive light by the company's stakeholders in the home country even though it might be business as usual in the foreign operating country. In addition, companies might face legal consequences in their home country or one of their operating countries. It is thus imperative to have adequate corporate anti-bribery policies in place. Other indirect effects to companies include higher cost of credit, issues related to crumbling infrastructure, bad public services and general uncertainty of the business environment (Gaviria 2002, 250).

Corruption remains a severe problem in Latin America. Despite the recent increase of anti-corruption laws and institutions as well as investigations of high-profile corruption cases, corruption is on the rise (Urizar & Torchiaro 2018). These conclusions are drawn from Transparency International's Global Corruption Barometer. According to the survey, more than half of the population in Latin America and the Caribbean thinks that the government fails to address the problem of corruption and that corruption had even increased over the previous 12 months. Almost one in five reported having paid a bribe to at least one public service during the preceding 12 months. (Pring & Vrushi 2019, 9, 12.)

Corruption perceptions measured indicate clearly that corruption is systemic in Latin America. Consequently, corruption is particularly hard to combat and would require a dramatic change in attitudes and practices of society. While perceived corruption may in fact increase when corruption decreases because more incidents of corruption become

public, progress made in tackling corruption in Latin America remain small compared with other emerging markets (Lipton, Werner & Gonçalves 2017).

However, there is considerable variation between countries in Latin America and the Caribbean region. The highest bribery rates are found in Venezuela (50%) Mexico (34%) and Peru (30%) and the lowest in Costa Rica (7%) Barbados (9%) and Brazil (11%) (Pring & Vrushi 2019, 17.)

Trade and transport facilitation contributes to better governance and reduces corruption (OECD & WTO 2013, 18–21). One concrete example of this is the corruption-reducing impact of improvements in customs procedures. Shepherd has found that longer trade times correlate strongly with trade-related corruption, such as the collection of speed money to expedite customs formalities (Shepherd 2010, 26). This makes sense, as long border times encourage companies to pay for speeding up the process. Thus, reducing the time goods spend at the customs would reduce corruption. Another way for tackling the corruption of customs officials is the use of ICT. Automated customs management systems are effective in guaranteeing transparency. They make the clearance of goods faster, improve the reliability of foreign trade statistics and make the control of customs operations easier, which in turn reduces duty evasion. (Jean & Mitaritonna 2010, 30.)

3.3.2 Political instability

One of the Worldwide Governance Indicators is *political stability and the absence of violence or terrorism*. Along with *regulatory quality*, this indicator demonstrates "the capacity of the government to effectively formulate and implement sound policies". (Kaufmann et al. 2010, 4.) A stable political environment contributes to international business because companies can rely on that there will not be any unpredictable changes in government policies that would affect trade (Wong & Tang 2018, 433). Companies might reduce operations or even completely exit from markets because of political unrest or worsened conditions for doing business. This section looks into some issues that might arise from political instability. First, it is considered what kind of costs are related to issues in the regulatory environment and then, to insecurity caused by criminal activities.

In general, differences in regulatory environments set challenges for international trade. Complying with public and private standards concerning consumer safety, public health and environment can be tricky in cross-border trade, when standards differ between

countries. Common international standards help address these information asymmetries (Tijaja 2013, 4). Costs of acquiring information on all relevant regulations, such as local standards, different permits and taxes can be significant because the information is not always easily available and might involve several agencies. Complying with local laws becomes especially challenging, if the government revises them constantly, as has been the case with Mexican tax laws in recent years. (APEC 2015, 29, 109, 291.) Another point of view to the regulatory environment is the protection of company assets. Companies want to be sure that intellectual and property rights (IP rights) are protected and enforcement of contracts is reliable in the country they want to operate in (Taglioni & Winkler 2016, 13).

One issue related to political instability causing unpredictability in logistics is strikes. For example, strikes among customs officials have caused losses for Chilean exporters of fresh produce, such as salmon and fruit (APEC 2015, 474). In Finland, strikes of the Finnish Transport Workers' Union AKT affecting port operations have caused problems for companies in terms of delayed deliveries and interruptions in manufacturing, which damage exporters' reputation as a reliable supplier. Besides the impact on the reputation of companies, labor strikes affect countries' reputation in the long term as in the case cited in Lorentz and Hilmola (2012, 348) concerning longshoremen's strike in Finland in 2010. Due to the supply chain disruption caused by the strike, companies' confidence towards using Finnish ports in their supply chain was diminished, which encouraged them to redesign the supply chain to use alternative ports in the Baltic Sea to avoid similar disruptions in the future.

Another issue causing delays in the supply chain is the threat of international terrorism and cross-border crime, which increases security and anti-smuggling checks at the border and thus, causes delays in crossing the border (UNECE 2012b). One example of such a challenge is the border crossing between Mexico and the United States, where security controls often cause unpredictable delays. It has even been stated that the border between Mexico and the US is one of the biggest hinders to supply chain competitiveness that would be achieved with the North American Free Trade Agreement (NAFTA). (Cedillo-Campos et al. 2014.) It is thus important to find a balance between logistics security and trade facilitation. On one hand, extreme security measures affect facilitation and increase logistics costs but on the other hand, insufficient security measures are also harmful to trade. (Pérez-Salas Ascencio, González-Ramírez & Cedillo-Campos 2013.)

Besides delays caused by tightened security measures, there are other costs to international business related to crime and insecurity. Stolen cargo and solicitation of informal payments are severe problems in many Latin American countries. Preparedness for security risks in the supply chain increases costs due to the need for extra insurance and security measures, such as live tracking of trucks and armed escorts. (APEC 2015, 296; 397.) According to Pérez-Salas et al. (2013), Latin America is the riskiest region in the world in terms of costs of crime and violence to companies. Insecurity also affects the possibilities to gain capital, as was the case for firms operating in rural areas of Colombia during the armed conflict when investors were reluctant to invest in unsafe regions (Casas, Cateriano, Pontes & Randall 2009, 195).

In this section, various risks that are related to corruption, unstable political environments and insecurity have been discussed. These risks burden companies with extra costs and unpredictability of logistics. It is worthwhile for companies to take these questions into account when considering operating in different countries. In the following chapters of this study, Colombia and its peer countries are evaluated in the light of these questions with the help of indicators presented in the preceding chapters.

3.4 Theoretical framework for analyzing the Colombian logistics and business environment

This section recaps the theoretical framework for analyzing the Colombian business and logistics environment. The purpose is to clarify how the reviewed literature was used in the analysis. The concept of trade and transport facilitation as well as ways to measure it are thoroughly explored in the theoretical framework. In particular, the indicators created by different international organizations for assessing countries' performance in the field of TTF are presented. The indicators were roughly divided into groups based on their topic: some are related to transport infrastructure and logistics, some to institutions and others cover both. The indicators are revisited in section 5.6, which reviews the indicator scores and rankings of Colombia and the comparator countries.

The literature review on logistics performance in section 3.1 summarizes academic studies which examine the interconnectedness of *trade* and *logistics performance*. Evidence from the research literature suggests that issues related to both infrastructure and institutions affect logistics performance and thus, trade. The most important takeaway of this review is the determinants that have been used in academic literature for measuring

logistics performance as well as trade and transport facilitation. Based on the review, two types of determinants of logistics performance were distinguished: indicators related to transport infrastructure and institutions. Table 3 presents the links between the sections in the theoretical part and those of the analysis.

Table 3. Theoretical framework for analyzing the Colombian business environment from the point of view of logistics

Theory	Section	Analysis	Section
Trade and transport facilitation indices (World Bank; OECD; WEF; Heritage Foundation; Transparency International; Global Express Association; DHL; UNCTAD; IATA; Interamerican Development Bank)	2.1, 2.2	The scores of Colombia and its peer countries in trade and transport facilitation indicators	5.6
Determinants of logistics performance: Infrastructure (Shepherd 2016; Francois & Manchin 2013; Guner & Coskun 2012; Portugal-Perez & Wilson 2012; Behar & Manners 2008; Iwanow & Kirkpatrick 2007; Wilson et al. 2005; Nordås & Piermartini 2004)	3.1, 3.2	Transport infrastructure analysis of Colombia	5.5
		Selected infrastructure indicators	5.7.1
Determinants of logistics performance: Institutional quality (Àlvarez 2018; Wong & Tang 2018; Yu et al. 2015; Francois & Manchin 2013; Guner & Coskun 2012; Portugal-Perez & Wilson 2012; Yu 2010; Iwanow & Kirkpatrick 2007; Depken & Sonora 2005; Wilson et al. 2005; Groot et al. 2004; Anderson & Marcouiller 2002)	3.1, 3.3	Overview of the economy and trade environment in Colombia	5.1, 5.2, 5.3, 5.4
		Selected institutional quality indicators	5.7.2

The literature review sets the frames for the analysis of the Colombian business and logistics environment, as both institutional questions and infrastructure-related issues were covered in the analysis. What makes the research framework of the present study different from previous research is that it combines an analysis of the current state of the economy and transport infrastructure with an evaluation of Colombia's performance in a

great number of TTF indicators. The first part of the analysis is dedicated to analyzing the economy and trade environment as well as transport infrastructure in Colombia. The second part deals with TTF performance indicators. Out of the numerous indicator components are highlighted those that have been identified as the key components of logistics performance based on the survey of literature on logistics performance.

4 RESEARCH DESIGN

4.1 Research approach and strategy

As has been mentioned previously, the focus of the study is the Colombian business environment from the point of view of logistics. The objective of the study was to describe the Colombian business and logistics environment to increase the understanding of Finnish companies of this particular operating environment. Thus, by definition, the purpose of the study is *descriptive*. As for data collection and analysis techniques, a *qualitative* approach was chosen because the aim was to describe the Colombian business and logistics environment holistically. Qualitative research aims to provide a detailed description of the studied object, which makes it distinct from quantitative methodologies that seek to describe the general characteristics of a population (Hyde 2000, 84).

The research strategy chosen for this thesis is a *case study*. According to Yin (2003, 2, 5), a case study is the preferred research strategy when the research question is a "how" or "why" question and the focus is on contemporary events over which the researcher has no or little control. In addition, case study methodology allows for retaining a holistic image of the contemporary phenomenon. For these reasons, a descriptive case study is a suitable strategy for this study. The main unit of analysis in this case study is the Colombian business and logistics environment.

As has been noted earlier, the research question directing the study is:

RQ1: How is the Colombian business environment from the point of view of logistics?

When evaluating the business environment of a country, it is worth comparing it to that of other countries. In the context of this thesis, it makes sense to compare Colombia to other countries in Latin America. This results in the second research question:

RQ2: How does Colombia compare in terms of logistics performance with its Latin American peers?

For replying to the research questions, secondary data in the form of reports, statistics as well as international assessments and rankings was studied.

An inductive approach to reasoning means a theory-building process that starts from empirical observations and seeks to develop a theory based on these facts. Whereas in deductive reasoning, the starting point is an established theory and the study aims to test hypotheses set based on the theory. (Hyde 2000, 83.) The logic behind this thesis is *inductive* as the goal was to explore the Colombian business and logistics environment without setting *a priori* hypotheses. The inductive research process is not obviously completely free from preconceptions as no topic can be studied in a void. Concepts and ideas from prior research advise the researcher on where to find and what to look for in the empirical data as well as help in analyzing the data. These *sensitizing concepts* are used as a starting point, especially in inductive qualitative research. (Eriksson & Kovalainen 2008, 129, 309.) In the same way, research literature creates a conceptual framework for this study. The concepts related to trade and transport facilitation presented in Chapters 2 and 3 helped in choosing and organizing the data for describing the Colombian business environment from the point of logistics.

4.2 Data collection and analysis

The main source data for this study was international assessments on the logistics performance of Colombia and its comparator countries. This data includes rankings and scores that international organizations have created to compare different countries. These reports are excellent in giving insight into how the Colombian logistics performance and business environment compare globally and regionally. In Colombia's case, it makes sense to compare its score to other Latin American countries to put the assessment in perspective. For this reason, the indicator scores presented in the analysis are accompanied by those of Colombia's peers. Suitable comparator countries for Colombia were found with the help of the World Bank's Comparator Countries database – a tool that suggests countries for benchmarking based on their similarities in economic size and development, export basket composition as well as geographical proximity (World Bank 2015). This method suits well the purpose of this study because if we think that a company is selecting a country for its foreign operations, it will most likely want to compare countries that are located in the same region and have similar industries.

According to the World Bank's tool, the best matching comparators in Latin America and the Caribbean (LAC) are Argentina, Ecuador, Peru, Brazil, Costa Rica, Dominican Republic, El Salvador and Venezuela. The countries are organized by similarity with

Colombia in decreasing order. The list was narrowed down by leaving out the Dominican Republic because it is an island state unlike the rest of the countries and El Salvador, which is classified as a lower-middle-income economy according to the World Bank's income groupings. All the other countries belong to upper-middle-income economies (World Bank 2018a.) It was also decided that Venezuela would not be included in comparator countries due to its extremely difficult political and economic situation. The prevailing poverty and dictatorship affect the competitiveness of the country. Consequently, the current situation would not give good grounds for comparison. The three mentioned countries also happen to be the least similar to Colombia according to the Comparator Countries tool, which further justifies the selection of the peer countries. Thus, the list of comparator countries in alphabetical order is as follows: **Argentina, Brazil, Costa Rica, Ecuador** and **Peru**.

In addition to comparisons with other countries, TTF indicators allow for comparisons in time, as most indicators are published yearly or biannually. Many charts and tables in this thesis show the scores for Colombia and its peers for several years in addition to the most recent year available to illustrate the development trend of the score.

The TTF assessments include a plethora of indicators measuring different aspects of the business environment. The most relevant components were selected based on the themes that were found recurring in the academic research on trade and transport facilitation and logistics performance. As the findings of the previous studies indicate that infrastructure and quality of institutions affect countries' logistics performance, the TTF indicators related to these themes were highlighted in the analysis.

Even though the TTF indicators consist of an enormous number of components, they lack a thorough analysis of individual countries' transport sectors. For this reason, the data for this study was complemented by reports and statistics on the current state of logistics in Colombia. This information was mainly gathered from the websites of the Colombian Ministry of Transport and other transport sector authorities. The analytical part of the thesis also includes an outlook on the Colombian economy. For this, the information was principally collected from country reports by embassies, ministries and market research firms as well as trade statistics collected by international organizations.

4.3 Trustworthiness of the research

Traditionally, the trustworthiness of research in logistics has been evaluated based on the notions of validity and reliability. However, this technique is best suited for quantitative research, whereas qualitative methods call for a different approach. (Halldórsson & Aastrup 2003.) Alternative quality criteria proposed in methodology literature include *credibility*, *transferability*, *dependability* and *confirmability* (Guba & Lincoln 1989).

The notion of *credibility* means the truth-value of the study's findings. In other words, to be credible, the researcher's interpretation of the data should match the true meaning of the data. (Halldórsson & Aastrup 2003, 330.) *Triangulation* can be used to show that the findings of the study are credible (Korstjens & Moser 2018, 121). This thesis resorts to *data triangulation* as data for the analysis was collected from a multitude of sources. For instance, the Colombian transport sector was analyzed with the help of reports by the Colombian Ministry of Transport as well as transport infrastructure indicators of international organizations. Furthermore, the trade and transport facilitation indicators serving as research data in this thesis have been constructed by using different data collection methods, such as opinion polls, expert assessments and calculations. Thus, some of the indicators themselves have been created using *method triangulation*.

The credibility of the research results was also improved by the use of several different indicators for measuring the same aspect of the business environment. However, since some indicators are derived from the same source data, there is a risk of making assumptions based on results that appear to be confirming each other when in fact they are similar only because they come from the same data source. To avoid this, it was imperative to examine how the indicators have been constructed and exclude overlapping data from the presentation of the main findings of the study. Thus, the focus in the overview of the results is on indicator components instead of composite indices and overlapping data was left out from the summary of results.

Transferability is the degree to which research results are applicable to other contexts or situations. A prerequisite for assessing transferability is the description of the context of the research setting. (Halldórsson & Aastrup 2003, 332.) One issue related to the transferability of data involves possible bias in the indicators that are based on survey data. One might argue that survey is not a suitable method for comparing countries that are very different from each other because the respondents' answers are always affected by their own cultural context. For example, when survey participants are asked to evaluate

postal services, respondents who are used to punctuality are dissatisfied with even a slight delay, whereas respondents who are used to very unreliable postal service are happy when the shipments arrive at all.

Vokoun and Daza Aramayo (2017) criticized the Global Competitiveness Index of the WEF and other similar indices because they use subjective survey data and their indicators favor developed countries as well as large and neo-classical economies. They maintain that these indices are not suitable for comparing countries with different levels of development. They also remarked that political instability and corruption should not be included in business environment indicators because they have a disproportionate effect on the aggregate index scores of developing countries. (Vokoun & Daza Aramayo 2017.) It can be argued that leaving out such indicators would not be advisable because they are relevant factors of the business environment and companies should be able to make informed decisions based on all available facts.

In the present thesis, the question of the appropriateness of the indicators to different contexts was addressed by comparing Colombia mainly to its regional peer countries that were selected among the countries in the same region based on the similarity of their economy and level of development. In some cases, Colombia was also compared to all the countries in the same region or income group. Besides, in addition to overall scores and rankings, the scores of index components are presented so that the reader can see what the aggregate score consists of and can make their own conclusions based on what they deem relevant.

Dependability means the extent to which the study could be replicated by another researcher with similar findings. The fourth quality criteria, *confirmability*, is the neutrality of the research findings i.e., the results are free from the researcher's bias. These criteria can be fulfilled by trackability and explicitness, which in practice means careful documentation of the research process, source data, decisions, theories behind interpretations etc. (Halldórsson & Aastrup 2003, 331.)

In the case of the present thesis, some degree of researcher's bias is inevitable due to the nature of the data. The number of different TTF indicators and their components is so vast that it was impossible to present all of them in this thesis. Thus, which indicators have been left out and which are highlighted in the results affect the image that is conveyed of the Colombian business environment. The selection of indicators was done based on what would be relevant for foreign companies with main emphasis on transport and logistics. Also, the findings of the study concentrate on the strengths and weaknesses

of the business environment. Being aware of the weaknesses is especially important for companies because it allows them to prepare for possible challenges.

The intention was to improve the dependability by explaining the research process and how the theory and analysis are connected throughout the text. The questions that direct the research, as well as the research gap that the thesis aimed to fill, are presented in the introduction followed by a thorough discussion of concepts that are relevant for this study. The trade and transport facilitation indicators were selected as research data because they have been established as determinants of logistics performance in prior academic studies and international organizations' reports. The results of the analysis were arranged according to the findings of the literature review presented in the theoretical framework. Tables and figures were used for clarifying the findings of the literature review, the theoretical framework and the connection between different parts of the study. Such tracking of the research process helps the reader to understand the researcher's thought process and to decide whether the researcher's interpretation of the results is justified. Furthermore, the data sources are clearly indicated in the list of references and are accessible online free of charge, which makes this study easy to replicate.

5 ANALYSIS OF THE COLOMBIAN BUSINESS AND LOGISTICS ENVIRONMENT

This chapter analyzes the business environment and logistics performance of Colombia. The chapter begins with an outlook on the economy and trade relations. Then, follows an analysis of the Colombian transport sector. The last part studies Colombia's performance in trade and transport facilitation indicators compared with its peer countries Argentina, Brazil, Costa Rica, Ecuador and Peru.

5.1 Political and geographical position

The population of Colombia is more than 49.6 million inhabitants (2018), which makes it the third-largest Latin American country by population after Mexico and Brazil. By area, it is the fifth-largest country after Brazil, Argentina, Mexico and Peru covering 1 139 910 square kilometers. (CIA 2020.) According to the World Bank's statistics, 27% of the population live below the poverty line (2018). Even though this is still a substantial proportion of Colombians, the situation has improved fast. In 2009, more than 40% and in 2002, nearly half of the population were poor. However, Colombia remains among the worst countries in the world in terms of income inequality. The literacy rate is estimated to be 95.1% (2018). The unemployment rate (9.7% in 2019) has been one of the highest in Latin America. (World Bank 2020.) Due to the job destructing effect of the COVID-19 pandemic, the unemployment rate rose up to 20% in the second quarter of 2020. Since then, the job market has started to recover and the average unemployment rate for the year 2021 is predicted to be 13.9%. (IHS Markit 2021, 21.)

Terrorism and drug-related violence have long been a severe issue in Colombian society. The former president Juan Santos followed the lead of his predecessor Alvaro Uribe in emphasizing security and indeed, Colombia has made substantial improvements in this field. Colombia suffered for over 50 years of an ongoing armed conflict involving drug cartels and guerrilla movements, such as the extreme left-wing FARC. The Colombian government negotiated with FARC for four years to reach a definite cease-fire and to re-integrate guerrillas into the society. The peace treaty was concluded finally in November 2016 but the implementation of the treaty has been slow. Social inequality, narcotrafficking and land ownership disputes continue to provoke violence. Peace talks with the largest remaining insurgent group ELN (National Liberation Army) were started

in 2017 but were put on hold in January 2019 due to a car bomb organized by the group. The violence and terrorism are concentrated in rural and mountainous areas, and thus, in cities and regions where most business takes place, the armed conflict is no longer visible. (Kokkoniemi 2019, 28–29.)

Despite the insecurity related to the prolonged conflict and narcotrafficking, Colombia has been able to maintain strong democratic institutions characterized by transparent elections and the protection of civil rights (CIA 2020). Colombia also has long traditions in managing well the macroeconomy even during the price slumps of its main export articles. It is the only Latin American country that has not missed a foreign debt payment since the Second World War. (Ripatti 2017, 42). The current president of the republic, Iván Duque elected in 2018, has continued the long-established commitment to macroeconomic stability and promotion of free trade and foreign investments. The current government is striving to finish the massive infrastructure program initiated during Santos's presidency. (IHS Markit 2020, 7.) The project will be the biggest in Latin America and cover the entire country. The plan is to build 25 new terminals or ports, construct or modernize altogether 31 airports, build thousands of kilometers of new highways and transform the river Magdalena so that it would be navigable for cargo vessels. Besides infrastructure, other priorities of Duque include education, environment, entrepreneurship, equality and transparency. One of the main objectives is to reduce excessive bureaucracy and corruption. (Kokkoniemi 2019, 28.)

Iván Duque's presidency has seen the outbreak of mass protests starting from late 2019. In 2020, Duque's approval rate rose thanks to his government's success in containing the spread of the coronavirus. However, easing of restrictions to revive businesses was followed by a surge in infections, which in turn led to a new lock-down. This gave the impression that the government is unable to manage the situation and Duque's popularity plunged as the crisis was prolonged. In April 2021, a tax increase was proposed to maintain Colombia's investment grade. The tax reform proposal was met with the resurgence of public unrest that escalated in violent protests across the nation. The bill was withdrawn but the protests continued as a sign of popular discontent with persisting social problems such as the prevailing social inequality and issues in the peace process. (IHS Markit 2021, 6.)

Colombia is situated in the northeastern part of South America. It is the only country on the continent with access to both the Caribbean Sea and the Pacific Ocean. This has given Colombia a privileged position in exporting goods out of the country. (CIA 2020.) On the other hand, the geography and topology of Colombia bring challenges. The country is divided by the Andes Mountain range and the Amazon rain forest, which has historically hindered communication and transport between the regions. The most fertile soils and profitable mines

are far from the sea and access to ports. The situation was improved by the launch of steamboats in the Magdalena River and the development of railways halfway of the 19th century. (Orlando 1996, 26)

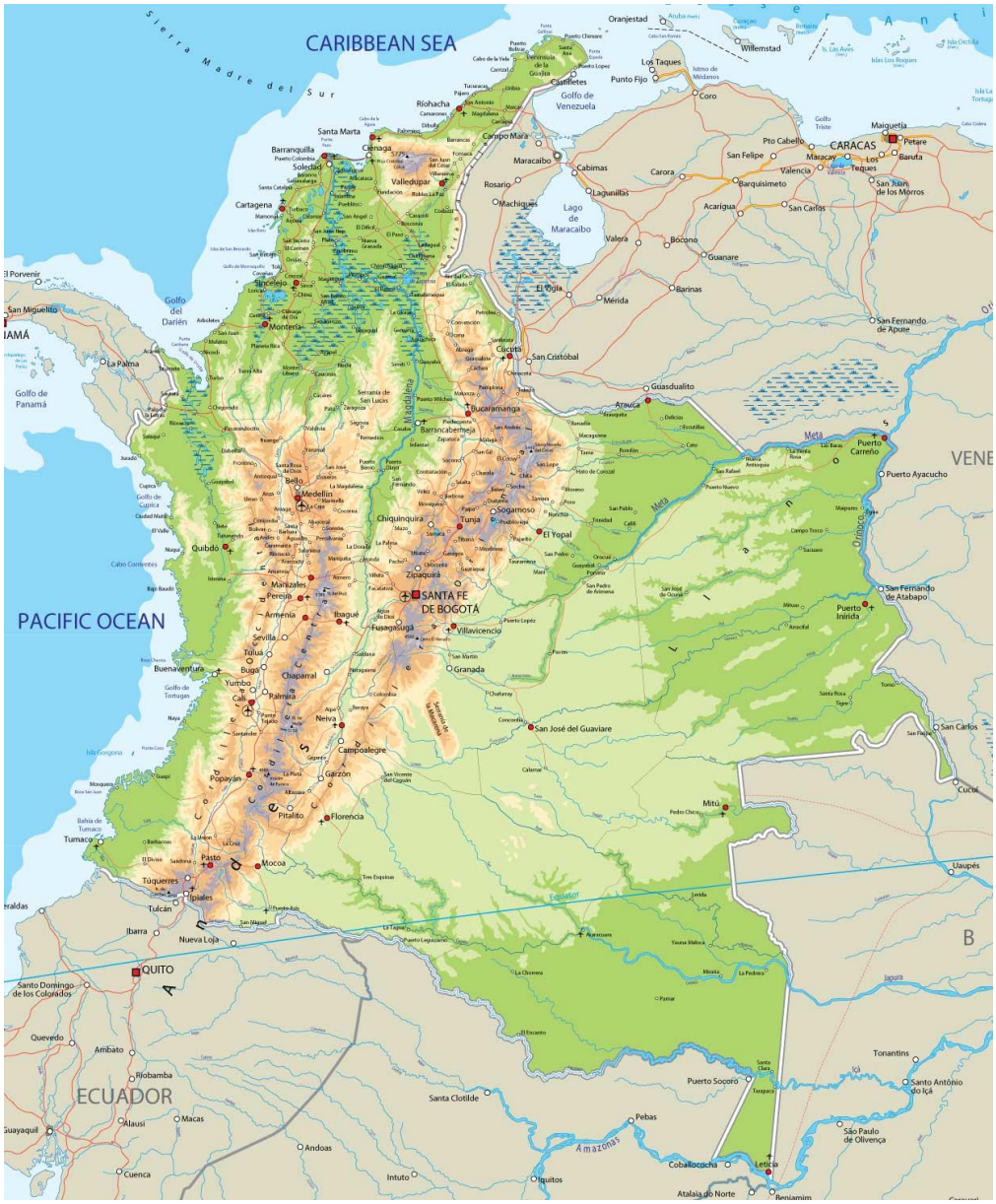

Figure 3. Geographical map of Colombia (Embassyworld.com 1998)

Colombia is situated in the tropics and without the three massive Andes Mountain chains, the climate would be hot and extremely humid. Thanks to the Andes, Colombian climate is very varied: the climate is hot in the valleys and river basins, temperate in the mountain plains and cold up in the mountains. (Orlando 1996, 26.) The variation of ecosystems and the tropical climate make Colombia ideal for agriculture. The soil in the Andes is fertile and allows the cultivation of a great variety of crops suitable for different heights.

Colombia is especially famous for its coffee, which is grown in the Andes between an elevation of 1000 and 1600 meters. Flowers, another important export product, are cultivated in mountain plains, whereas potatoes, grain and vegetables are grown between 2000 and 3300 meters of altitude. Extensive plantations of tropical fruit, cacao, sugar cane, rice, cotton and soybean are situated in the hot regions between sea level and 1000 meters. Besides having ideal conditions for agriculture, Colombia has excellent natural resources for the mining industry. There are ample reserves of coal, oil and gas. Colombia is the biggest exporter of coal and the fourth biggest producer of oil in Latin America. Other important mining products include silver, gold, emeralds and platin. (CountryWatch 2020, 248.)

5.2 Trade regime

Colombia is actively promoting regional cooperation. It is one of the four members of the Andean Community (Comunidad Andina, CAN) of which the objective is to increase development through the integration of the Andean and South American countries (Andean Community, 2020). The CAN was founded in 1969 and it has four members: Bolivia, Colombia, Ecuador and Peru. Venezuela left the Community in 2011. Much like the EU, the CAN constitutes an area, where the movement of goods, services and people is free. In 2005, the CAN made a free trade agreement (FTA) with the Mercosur countries (Argentina, Brazil, Paraguay and Uruguay). (IHS Markit 2020, 21)

The Pacific Alliance (Alianza del Pacífico) was created in 2011 by Colombia, Chile, Mexico and Peru to deepen economic and commercial integration between these countries. Costa Rica and Panama are also applying for membership in the union. The mission and aims of the Pacific Alliance are very similar to those of the EU, meaning that it aims to increase the wellbeing of its member countries' citizens by enhancing growth, development and competitiveness, in particular by facilitating access to the Asia-Pacific market. This will be attained by the free movement of goods, services and capital. So far, the Union has worked for these goals by removing tourist and business visa requirements between the countries, eliminating 92% of tariffs through a trade agreement, which stepped in to force in 2015, and by unifying the stock exchange in the Latin American Integrated Market. The trade market created by the Pacific Alliance is the second-largest trade group in Latin America after Mercosur. (Pacific Alliance 2020; IHS Markit 2021, 19.) Colombia also has a Regional Trade Agreement (RTA) with the Caribbean

Community CARICOM to promote trade and economic as well as technical cooperation between Colombia and the Caribbean countries (Ministry of Commerce, Industry and Tourism of Colombia 2020).

One reason behind Colombia's strong economic growth is its active promotion of free trade agreements (FTAs) (CIA, 2020). In addition to the abovementioned FTAs with regional unions, Colombia has signed FTAs with Mexico (1995), Chile (2009), Guatemala (2009), Honduras (2010) El Salvador (2010), Costa Rica, Canada (2012), the United States (2012), South Korea (2013), the EU (2013) and the EFTA (2008). Colombia signed FTAs with Panama and Israel in 2013 but these agreements have not yet stepped into force. In 2019, Colombia also signed an agreement with the United Kingdom to maintain the same trading relations as the UK had as a member of the EU. Trade agreements with Turkey and Japan are under negotiation. With Cuba and Venezuela, Colombia has bilateral trade agreements, which provide for a preferential tariff system concerning goods originating from contracting parties. (Ministry of Commerce, Industry and Tourism of Colombia 2020.) Currently, Colombia is exploring a possibility to create trade agreements with another five countries: Australia, China, the Dominican Republic, India, and Singapore (PRS group 2017, 13).

Trade between Colombia and the European Union is based on a comprehensive FTA which was signed simultaneously with another Andean country Peru in 2012 and became provisionally applicable with both countries the following year. Ecuador acceded to the treaty in 2016. The last member of the Andean Community, Bolivia, can also seek to join the agreement. The existing trade agreement opens the markets for goods, services, government procurement and investment. (European Commission 2020.) Colombia is the main trading partner of the EU within the CAN and the fifth in Latin America (Delegation of the European Union to Colombia 2016). For Colombia, the EU is the third-largest trading partner (International Trade Center 2019).

Even though Colombia is one of the best countries in Latin America in ease of doing business, issues related to legal formalities and judicial institutions remain challenging. Official regulations and practices have not always been updated according to trade agreements. This causes problems in enforcing the FTAs in Colombia. The current government is tackling this issue by aiming to get rid of excessive bureaucracy and to digitalize processes. (Kokkoniemi 2019, 29.)

5.3 Recent economic development

Colombia is the fourth largest Latin American economy after Mexico, Brazil and Argentina. The economic growth has been strong throughout the 21st century and it is expected to remain above the regional average in the coming years. The Inter-American Development Bank has estimated that in twenty years Colombia might be at the level of industrial countries. Continued growth requires, however, long-term structural changes and diversification of the economy. Colombia became a member of the OECD in 2018. The economic and trade policies have been actively promoting the image of Colombia as a modern and dynamic business environment. Stable financial politics, as well as a relatively easy and reliable business environment, have made Colombia an attractive investment target for foreign companies. (Kokkoniemi 2019, 26.)

Before the COVID-2019 pandemic, the government was focusing on economic challenges related to the peace process, high unemployment and the Venezuelan refugee crisis. Before closing all borders to mitigate the spread of the virus, Colombia kept borders open for the influx of immigrants from its neighboring country and offered access to healthcare, labor market and education. As a consequence, the health care system became underfunded. (IHS Markit 2021, 28.) The crisis in Venezuela has also affected Colombia through the 90-percent drop in exports to Venezuela, which used to be its second-biggest trading partner (Kokkoniemi 2019, 25). More recently, the main economic challenge facing the current government is the global pandemic. The government has allocated 10% of GDP for tackling the consequences of the virus. This includes 7.2 billion US dollars funding for health care, 4.5 billion dollars for social security benefits and tax cuts for the vulnerable and 10.4 billion dollars for employment security (unemployment benefits and credits) as well as credits for SMEs. Now, the focus of the government is on preventing the worsening of the fiscal deficit and maintaining macroeconomic stability in order to defend Colombia's credit rating. (IHS Markit 2021, 8, 27–28.)

Table 4 presents past and expected future growth in Colombia (CO) and its regional peer countries: Argentina (AR), Brazil (BR), Costa Rica (CR), Ecuador (EC) and Peru (PE). The figures in italics are estimations of the IMF.

Table 4. Past and projected GDP growth (International Monetary Fund 2021)

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
AR	6.0	-1.0	2.4	-2.5	2.7	-2.1	2.8	-2.6	*-2.1*	*-10.0*	*5.8*	*2.5*
BR	4.0	1.9	3.0	0.5	-3.6	-3.3	1.3	1.8	1.4	*-4.1*	*3.7*	*2.6*
CO	6.9	3.9	5.1	4.5	3.0	2.1	1.4	2.6	3.3	*-6.8*	*5.2*	*4.0*
CR	4.4	4.9	2.5	3.5	3.7	4.2	4.2	2.1	*2.2*	*-4.8*	*2.6*	*3.3*
EC	7.9	5.6	4.9	3.8	0.1	-1,2	2.4	1.3	*0.0*	*-7.5*	*2.5*	*1.3*
PE	6.5	6.0	5.8	2.4	3.3	4.4	2.1	4.0	2.2	*-11.1*	*8.5*	*5.2*

Between the years 2011 and 2015 Colombia experienced robust annual growth of 4.7 percent on average. The declining prices of oil and other mining products made the GDP growth plummet after 2015. However, thanks to macroeconomic scrutiny and tax reforms, the Colombian economy turned out to be very resilient and was less hit by the globally falling oil prices than for instance Argentina and Brazil, other important Latin American oil producers. The growth picked up in 2018 and was further accelerated the following year by strong domestic consumer demand and an increase in investments. In 2019, Colombia was growing faster than its peers. (CountryWatch 2020, 185–186.)

In 2020, the Colombian economy plunged into recession caused by the COVID-19 pandemic. According to IHS Markit, the economy contracted even more than in the IMF forecast in Table 4 (7.7%). The repercussions for the Colombian economy have been severe for several reasons. First, domestic demand, which is a significant source of growth in Colombia, is affected not only because of unemployment and loss of revenues of consumers but also because mandatory quarantines reduced the demand for services. Second, tourism, which makes up 3.7% of the GDP, was stopped in March 2020 when Colombia closed all borders and banned all recreational flights and transport. Since then, domestic travel has been reopened and international flights have begun to operate again. Nevertheless, the recovery of the tourism industry depends on the roll-out of vaccines, especially in the United States, where most international visitors to Colombia come from. Third, as an exporter of oil and oil-related products declining oil prices hurt the economy in 2020. Fourth, the Colombian economy is fairly open making it vulnerable to the global slowdown of trade. A rebound in GDP growth is expected for 2021 driven by a recovery in export markets, in particular in the biggest trade partner the US, rising oil prices and the launch of vaccination programs in Colombia and globally. Consumer confidence in Colombia has recovered significantly but the rise in COVID cases in summer of 2021 was harming domestic demand. (IHS Markit 2021, 1–2, 29; IHS Markit 2020, 22–23.)

In addition to the agriculture and mining industry discussed in section 5.1, the Colombian economy relies on textile, clothing and footwear, food processing, beverages, chemicals and cement industries as well as tourism of which the importance is growing along with the improved security situation (CIA 2020). Until recent developments in trade diversification, Colombia has been highly dependent on fluctuations in market prices of mining products. In 2013, around half of the export revenues came from oil and 20% from coal. For instance, 70% of exports to the EU consisted of oil and coal, whereas nowadays, the share is 40%. The same development has been visible in foreign investment: in 2013, more than 75% of the FDIs were directed to the mining sector and now, more than 75% of the investments concern other sectors. (Kokkoniemi 2019, 26.) As for the GDP composition by sector, services is by far the largest sector covering 62% of the GDP (estimate for the year 2017). The proportion of the industrial sector is 31% and of agriculture is 7%. (CIA 2020.)

As mentioned before, Colombia has a track record of prudent macroeconomic management and it has set strict limits for the size of the public debt in relation to the GDP. However, government spending has lately increased significantly due to the pandemic and public debt rose to 57% in 2020. Thus, there is no room to increase debt without reaching the target limit set at 60% of the GDP. This threshold will undoubtedly be exceeded in 2021 because even though the worst economic crisis is over, financing is still needed to support the recuperation, including investing in the vaccination program. In fact, the USD81 billion budget approved for the year 2021 is the biggest in the country's history. Thus, it is expected that Colombia's fiscal situation would quickly deteriorate. (IHS Markit 2021, 7–8, 28.)

Credit ratings for Colombia and its peer countries are summarized in Table 5.

Table 5. Credit ratings of Colombia and its peers (2.10.2021) (Trading Economics 2020)

	S&P	Moody's	Fitch
Argentina	CCC+	Ca	CCC
Brazil	BB-	Ba2	BB-
Colombia	BB+	Baa2	BB+
Costa Rica	B	B2	B
Ecuador	B-	Caa3	B-
Peru	BBB+	Baa2	BBB+

The credit rating for the foreign debt of Colombia has been among the highest in Latin America, which has allowed the financing of huge investment projects at a low cost (Kokkoniemi 2019, 25). Colombia has currently access to IMF funding without conditionality due to its track record of macroeconomic stability. However, S&P and Moody's have downgraded the sovereign rating to speculative in 2021 due to their concern that Colombia will fail to implement tax reform needed to lower public debt levels. (IHS Markit 2021, 28.) Out of comparator countries, Peru has the best credit ratings and is considered to be of medium credit quality. The rest of the countries fall into the category of low credit quality, except that in Moody's rating Colombia, remains in lower medium grade. Especially Argentina and Ecuador have very low credit ratings.

5.4 Trade and foreign direct investment development

While Colombia has been promoting trade relations with more than a dozen new trade agreements between 2004 and 2013, its export value has grown 3.5-fold. Due to a decline in oil prices that started in late 2014, the value of exports began to shrink the same year and still has not reached the 2013 level. (Ripatti 2017, 43.) This trend can be seen in Figure 4 that depicts the merchandise trade balance in Colombia during the past decade. In 2013, the trade balance turned from slightly negative to almost 10 billion US dollars negative. In 2020, the merchandise trade deficit was 12.4 billion dollars and the export value 31.0 billion dollars. The value of exports dropped over 20% compared to the previous year.

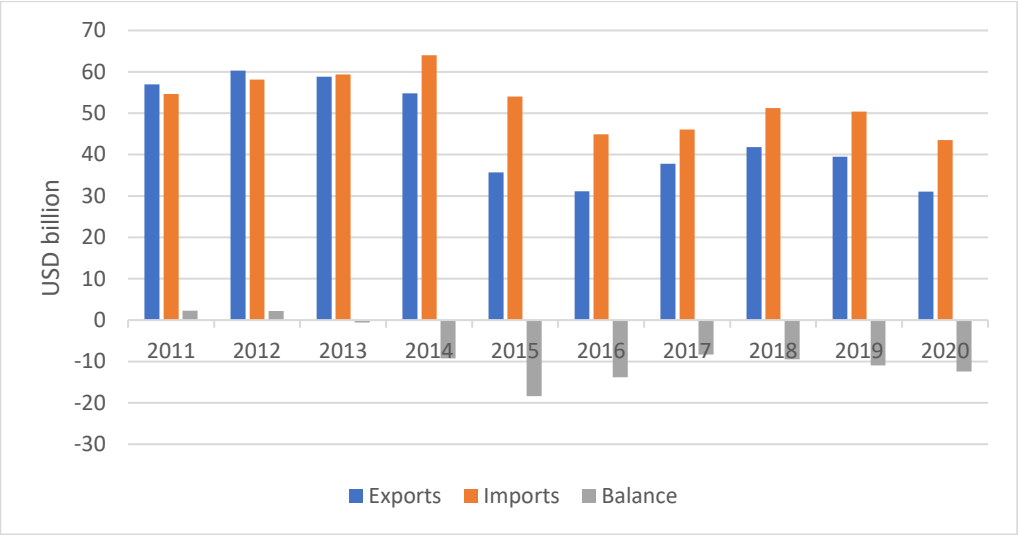

Figure 4. Development of Colombia's merchandise trade in 2011-2020 (International Trade Center 2019)

According to the ITC Trade Map data, mineral fuels and oils accounted for 41.6% of the total merchandise export value in 2020. The export value in US dollars of this product category dropped from 21.6 billion to only 12.9 billion between 2019 and 2020. These figures demonstrate the extent to which Colombia's economy is dependent on oil price fluctuations. The share of other mining products and pearls in 2020 was 9.7%. The third-largest export value came from coffee (8.2%). Other important agricultural products were cut flowers (4.6%) and fruit (4.1%). The value of merchandise imports to Colombia was 43.5 billion dollars. The biggest import product groups were machinery (12%), electronics (11%) and vehicles (8%). (International Trade Center 2019.) The most significant product categories in Colombian exports and imports in 2020 are presented in Appendix 1. Most important product groups in exports and imports by value in 2020 (Source: International Trade Center 2019)

Colombia's main trading partners are visualized in Figure 5 andFigure 6. The United States has traditionally been Colombia's most important trading partner. Besides trade, the countries have strong ties in security issues. Colombia has received a lot of aid from the US for its battle against drug traffic. (IHS Markit 2020, 17.) In 2020, 30.4% of all exports were directed to the US and 24.5% of all imports originated from there. China's share in Colombia's exports was 8.6% and in imports 23.9%. If the EU countries were treated as one trading block, the third biggest trading partner after the US and China would be the EU. The EU's share of Colombia's exports was around 14.1% and the EU's

share of Colombia's imports from the world was 11.6%. (International Trade Center 2019.)

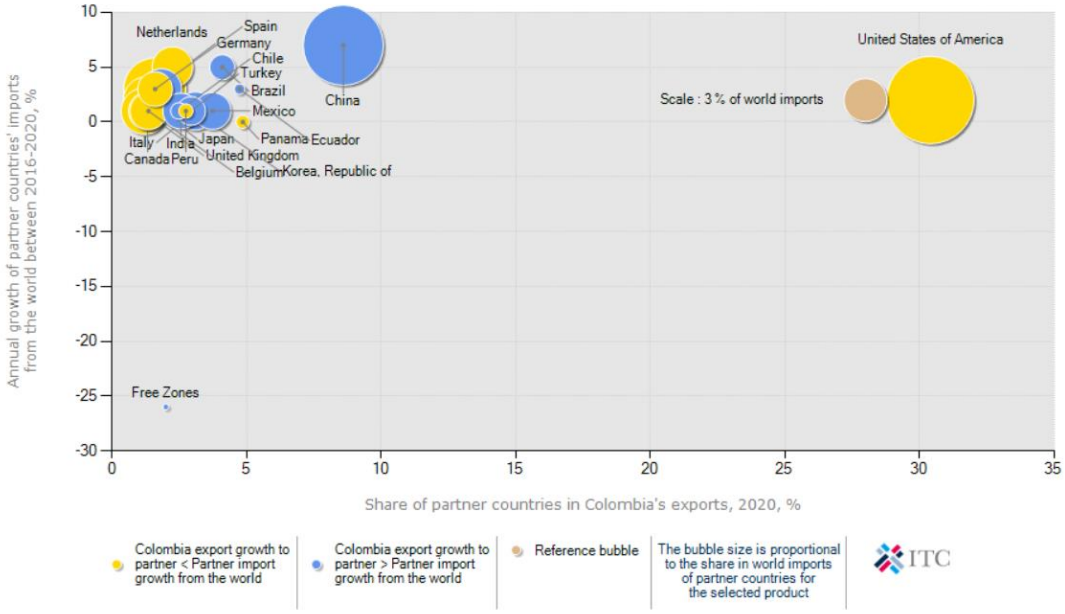

Figure 5. Destination countries for exports from Colombia in 2020 (bubble size indicates the country's importance in the total world trade and the color indicates whether Colombia's export growth to the partner country is more significant than its partner's total import growth) (International Trade Center 2019)

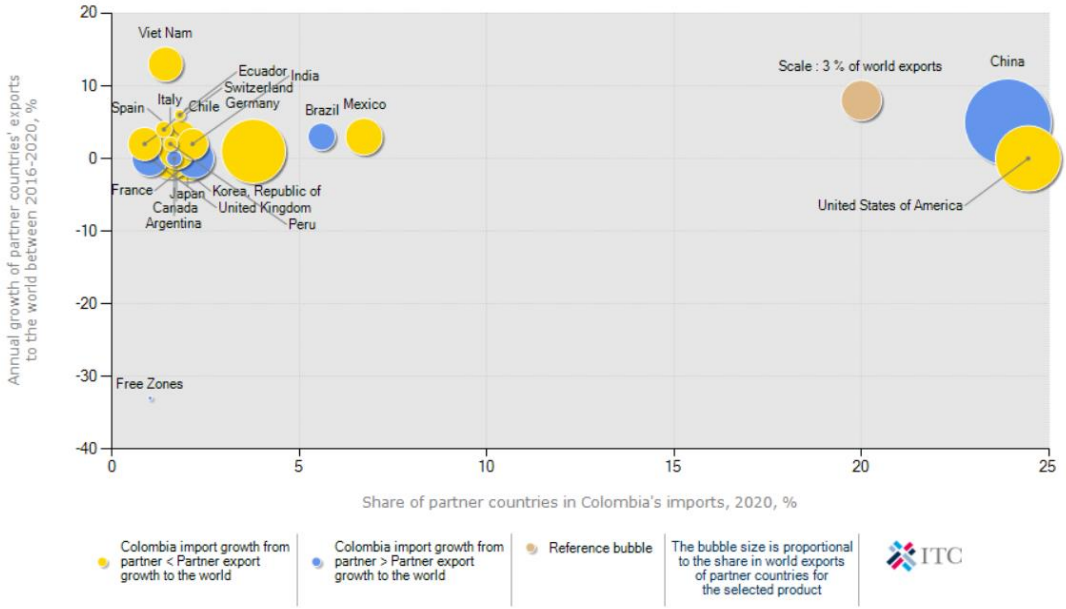

Figure 6. Origin countries for imports to Colombia in 2020 (bubble size indicates the country's importance in the total world trade and the color indicates whether Colombia's import growth from the partner country is more significant than its partner's total export growth) (International Trade Center 2019)

The World Bank and the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) have created a trade costs dataset, which presents data of bilateral trade costs in percentages of the trade value. Bilateral trade costs between Colombia and 30 trading partners with which the country has the lowest trade costs are illustrated in Figure 7. The data covers only manufactured goods and agriculture. The average of the years 2010-2015 is used instead of the latest year available 2015, to include those countries of which the trade data is missing from that particular year.

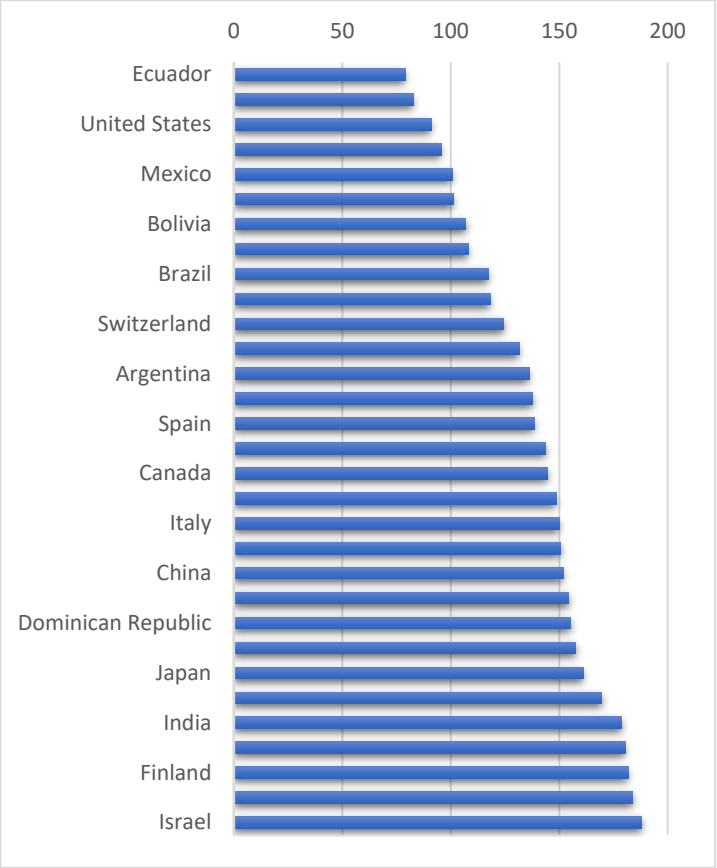

Figure 7. Average bilateral trade costs of Colombia and its trading partners in 2010-2015 (UNESCAP 2018)

The importance of trade facilitation in reducing trade costs has been discussed in section 2.1.2. It was mentioned that tariff costs have sunk historically low but they remain high. Bilateral trade models presented in section 2.2.1 use several different factors in explaining countries' bilateral trade. In addition to tariffs, these factors affecting bilateral trade costs include geographical distance, transportation costs, common language, history and border or membership in the same economic union, logistics performance, international connectivity and non-tariff measures.

In light of this, it is not surprising that nine of the ten countries with the lowest trade costs are Latin American countries. All ten countries have signed free trade agreements with Colombia. In fact, most of the countries listed in the chart have either bilateral FTAs or are part of a union that has an FTA with Colombia, like Switzerland as a member of the EFTA and Argentina as a member of Mercosur.

Out of the EU countries that figure in this top-30 list, Spain is culturally and linguistically closest to Colombia and shares a long history with the country. For this reason, Spain has traditionally had strong trade relations with Colombia. In 2020, it was the 9th biggest exporter of goods to Colombia. Of course, large amounts of trade between the two countries decrease the transport costs. (International Trade Center 2019.)

As was mentioned in section 5.3, the service sector is the biggest economic sector in Colombia accounting for 62.1% of the GDP (2017). Services trade volumes in 2016-2020 by service type can be seen in Appendix 2. Development of Colombia's services trade in 2016-2020 (USD billion) (Source: International Trade Center 2019)Appendix 3. Enabling Trade Index 2016, Economy profile of Colombia (Source: World Economic Forum 2021) As was the case for the balance of trade of products, Colombia is also a net importer in the field of services. The biggest sectors of exported and imported services are travel, transport, financial and other business services. (International Trade Center 2019.)

In 2020, the FDI flows to Latin America and the Caribbean sank 45% to 88 billion US dollars, which was the biggest drop among developing regions. The share of LAC was 8.8% of all FDI inflows in the world. As for outflows, the region's share was 3.2%. In Colombia, the FDI inflows were affected by mass social protests, a fall in oil prices as well as the lowering of the investment grade and were at USD 8 billion. There was a 46% drop from the previous year. Nevertheless, it is expected that the investment will rebound by 10.5% in 2021 thanks to the government's efforts to ameliorate the business environment with tax incentives for large-scale investments and with a 5G infrastructure program for helping the growing digital sector. Outflows from Colombia dropped 39% to USD 2 billion. Chile, Colombia and Mexico accounted for almost all outward investment from the region. (UNCTAD 2021b, 56–57, 60, 62.) Table 6 presents the volume of FDI inflows and outflows in Colombia and its regional peers.

Table 6. Development of FDI inflows and outflows in USD billion in 2015–2020 in Colombia and its peer countries (UNCTAD 2021b)

		2015	2016	2017	2018	2019	2020
ARG	FDI inflows	11.8	3.2	11.5	11.9	6.7	4.1
	FDI outflows	0.9	1.8	1.2	1.8	1.5	1.2
BRA	FDI inflows	50.0	53.7	66.6	59.8	65.4	24.8
	FDI outflows	-11.6	-5.9	19.4	-16.3	19.0	-25.8
COL	FDI inflows	11.7	13.8	13.8	11.5	14.5	7.7
	FDI outflows	4.2	4.5	3.7	5.1	3.2	2.0
CR	FDI inflows	2.8	2.2	2.8	2.3	2.7	1.7
	FDI outflows	0.21	0.08	0.13	0.05	0.12	0.09
ECU	FDI inflows	1.33	0.76	0.62	1.39	0.96	1.0
	FDI outflows	n/a	n/a	n/a	n/a	n/a	n/a
PE	FDI inflows	8.3	6.7	6.9	7.0	8.1	1.0
	FDI outflows	0.20	1.16	0.50	0.14	0.94	0.50

In 2020, Brazil, Colombia and Argentina were the biggest recipients of FDI inflows in this group. They are also among the top five host economies for FDI inflow in the whole region along with Mexico (USD 29.1 billion) and Chile (USD 8.4 billion). Colombia's FDI flows are quite far from giant economies like Brazil and Mexico. In terms of outflows, Colombia was number 1 among its peers and third biggest in the LAC region after Chile and Mexico. Outward flows from Brazil are negative because Brazilian companies are raising funds from their foreign subsidiaries (UNCTAD 2021b, 58).

5.5 Transport sector in Colombia

In terms of transport infrastructure, Colombia does not rank high in business environment indices, such as the Global Competitiveness Index, discussed further in Section 5.6.4. Especially, the bad quality of roads hinders Colombia's competitiveness. The obvious reasons for this, as has been explained in Section 5.1, are geographical. Since the land is divided by three mountain chains and the Amazon jungle, the costs of building a transport infrastructure rise very high. It is estimated that the average cost for building a kilometer of road in the Colombian Andes is 10 million US dollars, while in the US it would be 2.25 million dollars and in Europe 2.6 million dollars. Furthermore, the existing road infrastructure is in bad condition. (International Trade Center 2021.)

In addition to challenges in building and improving the transport infrastructure, the provision of cross-border transportation services is limited. Foreign companies must have a locally-based agent to provide multimodal freight services within or departing from the Colombian territory. According to the Colombian legislation, international cabotage

companies are allowed to provide transport services between two points in the Colombian territory only provided that national capacity to produce the service does not exist. (PRS Group 2017, 3.)

In Colombia, the Ministry of Transport leads the national transport sector administration, which consists of the National Roads Institute (Instituto Nacional de Vías, INVIAS), National Agency of Infrastructure (Agencia Nacional de Infraestructura, ANI), Special Administrative Unit of Civil Aeronautics (Unidad Administrativa Especial de Aeronáutica Civil, Aerocivil), Superintendent of Ports and Transport (Superintendencia de Puertos y Transporte, Supertransporte) and National Road Safety Agency (Agencia Nacional de Seguridad Vial, ANSV). The ministry's tasks include formulating and adopting policies, plans and programs as well as regulating the financing of transportation and infrastructure in the field of road, railway, sea, inland waterway and air transport. (Ministry of Transport of Colombia 2020a.) The current state of different modes of transport in Colombia are described in the following sections.

5.5.1 Maritime transport

There are altogether ten maritime port zones in Colombia. Eight of them, San Andrés, Guajira, Santa Marta, Ciénaga, Barranquilla, Cartagena, Gulf of Morrosquillo and Gulf of Urabá, are located in the Caribbean and two, Buenaventura and Tumaco on the Pacific coast. The operating rights of Colombian ports were transferred to private enterprises by a law dating from 1991. The ports are managed nowadays by 13 private and 41 public companies. (Ministry of Transport of Colombia 2020b, 81.) The location of seaports and container terminals can be seen in Figure 8 and Figure 9.

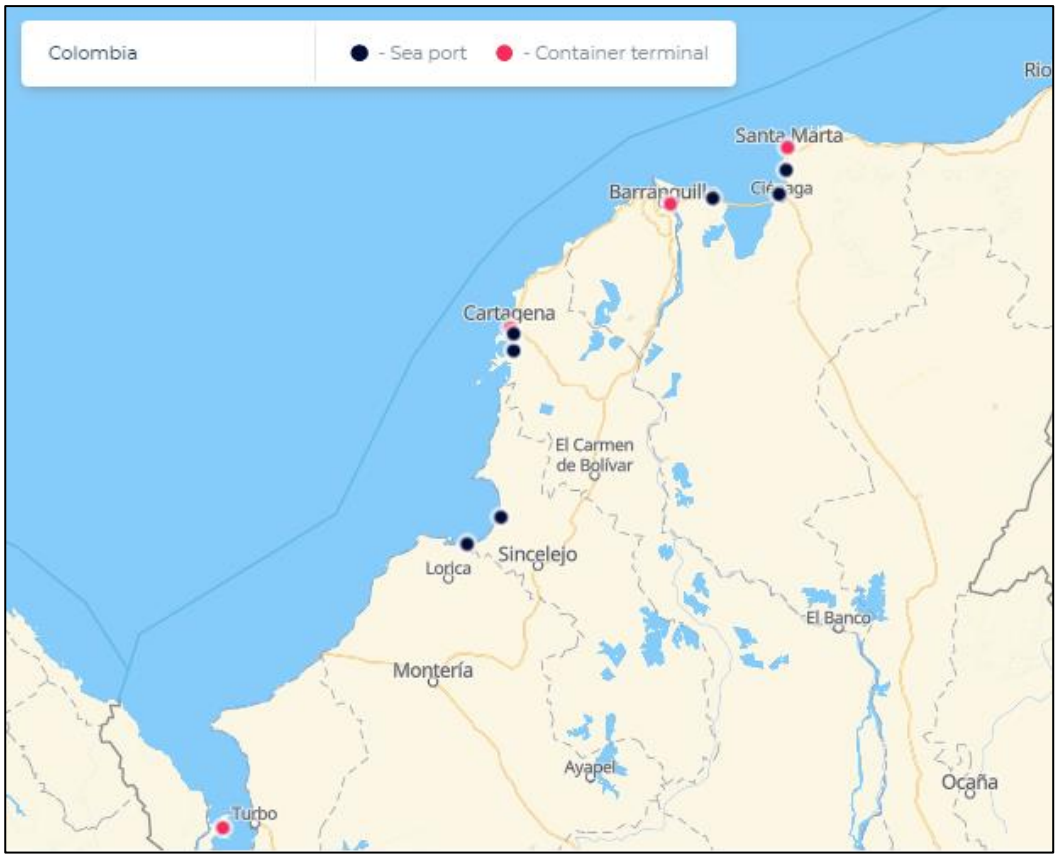

Figure 8. Caribbean ports of Colombia (Searates.com 2020)

Figure 9. Pacific ports of Colombia (Searates.com 2020)

In 2020, altogether 163.7 million tonnes of cargo were handled in all Colombian ports combined, including inland waterways. There was a 17 percent decline from the previous year mainly due to lower volumes of coal moved in Ciénaga and Guajira. The ports of the Caribbean side handled 88% of the total cargo and the ports in the Pacific moved 11%. The remaining 1% is the share of two inland ports. The three biggest ports in terms of cargo were Cartagena, Ciénaga and Gulf of Morrosquillo, accounting for 27%, 23% and 19% respectively of the total cargo handled in ports. (Superintendency of Ports and Transport 2021, 6.)

Cargo volumes and international trade are concentrated in the Caribbean ports because oil and coal are loaded aboard on the Caribbean coast, there are more and better-equipped ports and better connectivity by land and rivers to the center of Colombia. Whereas, on the Pacific coast, only Buenaventura port, receives an important number of large cargo vessels for international trade. The other port in the Pacific side, Tumaco, is mainly used by cross-border vessels with Ecuador. However, ports of the Pacific side play an important role in domestic passenger and cargo traffic as well as cabotage. In fact, they are essential in serving tourism and local populations in the region that for geographical reasons lacks proper road infrastructure. (Ministry of Transport of Colombia 2020b, 141, 145.) There are railroads leading to ports of Buenaventura and Santa Marta as well as Ciénaga. However, the railway to Buenaventura is currently inactive. Barranquilla port in turn can be accessed by the Magdalena River. (Ministry of Transport of Colombia 2014, 43.) Main cities, seaports and rivers can be viewed in Figure 10.

Figure 10. Main cities and rivers in Colombia (PRS Group 2017)

In terms of cargo volumes, the most important cargo type is coal in bulk accounting for 33% of all cargo handled in ports in 2020. In previous years, the share of coal in bulk has been as high as 42% on average. Second came liquid bulk (30%), mainly hydrocarbon in 2020 and crude oil in 2019. The share of container cargo was 25%. The most important ports for container cargo are Cartagena (29 million tonnes in 2020) and Buenaventura (9 million tonnes). (Superintendency of Ports and Transport 2021, 8.) The most important seaport infrastructure projects in recent years include expanding container yards that have been insufficient to handle cargo, for example in Buenaventura, Barranquilla and Santa Marta. All maritime terminals are also seeking to streamline and modernize their operations. Thus. investments in security systems, green technology and navigation systems are foreseen. (PRS Group 2017, 11).

In comparison with other Latin American countries, Colombia is the fifth biggest in terms of container traffic. Brazil has by far the biggest container volumes. Panama, Mexico and Chile come second, third and fourth. Peru and Ecuador are sixth and seventh. When it comes to the ranking of ports instead of countries, Cartagena was ranked the 4th biggest Latin American port in 2019 after Colón, Panama, Santos in Brazil and Manzanillo in Mexico. Port of Buenaventura was 18th in this ranking with 1 121 267 TEUs. The traffic volumes in Cartagena were 2 933 808 TEUs. Container

volumes have grown 48% in Cartagena since 2013. The top port ranking order has remained the same during this time. (Ministry of Transport of Colombia 2020b, 126–128.)

5.5.2 Inland waterways

It has been mentioned that geographical conditions in Colombia are not very favorable for constructing an efficient transport infrastructure. However, one geographic factor that is a real competitive advantage is Colombia's extensive system of inland waterways. It has enabled the country to cover all basic needs of the populations living isolated from the centers of distribution and commerce. (Ministry of Transport of Colombia 2011.) Nevertheless, the investments in waterway infrastructure have been lagging behind and its potential is not in full use. (Ministry of Transport of Colombia 2020c, 68.)

There are four main river basins in Colombia: Magdalena, Atrato, Orinoco and Amazonas. The rivers in these river basins form in total 24 725 km of inland waterways of which 74% are navigable. The longest navigable rivers are the Putumayo River (1600 km), Caquetá River (1200 km) and Magdalena River (1092 km). (Ministry of Transport of Colombia 2020b, 77–78.) The river system is visualized in Figure 11.

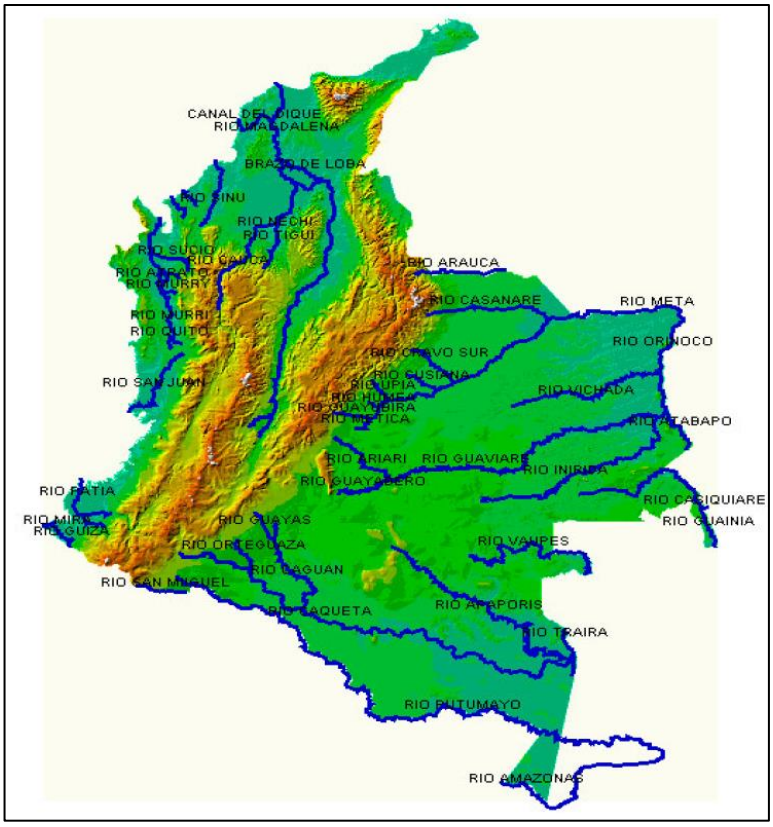

Figure 11. River system in Colombia (Ministry of Transport of Colombia 2011)

The Magdalena River is the river that is most used for transporting goods inside Colombia. The river reaches the Caribbean Sea through the port of Barranquilla. In 2019, 3 279 834 tonnes of cargo, which corresponds to 67.5% of the total cargo transported by inland waterways, was transported in the Magdalena River. Most of the cargo consisted of petroleum products. Magdalena was also the busiest river in terms of passengers. (Ministry of Transport of Colombia 2020b, 96, 107.)

There are significant public-private partnership projects on hand for recovering navigability of the Magdalena River and the Dike Canal (Canal del Dique), which empties into the Bay of Cartagena. These projects have been initiated by the government in order to advance intermodal transport and thus give an impulse to exports and imports as well as to improve the competitivity of products by lowering transport costs. (Fontalvo 2020.)

5.5.3 Road transport

As mentioned earlier, the road infrastructure in Colombia is inadequate. Only a small proportion of the roads are paved and the ones that are can be in poor condition. The shares of paved roads in Colombia and its peer countries are compared in Figure 12. Colombia's share is the smallest out of all 23 countries studied even though its total road network extends to 205 379 km making it the fourth most extensive road network in Latin America after Brazil, Argentina and Mexico (IDB 2015).

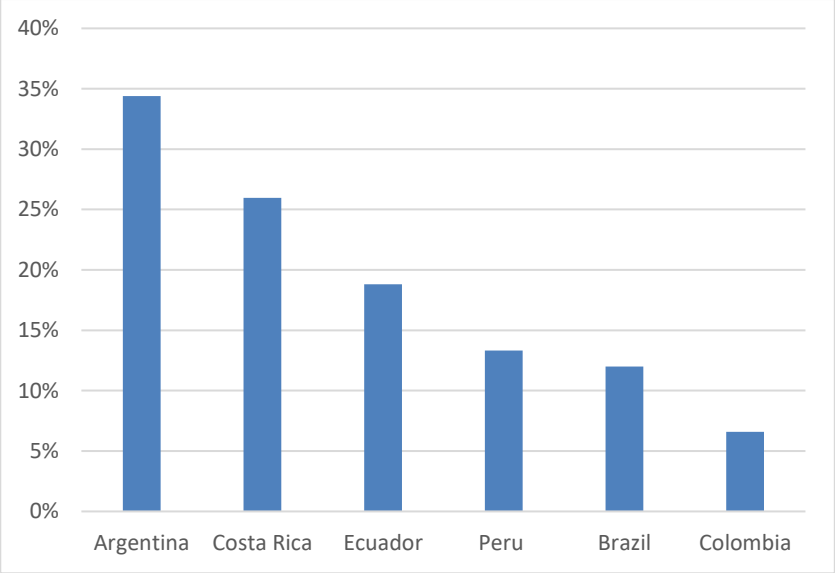

Figure 12. Percentage of paved roads of the total network (IDB 2015)

The management of the public road network in Colombia is divided under three jurisdictions. The primary network that is under the responsibility of the state of Colombia covers 9% of the total network. The secondary roads (22% of the total network) are taken care of by regional departments. Finally, tertiary roads cover 69% of the roads and fall mainly under the responsibility of municipalities. The administration of the primary roads is divided between two authorities: INVIAS and ANI. (Ministry of Transport of Colombia 2020b, 50, 64.) Figure 13 presents the network of main roads. Red lines indicate the primary roads and yellow lines secondary ones.

Figure 13. Main roads in Colombia (red: primary roads, yellow: secondary roads) (World Food Programme 2020)

According to INVIAS's evaluations, 54% of the paved primary roads administered by INVIAS were considered to be in either good or very good condition, 28% satisfactory and 18% poor or very poor condition. Unpaved roads were even worse off since 60% were in poor or very poor condition and only 8% were in very good or good condition. (Ministry of Transport of Colombia 2020b, 64.)

As for the road transport services, there are altogether 3468 companies that the Ministry of Transport has authorized to offer road freight services. The total vehicle fleet consists of 129 108 trucks that have a capacity of over 10.5 tonnes. In 2019, altogether 247 million tonnes of cargo were transported on Colombian roads. Only 6% of it was transported in containers. Road transport cargo volumes on different routes highlight that the main centers of production and consumption are situated in Bogotá and Medellín. The road cargo traffic also shows that the most important ports are Buenaventura on the Pacific coast and Cartagena and Barranquilla on the Atlantic Coast. (Ministry of Transport of Colombia 2020b, 101–102.)

5.5.4 Railway transport

The public railroad system is not very efficient and its development has not been among the priorities of previous governments (PRS Group 2017, 11). The railroads have suffered from underfunding since they were nationalized in the 1950s (Smith 1999). The railroad network of Colombia is in total 3528 km of which only 36% (1267 km) is in operation. Apart from a 5-kilometer strip in the capital region, which is administered by INVIAS, ANI is in charge of the active public network. (Ministry of Transport of Colombia 2020b, 72.) Figure 14 illustrates the railway corridors in Colombia managed by ANI.

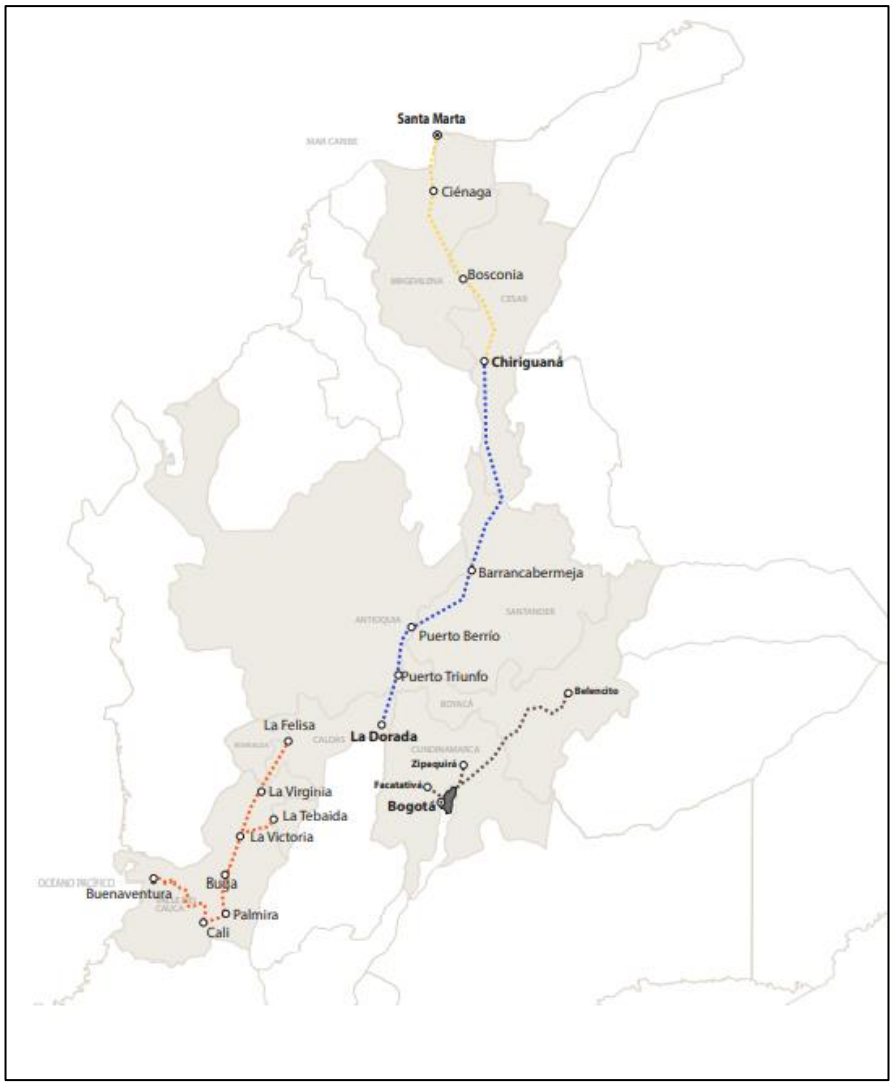

Figure 14. Railway corridors in Colombia (yellow: Atlantic corridor, blue: Dorada–Chiriguaná corridor, black: Bogotá–Belencito corridor, orange: Pacific corridor) (Ministry of Transport of Colombia 2020b)

The Atlantic railway corridor Santa Marta–Chiriguaná (in yellow) and Dorada–Chiriguaná corridor (in blue) are used for transporting cargo. Whereas the Bogotá–Belencito corridor (in black) is for cargo and passengers. The Pacific railway corridor Buenaventura–La Felisa (in orange) is currently inactive. In addition to the national railway, 5 percent of the total railway network is privately owned. Most of it is used for transporting coal from the Cerrejón mine to the port of Puerto Bolívar on the Caribbean coast. (Ministry of Transport of Colombia 2020b, 72, 76.)

The biggest cargo volumes, 99.8% of the total 50-million-tonne freight moved in the public railways, were transported in the Santa Marta–Chiriguaná corridor. Most of this cargo is coal. The government is currently investing in reactivating the other railways.

Thanks to the project, cargo volumes transported in Dorada–Chiriguaná corridor went from 1186 to 47 860 tonnes between 2018 and 2019. Of course, this is just a fraction of the total railway freight. The aim of promoting the railways as a transport mode is to lower transportation costs as well as to reduce congestion, pollution and road accidents. (Ministry of Transport of Colombia 2020b, 74–76, 106; Ministry of Transport of Colombia 2020c, 65–67.)

5.5.5 Air transport

If Colombia's weaknesses are the road and railway infrastructure, its strongest point in terms of infrastructure is airports. It ranks globally as the 31st most competitive economy in airport connectivity (Schwab 2019). There are almost 200 airports in Colombia serving international, national and regional connections. However, the operations are to a great extent concentrated in the biggest airport of the country, El Dorado in the capital city Bogotá. It accounts for 35% of all operations. The second busiest airport is José María Córdova airport in Rio Negro close to the second-largest city in Colombia, Medellín. The airport in Rio Negro accounts for 9% of all air traffic. (Civil Aviation Authority of Colombia, 2019.) As for air cargo volumes, over 80% of the total air cargo goes through these two airports. The share of El Dorado is 71% and that of Rio Negro 11%. (Ministry of Transport of Colombia 2020b, 105.) El Dorado is the third-busiest hub in Latin America in terms of passengers and busiest in terms of cargo (PRS Group 2017, 11). The network of airports is visible in Figure 15.

Figure 15. Airports in Colombia (Mapsofworld.com 2021)

As for direct flight connections, there are 141 international connections and 99 domestic connections in Colombia (Ministry of Transport of Colombia 2020b, 70). Traveling by air is often the most convenient option as the topography and poor condition of roads make driving difficult. Traveling by car between the biggest cities in Colombia takes between 7 and 18 hours but only 30 to 60 minutes by plane. (PRS Group 2017, 11.) Considering trade and international tourist flows, Colombia's geographic position in the South American continent is ideal. It takes only 3 hours to fly to Miami and there are flights available to all major US cities.

Colombian government's efforts to promote the country as a safe tourist destination, including measures to fight violent crimes, seem to have paid off because Colombia has managed to improve its reputation and the tourist industry has been experiencing record-breaking growth prior to 2020. In 2017, Colombia's tourism revenues were third highest in South America after Brazil and Argentina. The biggest group of tourists comes from

the US. (Oxford Business Group, 2021.) Due to the growing number of international tourists, the number of international airline passengers was growing a lot faster than that of domestic passengers in the late 1990s and the 2000s. Since then, the number of both international and domestic passengers has grown on average 10% every year throughout the years 2010 and 2019. For the past 10 years, around one-third of all air passengers have been international passengers. (Civil Aviation Authority of Colombia, 2019.)

To handle the increasing flow of passengers, a new international terminal was opened in Bogotá in 2012. Since then, however, the air traffic has grown unpredictably and El Dorado Airport's capacity has barely been able to meet the demand. Thus, new expansion projects are underway to increase the overall capacity. Other important ongoing airport projects include the modernization and expansion of more than 25 national and small regional airports. (PRS Group 2017, 11.) Figure 16 shows the number of international passengers in 2018 and 2019.

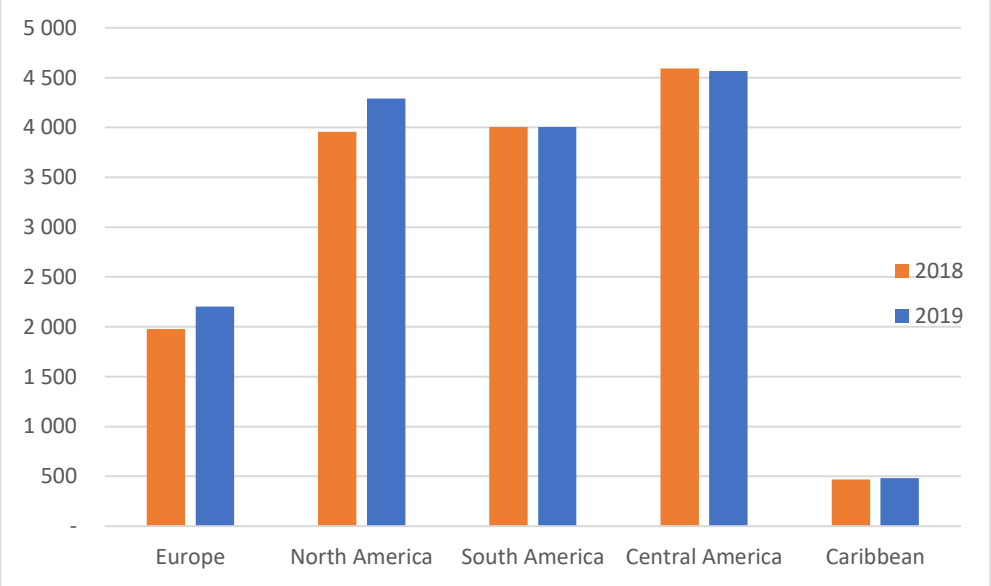

Figure 16. Number of international air passengers in thousands of passengers (Ministry of Transport of Colombia 2020b)

The biggest market for international passengers is Central America with 4.6 million passengers. North America comes second. The biggest growth from the previous year in 2019, was in the European market, which grew by 10%. (Ministry of Transport of Colombia 2020b, 105.) Foreign trade by air with different markets in 2018 and 2019 is visualized in Figure 17.

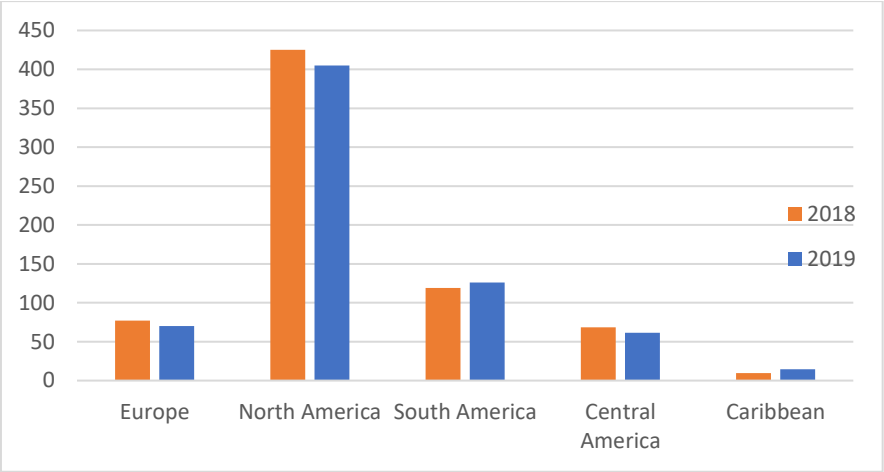

Figure 17. Foreign trade by air with the main markets in thousands of tonnes (Ministry of Transport of Colombia 2020b)

By far the biggest trade market for air freight is North America with 404 000 tonnes transported in 2019. It is not surprising, as the United States is Colombia's most important trading partner and it is easily reached by air. Other continents, Asia and Africa, are not included in the charts presenting the main markets for international passengers and air freight because their share is remarkably small.

5.5.6 Size of the transport sector and cargo volumes in different modes of transport

The size of the transport sector is measured as the share of transport and logistics activities of the GDP in Figure 18. Colombia's share (almost 8%) is the fifth largest out of 25 Latin American countries covered in the Inter-American Development Bank's statistics and highest among the comparator countries.

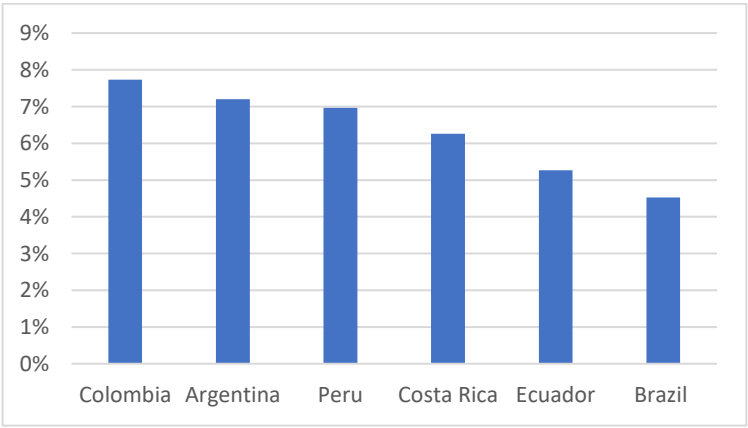

Figure 18. Size of the transport sector in percentage of the GDP (IDB 2015)

Figure 19 illustrates the share of different logistics activities in the transport and warehousing sector in 2019.

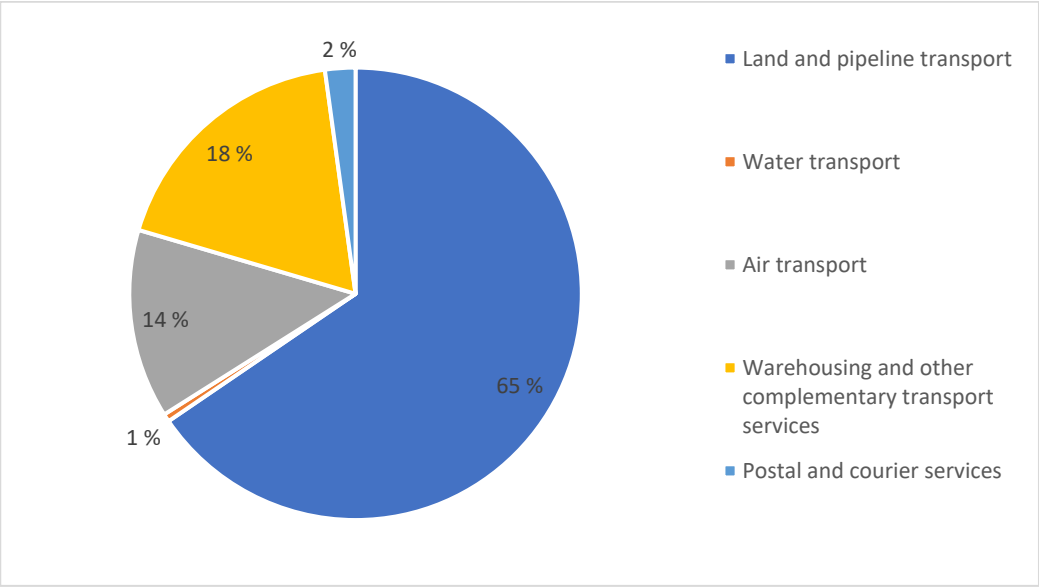

Figure 19. Added value of transport and warehousing activities (Ministry of Transport of Colombia 2020b)

The share of land and pipeline transport is the biggest of the whole transport and warehousing sector. The value of air transport has almost tripled between 2005 and 2019, moving from 8% to 14%. This can be explained by the improvement of the airport infrastructure, which enabled more frequent flight connections and brought new airlines to the Colombian market. (Ministry of Transport of Colombia 2020b, 28.)

Another way to compare the use of different transport modes is to look at cargo volumes. Figure 20 and Figure 21 present domestic and international cargo volumes by mode of transport.

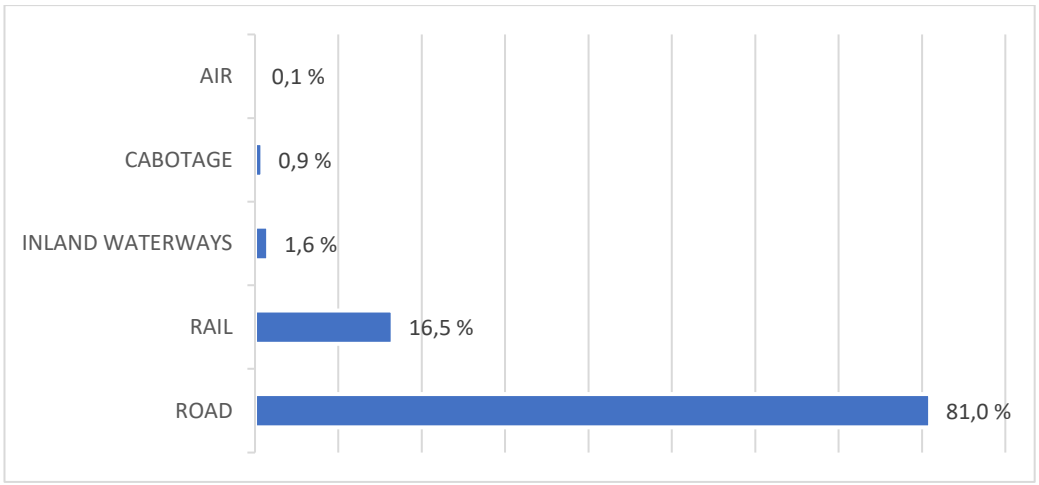

Figure 20. Domestic cargo volumes by mode of transport (Ministry of Transport of Colombia 2020b)

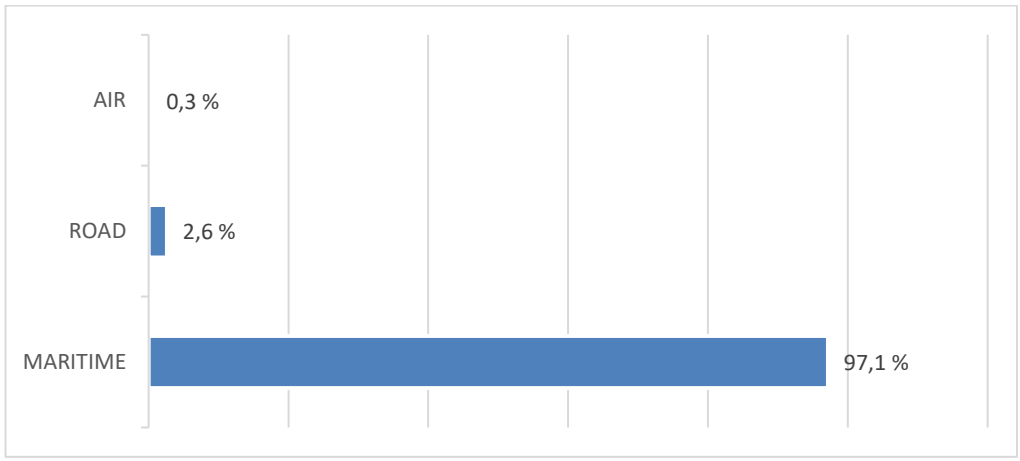

Figure 21. International trade cargo volumes by mode of transport (Ministry of Transport of Colombia 2020b)

In 2019, 305 million tonnes of cargo were transported within Colombia. As can be seen from Figure 20, the share of road transport was the biggest 81% followed by rail transport 16.5%. However, when coal and oil are excluded from the cargo volumes, the share of road freight grows up to 96.9% and that of rail freight is only 0.04%. The figures show that railroads are almost exclusively used for transporting energy sector products. According to the report of the Ministry of transport, the railroads and rivers are underused for transporting other than energy sector products, even though they have the potential for reducing transport costs of other goods. Thus, the government seeks to promote these modes of transport. (Ministry of Transport of Colombia 2020b, 99–100.)

When it comes to exports and imports, it is the maritime ports that play the biggest role in moving goods. In 2019, 97.1% of the total trade of 161 million tonnes was

transported by the sea. (Ministry of Transport of Colombia 2020b, 124.) Unsurprisingly, the share of air freight is small in both trade and domestic cargo when cargo volumes are measured because air freight suits best for transporting lightweight loads due to its costs.

The Colombian government is making efforts to develop intermodal transport. One of the recent advances in this field is the new intermodal transportation corridor between Cartagena and La Dorada, which connects La Dorada–Chiriguaná railway to the main ports in the Caribbean via inland waterways in river Magdalena. Promoting intermodal corridors for freight transport is part of the national logistics strategy that aims to improve competitiveness by decreasing costs and delivery times in the trade logistics chains. The goal is to reduce the logistics costs to 9.5% of the sales price of transported goods by 2030. Currently, the share of the logistics costs is on average 13.5%. (Ministry of Transport of Colombia 2020c, 62–64.)

Next, to compare the state of logistics in Colombia to that of its peers, some of the statistics from the Freight Transport and Logistics Statistics Yearbook are presented. Data was not available for all comparators for each indicator and thus, these countries are excluded from the charts.

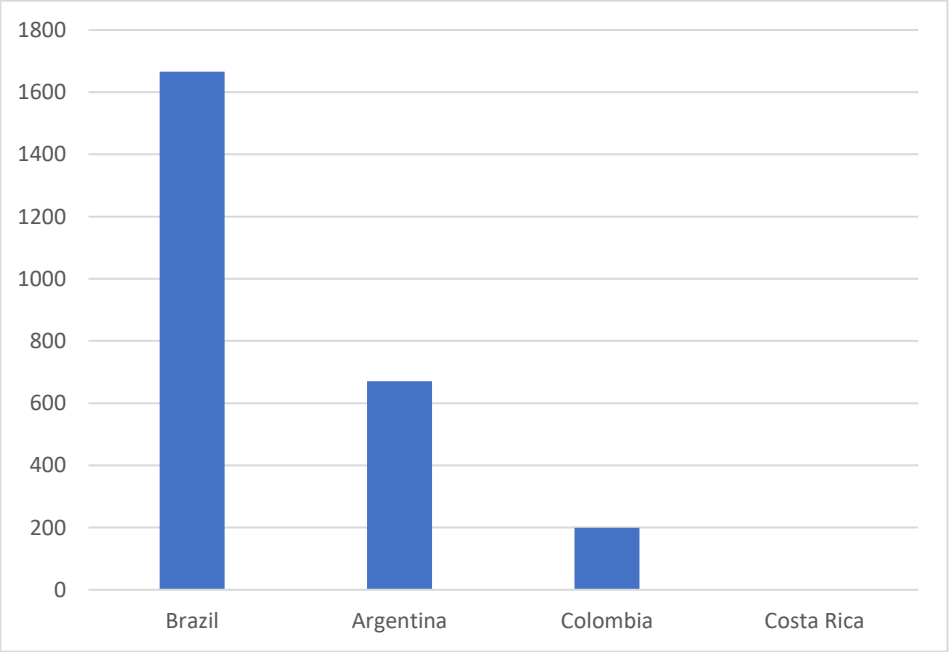

Figure 22. Domestic road freight in millions of tonnes (IDB 2015)

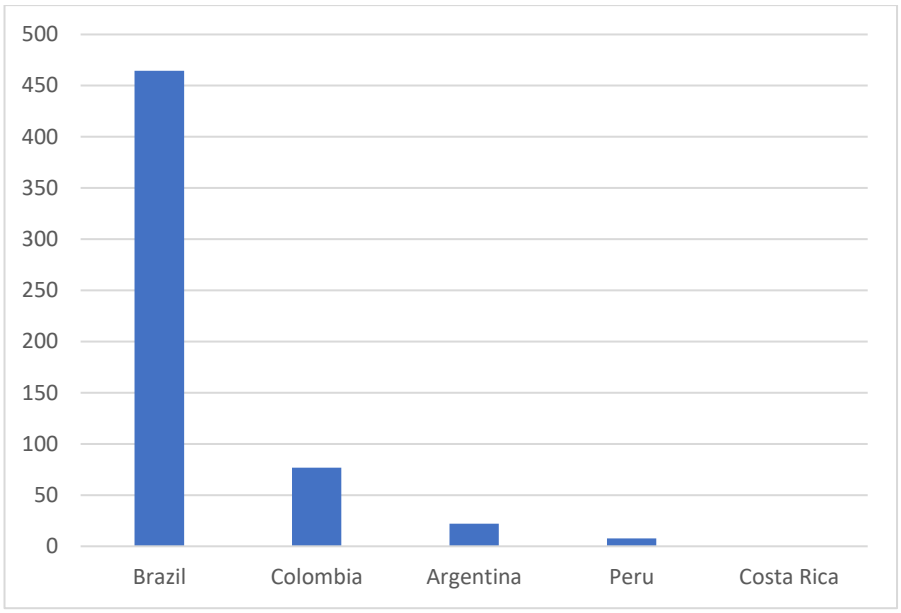

Figure 23. Total rail freight in millions of tonnes (IDB 2015)

As can be seen from Figure 22, Brazil has a significant lead in the volume of domestic cargo transported by roads. Also, a remarkably larger volume of cargo is transported by railways in Brazil than in other peer countries (Figure 23). Its railway network in operation is the longest in South America extending to 27 217 kilometers. The railway network in Argentina is the third-longest in Latin America with 18 181 kilometers even though the rail freight volume is low. (IDB 2015.)

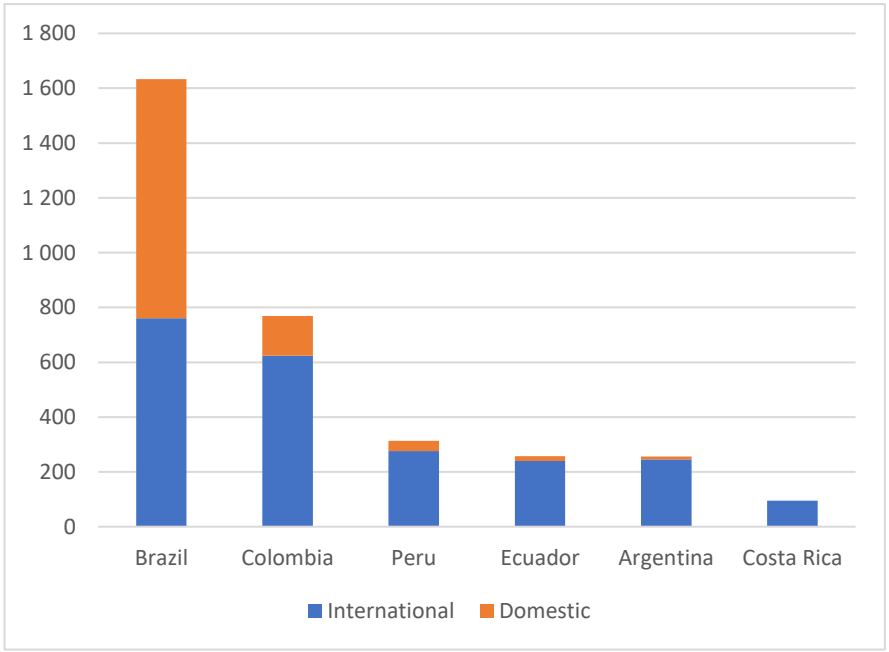

Figure 24. International and domestic air freight in thousands of tonnes (IDB 2015)

Figure 24 shows that more than half of Brazil's air cargo is domestic cargo. Colombia's volume of international cargo is close to Brazil's. There was no data available on the volume of domestic air freight in Costa Rica.

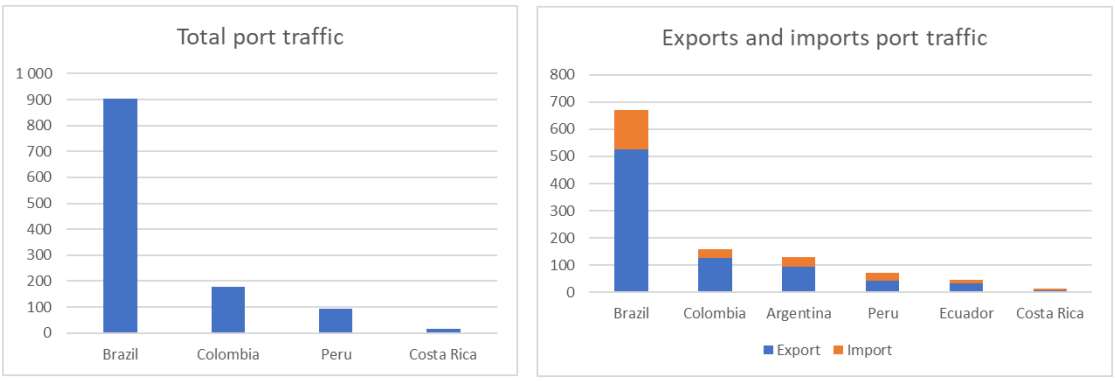

Figure 25. Port traffic in millions of tonnes (IDB 2015)

The total port traffic and the shares of exports and imports are presented in Figure 25. The total port traffic covers the total volume of maritime cargo handled in the ports of each country, including shipping and transit. Brazil has again the biggest cargo volumes.

5.6 Colombia in trade and transport facilitation indicators

5.6.1 Logistics Performance Index

The Logistics Performance Index assesses the ease of transporting merchandise in different countries based on the survey data collected from logistics professionals. The respondents evaluate the logistics performance of the country they work in and of the countries with which they operate. In international LPI 2018, altogether 167 countries were scored on a scale of 1–5 on 6 different dimensions. An overall score is calculated based on the six components and this aggregate score is used for ranking the countries. (Arvis et al. 2018.) Table 7Table 7 presents the overall international LPI scores in Colombia and its comparator countries. The highest scores and ranks of each column are highlighted in bold. In recent years, Brazil and Argentina have been the best performers of the six countries compared. In 2018, Colombia was not left far behind Brazil, which ranked as the 56th best-performing country in the world, even though, it received the

lowest scores of the group in 2016 and 2014 (94th and 97th respectively). (Arvis et al. 2018, 45–48.)

Table 7. International LPI scores and ranks in 2018-2012 (World Bank 2018b)

	2018		2016		2014		2012	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Colombia	58	2.94	94	2.61	97	2.64	64	2.87
Argentina	61	2.89	66	2.96	**60**	**2.99**	49	3.05
Brazil	**56**	**2.99**	**55**	**3.09**	65	2.94	**45**	**3.13**
Costa Rica	73	2.79	89	2.65	87	2.70	82	2.75
Ecuador	62	2.88	74	2.78	86	2.71	79	2.76
Peru	83	2.69	69	2.89	71	2.84	60	2.94

Table 8Table 8 shows the overall LPI scores and ranks as well as those of each component. The aggregated results of the four previous reports can be seen in Table 9. When comparing the results in the two tables, it can be seen that Colombia, Costa Rica and Ecuador have improved their logistics performance in 2018, as their 2018 scores are higher than the mean score of the four latest reports. The improvement is significant especially for Colombia that moved up from the 94th rank to 58th in 2018. Based on the aggregate scores, all countries are classified as *consistent performers* (second-best quintile of all the countries). Of the six components surveyed, Colombia's strongest point is the *ease of arranging competitively priced international shipments* and it outperforms other countries in this dimension. On the other hand, its weakness is *the efficiency of customs and border management clearance* also its *infrastructure* score affects negatively the overall score.

Table 8. International LPI results for 2018 (World Bank 2018b)

	Overall score (rank)	Customs	Infrastructure	International shipments	Logistics quality and competence	Tracking and tracing	Timeliness
Colombia	2.94 (58)	2.61 (75)	2.67 (72)	**3.19 (46)**	2.87 (56)	3.08 (53)	3.17 (81)
Argentina	2.89 (61)	2.42 (98)	2.77 (62)	2.92 (59)	2.78 (68)	3.05 (58)	3.37 (58)
Brazil	**2.99 (56)**	2.41 (102)	**2.93 (50)**	2.88 (61)	**3.09 (46)**	**3.11 (51)**	**3.51 (51)**
Costa Rica	2.79 (73)	2.63 (70)	2.49 (84)	2.78 (76)	2.70 (79)	2.96 (67)	3.16 (83)
Ecuador	2.88 (62)	**2.80 (48)**	2.72 (69)	2.75 (80)	2.75 (70)	3.07 (55)	3.19 (75)
Peru	2.69 (83)	2.53 (86)	2.28 (111)	2.84 (65)	2.42 (110)	2.55 (108)	3.45 (54)

Table 9. Aggregated international LPI results for the years 2012, 2014, 2016 and 2018 (Arvis et al. 2018, 40–43)

	Mean Score (Mean Rank)	Customs	Infrastructure	International shipments	Logistics quality and competence	Tracking and tracing	Timeliness
Colombia	2.81 (71)	2.50 (89)	2.58 (81)	**2.93 (60)**	2.79 (66)	2.84 (70)	3.17 (80)
Argentina	2.93 (62)	2.49 (90)	2.81 (60)	2.91 (63)	2.82 (62)	3.13 (52)	3.41 (58)
Brazil	**3.02 (56)**	2.52 (85)	**2.99 (51)**	2.89 (65)	**3.10 (46)**	**3.17 (49)**	**3.47 (53)**
Costa Rica	2.74 (79)	2.50 (88)	2.45 (97)	2.79 (77)	2.67 (81)	2.88 (65)	3.09 (92)
Ecuador	2.82 (70)	**2.69 (63)**	2.62 (74)	2.82 (72)	2.70 (77)	2.87 (67)	3.22 (75)
Peru	2.78 (74)	2.59 (74)	2.46 (91)	2.88 (68)	2.62 (87)	2.72 (85)	3.36 (60)

Table 10 displays some of the data on border procedures and supply chain reliability collected in the domestic LPI survey. No data for Costa Rica and Ecuador was available. As can be seen from the table, Colombia outperforms its peers in reliability as the respondents estimated that up to 96% of shipments meet their quality criteria. This result is excellent considering that the corresponding percentage in the highest performing quintile is on average 87%. However, it is possible that acceptable quality is more strictly defined in the highest performing countries and thus, it is difficult to make conclusions by comparing these percentages.

Another important aspect of reliability and predictability of shipments is related to inspections because physical inspections significantly raise the time to clear goods through customs and thus, increases the total import time. (Arvis et al. 2018, 23–30.) Also, in this metric, Colombia outperforms its peers as only 3% of import shipments are physically inspected and only 1% of these require multiple inspections.

Table 10. Domestic LPI results, time data (Arvis et al. 2018, 56–58)

	% of shipments meeting quality criteria	Number of agencies imports/exports	Number of forms imports/exports	Clearance time (days) without physical inspection/with a physical inspection	Physical inspection % of import shipments	Multiple inspections % of shipments physically inspected
Colombia	**96**	**3/3**	5/3	**2/2**	**3**	**1**
Argentina	75	5/4	4/3	2/4	36	6
Brazil	82	4/4	5/4	2/5	8	5
Costa Rica	-	-	-	-	-	-
Ecuador	-	-	-	-	-	-
Peru	88	5/5	**3/3**	2/4	15	4

One indicator of border efficiency is the amount of so-called red tape related to import and export transactions. This can be measured by the number of procedures needed for

import and export. Procedures are typically heavier for imports than exports, which is why the number of forms and agencies required for import is usually higher than for export. Red tape is a sign of lacking border coordination and it burdens logistics operators. (Arvis et al. 2018, 23–26.)

Average amounts of red tape in LPI quintiles are illustrated in Figure 26. From this chart, it can be seen that Colombia's number of agencies for import and export (3) is in line with other countries in the second-best quintile. In the highest-performing quintile, the number is on average 2. Colombia's peers perform a lot worse in terms of agencies, as the corresponding number in the lowest-performing bottom quintiles is 4. However, the number of forms needed for import in Colombia is up to 5, which corresponds to the average of the bottom quintile. In the number of export documents, Colombia's result is in line with the second quintile. In clearance time, Colombia performs better than its peers.

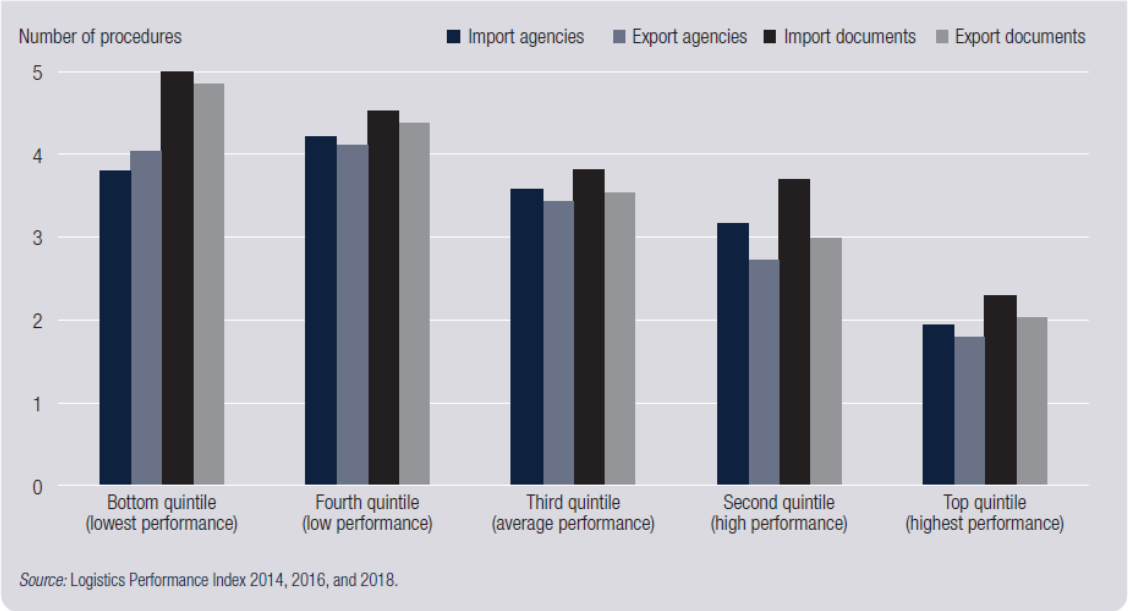

Figure 26. Red tape affecting import and export transactions by LPI quintile (Arvis et al. 2018, 26)

Colombia and its peers all belong to the group of upper-middle-income countries. In Figure 27, countries' LPI performance is compared within the same income group and region.

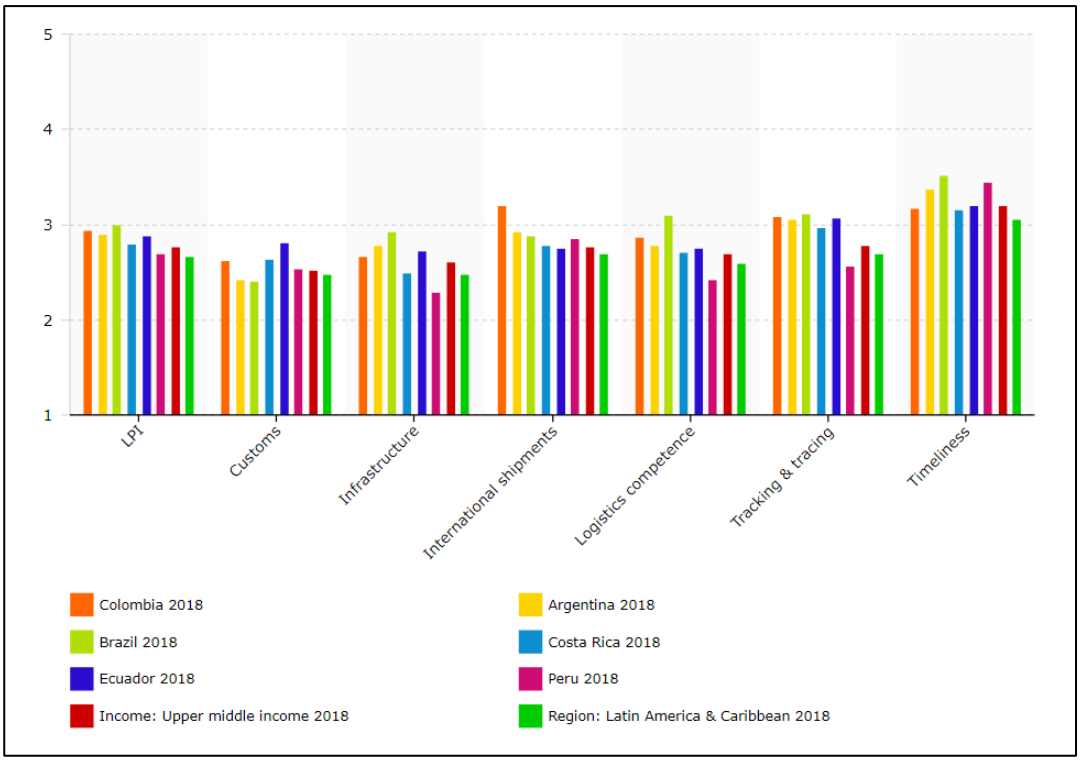

Figure 27. LPI performance compared against income group and region (World Bank 2018c)

The chart shows that Colombia outperforms its income group and region in all LPI components. Also, the comparator countries, except for Peru, perform better than these groups in most components.

5.6.2 Trade Facilitation Indicators

The OECD Trade Facilitation Indicators evaluate countries' trade policies on 11 different indicators. The performance of Colombia and its peer countries on these indicators as well as the average trade facilitation performance can be seen in Table 11. The scale is 0–2 and the highest score is 2. The average score of the 6 countries has been calculated in the last column. The score of the strongest country in each indicator is highlighted in bold. Colombia's overall trade facilitation performance is above average in most indicators. The country's strongest points are *the involvement of the trade community*, *documents* and *automation*. Its weaknesses lie in *internal* and *external border agency cooperation* as well as *appeal procedures*. These indicators also seem to be problematic in all peer countries, as these indicators have the lowest country average scores.

Table 11. Trade Facilitation Indicator scores (OECD 2020)

	Colombia	Argentina	Brazil	Costa Rica	Ecuador	Peru	Country average
Average trade facilitation performance	**1.46**	1.31	1.24	1.40	1.08	1.43	1.32
Information availability	1.55	1.43	1.29	1.43	1.15	**1.57**	1.40
Involvement of the trade community	**1.71**	1.25	1.00	1.50	1.29	1.57	1.39
Advance rulings	1.56	0.91	1.38	1.56	1.14	**1.71**	1.38
Appeal procedures	1.22	1.27	**1.50**	1.46	0.67	1.22	1.22
Fees and charges	1.54	1.54	1.50	1.57	1.36	**1.77**	1.55
Documents	**1.63**	1.11	1.22	1.50	1.00	1.56	1.34
Automation	**1.77**	1.46	1.31	1.62	1.17	1.39	1.45
Procedures	1.25	**1.44**	1.16	1.28	1.41	1.21	1.29
Internal border agency cooperation	1.09	**1.30**	0.73	1.00	1.18	1.00	1.05
External border agency cooperation	1.00	**1.18**	0.64	1.00	0.46	0.82	0.85
Governance and impartiality	1.78	1.56	**1.89**	1.44	1.11	**1.89**	1.61

When comparing Colombia with other upper-middle-income countries as well as with all Latin American and Caribbean countries, Colombia exceeds the average performance in all TFI dimensions, except for *appeal procedures* where the score is the same. Colombia has improved its performance in *advance rulings*, *fees and charges*, *automation*, *procedures* as well as *governance and impartiality*. In other areas, the performance has either been stable or declined. This trend as well as a comparison with Colombia's comparator country groups are illustrated in Figure 28.

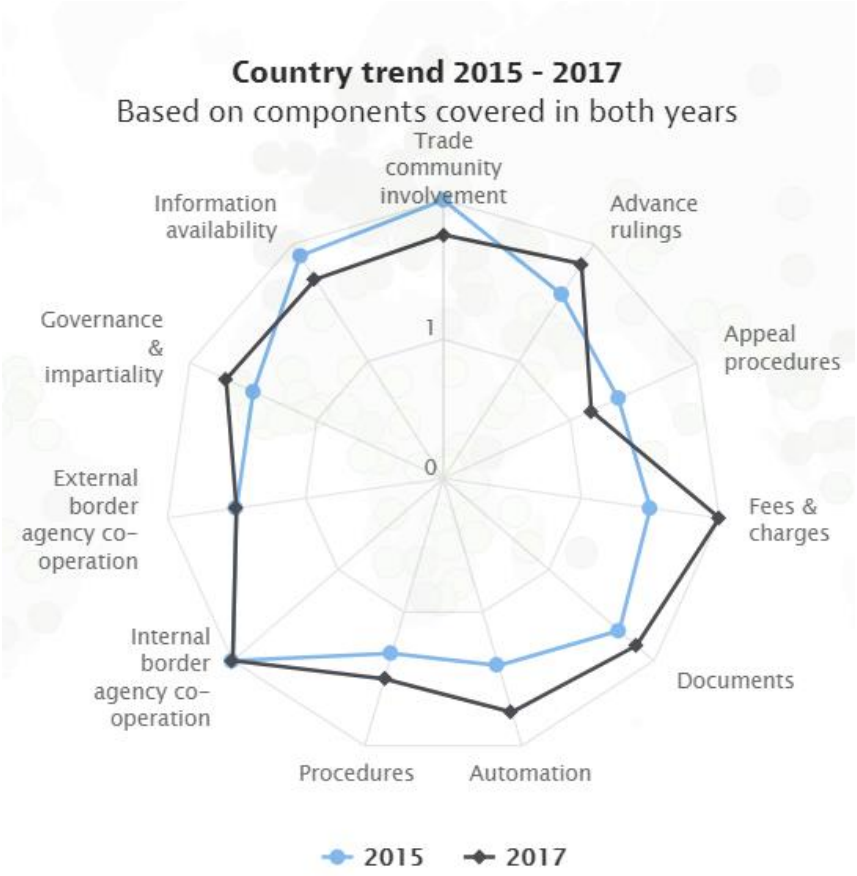

Figure 28. Trade Facilitation performance in Colombia (OECD 2020)

According to the OECD's analysis, Colombia is recommended to (OECD 2020):

- improve the availability of information on advance rulings (*advance rulings*)
- expand the acceptance of copies of documents (*documents*)
- reinforce the use of risk management procedures (*automation*)
- publish the average clearance time consistently and on a periodic basis, for major Customs offices (*procedures*)
- reinforce Authorized Economic Operator programs (*procedures*)
- expand the possibility of separating release from final determination and payment of Customs duties (*procedures*).

These recommendations were chosen based on the potential to increase trade and reduce costs in the relevant policy areas (*advance rulings, documents, automation* and *procedures*) because Colombia still has room for improvement in these fields (OECD 2020).

5.6.3 Enabling Trade Index

Enabling Trade Index of the World Economic Forum assesses countries based on the trade facilitation services, infrastructure, institutions and policies. Countries get points on a scale from 1 to 7 in four different sub-indexes: *market access*, *border administration*, *infrastructure* and *operating environment*. These are further divided into 7 pillars (shown in Table 13).

At the regional level, the Global Enabling Trade Report 2016 states that Latin America, along with North America and Europe, outperforms the global average in *domestic* and *foreign market access* pillars. However, the trade performance of the region lags behind because of inefficient *border administration*, the low quality of *transport infrastructure* and *services*. In addition, the *local operating environment* is worsened by insecurity, a factor where Latin America is ranked the lowest of all regions of the world. (Geiger et al. 2016, 25.)

The ETI overall rankings and scores of Colombia and its peer countries can be seen in Table 12. Costa Rica and Peru are the highest-performing countries in this group. Colombia's performance has improved since 2010 but declined slightly from 2014 and is close to the overall average of Latin America (Geiger et al. 2016, 100).

Table 12. Enabling Trade Index 2016 and 2014 scores and ranks (Geiger et al. 2016; Lawrence, Drzeniek Hanouz & Doherty 2012)

	ETI 2016		ETI 2014		ETI 2012		ETI 2010
	Rank	Score	Rank	Score	Rank	Score	Rank
Colombia	85	4.10	80	4.09	89	3.78	91
Argentina	94	3.98	103	3.78	96	3.68	95
Brazil	110	3.80	97	3.87	84	3.79	87
Costa Rica	57	4.52	**55**	**4.45**	**43**	**4.41**	**44**
Ecuador	81	4.14	71	4.25	83	3.83	89
Peru	**54**	**4.54**	61	4.37	53	4.31	63

Table 13 presents countries' ETI performance for each pillar. This comparison is more informative than the overall ETI scores. There is a lot of variation between different ETI components and it can be seen that each country its strengths and weaknesses as none of the countries outperform others in more than three components. *The operating environment* seems to be the most problematic pillar for most countries, except for Costa Rica and Peru. Colombia's asset is *market access* due to its fairly simple tariff structure and the fact that it enjoys good terms for exporting its products abroad. *Border administration* on the other hand has more issues since both importing and exporting are considered time-consuming and expensive. Burdensome import procedures are considered to be the most problematic factor for importing. As for *infrastructure*, railways and roads are scored low. High cost or delays caused by domestic transportation is consequently, the second-most problematic factor for importing and number-one problematic factor for exporting. Other issues that have been evaluated as the most troublesome for export and import can be seen in Figure 29. In the *operating environment* pillar, Colombia is very close to the global bottom of 136 countries, especially in terms of *public institutions* and *physical security*, even though *openness to foreign investments* and *access to finance* improves the performance in this area. Also, the quality of *ICT infrastructure* is good. Colombia is placed 27th on Government Online Service Index. (Geiger et al. 2016, 100.)

Table 13. Enabling Trade Index pillars in 2016 (Geiger et al. 2016)

	Domestic market access		Foreign market access		Border administration		Transport infrastructure		Transport services		ICT		Operating environment	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
COL	68	5.2	57	4.3	80	4.3	94	3.0	83	3.7	58	4.8	129	3.5
ARG	105	4.2	103	3.5	89	4.2	73	3.4	80	3.9	51	5.1	115	3.8
BRA	109	4.0	122	2.5	92	4.1	82	3.2	**58**	**4.2**	**45**	**5.3**	123	3.6
CRI	**12**	**5.9**	65	4.3	**56**	**4.9**	115	2.6	81	3.8	49	5.2	**66**	**4.3**
ECU	106	4.2	82	4.0	67	4.7	**48**	**3.9**	75	3.9	93	3.8	105	3.9
PER	14	5.8	**14**	**5.2**	60	4.8	95	3.0	78	3.9	81	4.1	80	4.2

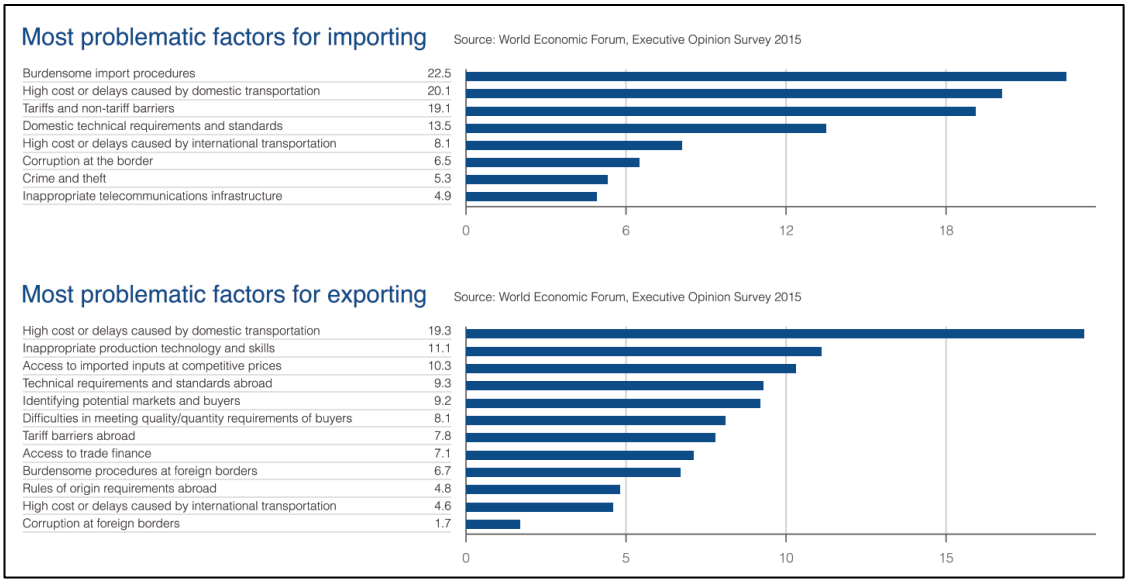

Figure 29. Most problematic factors for importing and exporting in Colombia (Geiger et al. 2016)

Pillar scores and rankings are calculated based on several trade enabling factors. All the factors are detailed in the Economy Profile of the country along with economy and trade indicators, most problematic issues in exports and imports, TFI indicator scores as well as country's status in the WTO's Trade Facilitation Agreement's ratification process. (Geiger et al. 2016.) The complete Economy Profile of Colombia can be found in Appendix 3. Enabling Trade Index 2016, Economy profile of Colombia (Source: World Economic Forum 2021)

5.6.4 Global Competitiveness Index

In addition to the Enabling Trade Index discussed in the previous chapter, the World Economic Forum publishes the Global Competitiveness Index that includes factors that drive productivity, growth and human development. Countries are scored on a scale from 0 to 100 where 100 stands for an ideal situation where an issue does not constrain productivity and growth. The overall GCI score is the average of 12 pillars consisting of 103 indicators that assess economies' *enabling environment*, *human capital*, *markets* and *innovation ecosystem*. Each of the 12 pillars has equal weight in the average score. (Schwab 2019.)

Overall scores and ranks of Colombia and its peer countries for seven previous years are presented in Table 14Table 14. For the years 2013–2017, only the ranks are shown because the scale of scores was changed in 2018 and thus, the scores from previous years are not comparable with the most recent ones.

Table 14. Global Competitiveness Index 2019–2016 (Schwab 2019, Schwab 2018, Schwab et al. 2017)

	2019		2018		2017	2016	2015	2014	2013
	Rank	Score	Rank	Score	Rank	Rank	Rank	Rank	Rank
Colombia	**57th**	**62.7**	60th	61.6	66th	61st	61st	66th	69th
Argentina	83rd	57.2	81st	57.5	92nd	104th	106th	104th	104th
Brazil	71st	60.9	72nd	59.5	80th	81st	75th	57th	56th
Costa Rica	62nd	62.0	**55th**	**62.1**	**47th**	**54th**	**52nd**	**51st**	**54th**
Ecuador	90th	55.7	86th	55.8	97th	91st	76th	71st	86th
Peru	65th	61.7	63rd	61.3	72nd	67th	69th	65th	61st

Colombia's rank has risen from 69th in 2013 to 57th in 2019 when it surpassed Costa Rica, which had been the most competitive country of the comparator group every year before that. Of Latin American and Caribbean countries, Colombia was the fourth most competitive country after Chile (33rd), Mexico (48th) and Uruguay (54th) (Schwab 2019). In fact, Colombia set a target in 2006 to become the third most competitive economy in Latin America, achieve the income per capita of a medium-high-income country and become an exporter of high-value-added goods and services. To achieve this goal, Colombia has been systematically monitoring and analyzing its GCI performance. (Schwab et al. 2017, 30.) Considering the country's recent progress in the GCI pillars, Colombia's goal seems attainable.

As for the global GCI performance, the LAC countries in general lag behind, especially in *institutions*, *infrastructure*, *labor market efficiency* and *innovation*. The region has not been able to close the gap on global leaders due to low productivity, high informality, insufficient export diversification and insufficient growth for creating employment and funding of public goods. Some fundamentals of competitiveness, such as institutional quality, have even worsened in the region, which still struggles with corruption. (Schwab et al. 2017, 29.)

Table 15 portrays the scores and ranks of Colombia and its peers in the GCI pillars. The average scores of the group of countries have been calculated in the last column of the table. Based on the average score, the performance is weakest in *innovation* and *institutions*, which is in line with what the Global Competitiveness report says about the average performance in the LAC region. Also, *product market* and *ICT adoption* receive low average scores. Colombia's weaknesses correspond to these lowest averages, as it receives its lowest scores in the same four pillars. Colombia is the top performer in *health*, *labor market*, *financial system* and *business dynamism*.

Table 15. Global Competitiveness Index component scores 2019 (Schwab 2019)

	Colombia		**Argentina**		**Brazil**		**Costa Rica**		**Ecuador**		**Peru**		**Average**
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Institutions	49	92nd	50	88th	48	99th	**57**	**54th**	48	106th	49	94th	50
Infrastructure	64	81st	68	68th	65	78th	**69**	**63rd**	**69**	**62nd**	62	88th	66
ICT adoption	50	87th	58	68th	58	67th	**60**	**63rd**	48	92nd	46	98th	53
Macroeconomic stability	90	43rd	34	139th	69	115th	74	85th	74	92nd	**100**	**1st**	74
Health	**95**	**16th**	84	53rd	79	75th	93	25th	85	50th	95	19th	89
Skills	60	80th	72	31st	56	96th	**69**	**51st**	61	76th	60	81st	63
Product market	53	90th	47	120th	46	124th	**59**	**41st**	43	130th	57	56th	51
Labor market	**59**	**73rd**	52	117th	53	105th	59	74th	52	116th	59	77th	56
Financial system	**65**	**54th**	53	105th	65	55th	60	70th	56	89th	61	67th	60
Market size	67	37th	69	34th	**81**	**10th**	47	88th	54	68th	62	49th	63
Business dynamism	**64**	**49th**	58	80th	60	67th	56	92nd	46	130th	56	97th	57
Innovation capability	36	77th	42	56th	**49**	**40th**	40	58th	33	88th	33	90th	39

Like the Enabling Trade Index, the GCI includes an economic profile of each country studied. The Economy Profile entails an overview of performance in the overall GCI and index components, selected economic, social and environmental indicators, such as the GDP and unemployment rate as well as detailed performance in every 103 indicators of

the pillars. The Economy Profile of Colombia can be found in Appendix 4. Global Competitiveness Index 2019, Economy profile of Colombia

Figure 30 lists the most problematic factors for doing business in Colombia based on the Executive Opinion Survey 2017, where the respondents were asked to select the 5 most problematic factors for the business in their own country and rank them. These lists have been published in the Global Competitiveness report 2017–2018 and are also available online.

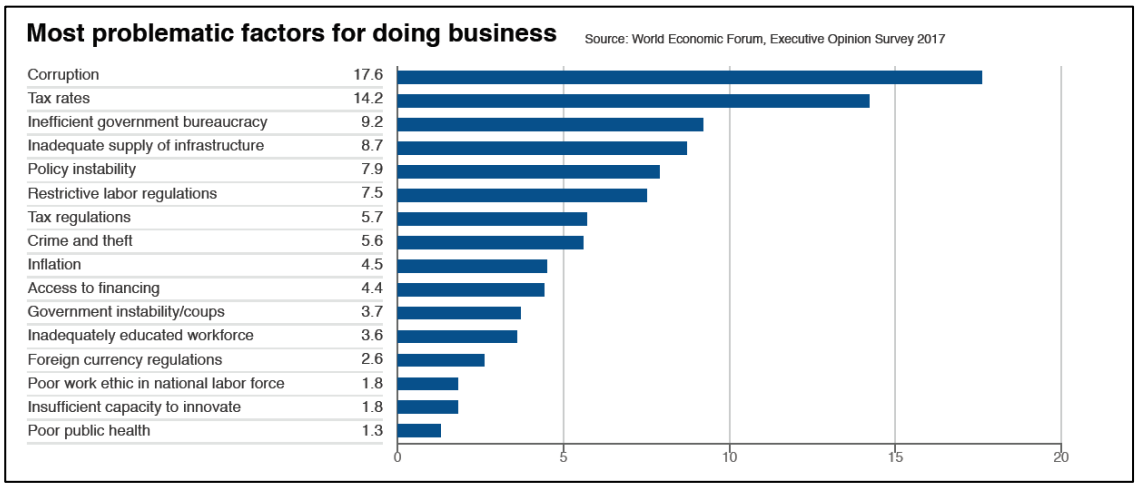

Figure 30. Most problematic factors for doing business in Colombia (Schwab et al. 2017, 120)

According to the survey respondents, the biggest issues for Colombia are corruption (17.6), tax rates (14.2), inefficient government bureaucracy (9.2), inadequate supply of infrastructure (8.7) and policy instability (7.9). Corruption figures are high on the list for also Peru (18.0), Brazil (12.3) and Ecuador (11.8). Also, other top 5 problems are basically the same in all comparator countries, except that in Argentina the inflation (20.7) is the most urgent problem and access to financing (8.2) is also on the top. In Costa Rica, access to financing (9.3) and restrictive labor regulations (9.0) replace corruption and policy instability in the top-5 problems.

5.6.5 Doing Business Index and Enterprise Survey

In the same way, as many other indices already presented, the Doing Business Index provides a score and a ranking to compare the performance of economies. The index measures the ease of doing business by evaluating the regulation of the business environment. The latest report includes 190 countries and Colombia was ranked the 67th.

Colombia featured on the list of top 10 improvers in three consecutive Doing Business reports but in the previous two years, none of the LAC countries have reached the list. Furthermore, none of the countries of the region is among the top 50 performers in the ease of doing business, as they still lag behind in implementing reforms that would improve the business environment. (World Bank 2019, 9, 11, 19).

Table 16 shows the development of the Doing Business Index scores and rankings of Colombia and its peers in recent years. Colombia and Peru have been the strongest countries of the group in past years. Costa Rica is also considered a relatively business-friendly environment. Argentina, Brazil and Ecuador in turn, are ranked low.

Table 16. Doing Business Index scores and rankings in 2017–2020 (World Bank 2019; World Bank 2018d; World Bank 2017; World Bank 2016)

	Doing Business 2020		Doing Business 2019		Doing Business 2018		Doing Business 2017	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Colombia	**67th**	**70.1**	**65th**	**69.2**	59th	69.4	**53rd**	**70.9**
Argentina	126th	59.0	119th	58.9	117th	58.1	116th	57.5
Brazil	124th	59.1	109th	60.0	125th	56.5	123rd	56.6
Costa Rica	74th	69.2	67th	68.9	61st	69.1	62nd	68.5
Ecuador	129th	57.7	123th	57.9	118th	57.8	114th	58.0
Peru	76th	68.7	68th	68.8	**58th**	**69.5**	54th	70.3

The latest Doing Business Index covers 10 topics of the business regulatory environment (Table 17). Typically, the performance of countries varies considerably across different regulation areas (World Bank 2019, 20). This is also the case for Colombia and its comparators. For example, Colombia is the 11th best country in the world in *getting credit* but close to the global bottom, ranking 117th out of 190 countries, in *enforcing contracts*.

Table 17. Doing Business Index scores and rankings by regulation areas (World Bank 2020c)

	Colombia		Argentina		Brazil		Costa Rica		Ecuador		Peru	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Starting a business	**95th**	**87.0**	141st	80.4	138th	81.3	144th	79.9	177th	69.1	133rd	82.1
Dealing with construction permits	89th	69.1	155th	56.4	170th	51.9	78th	70.8	114th	66.4	**65th**	**72.5**
Getting electricity	82nd	76.3	111th	70.0	98th	72.8	**25th**	**88.9**	100th	72.3	88th	74.5
Registering property	62nd	71.2	123rd	56.7	133rd	54.1	**49th**	**74.4**	73rd	67.7	55th	72.1
Getting credit	**11th**	**90.0**	104th	50.0	104th	50.0	15th	85.0	119th	45.0	37th	75.0
Protecting minority investors	**13th**	**80.0**	61st	62.0	61st	62.0	110th	48.0	114th	44.0	45th	68.0
Paying taxes	148th	58.6	170th	49.3	184th	34.4	**66th**	**78.0**	147th	58.6	121st	65.8
Trading across borders	133rd	62.7	119th	67.1	108th	69.9	**80th**	**77.6**	103rd	71.2	102nd	71.3
Enforcing contracts	177th	34.3	97th	57.5	**58th**	**64.1**	111th	55.2	96th	57.5	83rd	59.1
Resolving insolvency	**32nd**	**71.4**	111th	40.0	77th	50.4	137th	34.6	160th	25.5	90th	46.6

The World Bank Enterprise Surveys is a database containing companies' experiences of the business environment in different economies. It covers altogether 12 topics varying from crime and corruption to trade and finance. For Colombia, the survey data was collected from business owners and top managers in Bogotá, Medellín, Calí, Cartagena and Barranquilla in 2017 and 2018. It also includes a ranking of the top business environment obstacles to firms. This ranking can be seen in Figure 31. Enterprise Surveys: Top business environment obstacles for firms in Colombia (World Bank 2020b)

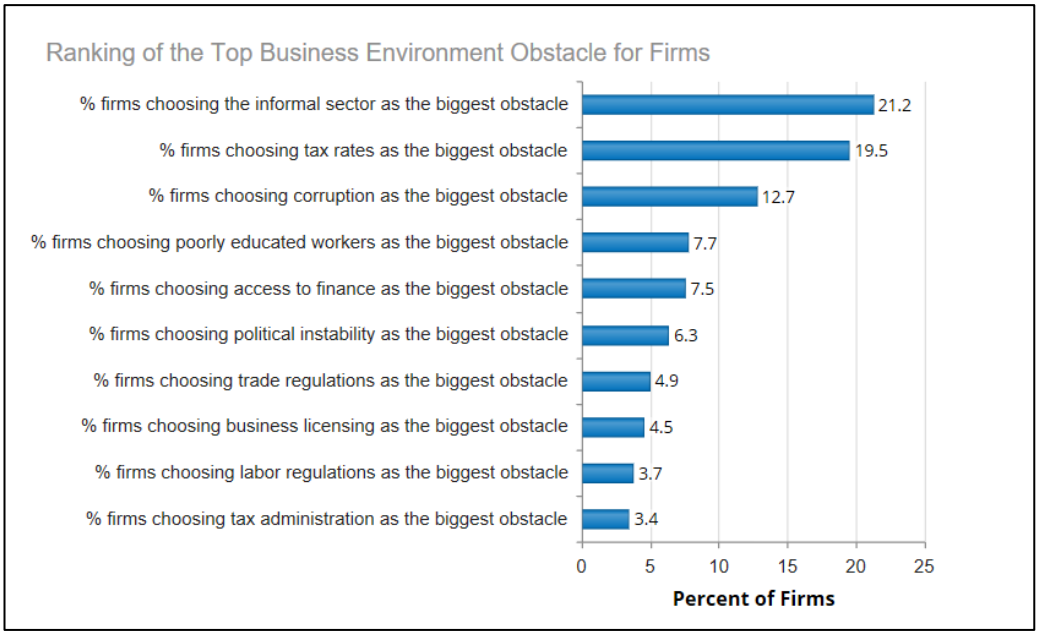

Figure 31. Enterprise Surveys: Top business environment obstacles for firms in Colombia (World Bank 2020b)

The issues which companies consider to complicate the business environment the most in Colombia include the *informal sector* (21.2% of respondents), *tax rates* (19.5%) and *corruption* (12.7%). In all Latin American and Caribbean countries combined, the proportion of firms selecting *informality* as the biggest problem is 12.6%. The issue is at the top of the list also in Ecuador (15.3%) and Peru (27.6%). In Argentina, the most considerable obstacle is *tax rates* (35.9%). The corresponding proportion in the LAC region is 11.4%. Other top issues in Argentina are *labor regulations* 15.3% and *political instability* 11.4%. Like in Colombia, *corruption* is a big obstacle for business in Peru (14.3%). Both countries exceed the level of the whole region, 7.2%. The third most important constraint to business in Peru is *political instability* with a share of 12.4% of respondents. In Ecuador, political instability is the number one issue (25.7%) and after *informality*, the third biggest problem is *access to finance* (10.7%). Other peer countries are not compared here because available survey responses date from 2009 and 2010 and thus, it would not be worthwhile to compare this data with the survey data from 2017. (World Bank 2020b)

5.6.6 Index of Economic Freedom

The Heritage Foundation publishes the Index of Economic Freedom, which measures the economic freedom of countries in four broad categories: *rule of law*, *government size*, *regulatory efficiency* and *market openness*. These areas are further divided into 12 indicators. The 2021 index includes 178 countries that are scored from 0 to 100 and ranked based on their average performance in the index components. (Heritage Foundation 2021a.)

The regional average score of the Americas is 59.5, which is slightly lower than the global average of 61.6. Colombia's score is the sixth-highest in the region preceded by Canada, Chile, the United States, Uruguay and Jamaica. The regional top three countries are considered *mostly free* countries by the Heritage foundation classification as their score is between 70.0 and 79.9. Colombia, Peru and Costa Rica are categorized as *moderately free* and Brazil, Argentina and Ecuador fall in the category of *mostly unfree*. Countries scoring below 50 are considered *repressed* states and include at the moment countries like Cuba and Venezuela. (Miller, Kim & Roberts 2021, 45.) Table 18 presents the Economic Index ranks and scores of Colombia and its peer countries in recent years.

Table 18. Overall scores and rankings of the Index of Economic Freedom 2017–2021 (Heritage Foundation 2021b)

	2021		2020		2019		2018		2017	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
COL	**49th**	**68.1**	**45th**	**69.2**	49th	67.3	**42nd**	**68.9**	**37th**	**69.7**
ARG	148th	52.7	149th	53.1	148th	52.2	144th	52.3	156th	50.4
BRA	143rd	53.4	144th	53.7	150th	51.9	153rd	51.4	140th	52.9
CRI	72nd	64.2	68th	65.8	61st	65.3	57th	65.6	63rd	65.0
ECU	149th	52.4	158th	51.3	170th	46.9	165th	48.5	160th	49.3
PER	50th	67.7	51st	67.9	**45th**	**67.8**	43rd	68.7	43rd	68.9

As already mentioned, Colombia's score is among the top performers of the region and with a score of 68.1 it is situated very close to the limit of the category of *mostly free* countries. Peru competes with Colombia for the top position, as their scores are very close to each other. Especially, Ecuador has made significant progress between 2019 and 2021.

According to the 2020 Index of Economic Freedom report, typical problem areas in the Americas are *rule of law* and *regulatory inefficiency*. Particularly in Latin America, corruption hinders foreign investment and job growth and a poor-quality regulatory environment sets obstacles to entrepreneurship. Also, the protection of property rights

and judicial efficiency are often insufficient. On the other hand, the *government spending* and factors of *market openness* are in line with global standards. (Miller et al. 2020, 66, 69.) Countries' performance in each of the 12 Economic Freedom components can be seen in Table 19Table 19.

Table 19. Index of Economic Freedom 2021 components (Heritage Foundation 2021b)

	Colombia	Argentina	Brazil	Costa Rica	Ecuador	Peru
Property rights	59.8	46.1	55.0	**64.0**	39.5	53.3
Judicial effectiveness	36.4	45.7	45.5	**58.1**	24.7	28.3
Government integrity	49.7	54.0	47.5	**59.0**	38.5	36.3
Tax burden	69.7	70.4	70.1	**79.9**	77.1	79.4
Government spending	69.3	52.8	56.5	**87.7**	58.5	86.4
Fiscal health	78.9	38.4	5.3	24.3	75.9	**91.5**
Business freedom	**71.0**	59.5	58.0	66.2	50.4	66.2
Labor freedom	**77.7**	46.3	50.7	55.5	47.9	63.2
Monetary freedom	78.1	41.9	77.8	80.9	81.7	**86.1**
Trade freedom	77.0	62.6	64.6	75.0	59.8	**86.4**
Investment freedom	**80.0**	55.0	60.0	70.0	35.0	75.0
Financial freedom	**70.0**	60.0	50.0	50.0	40.0	60.0

Colombia receives its lowest scores in all three rule of law indicators: *property rights*, *judicial effectiveness* and *government integrity*, which, as mentioned in the previous paragraph, are among the typical problem areas in Latin America. In all other indicators, Colombia scores close to or above 70. All the peer countries, especially Peru, which in other indicators performs quite well, receive relatively low scores in the same rule of law indicators. Other peer countries seem to have their own issues each, like fiscal health for Brazil and Costa Rica. For example, Ecuador's performance is significantly below the world average in market openness factors, which is a field where Latin American countries typically perform well.

According to the country report of Colombia, property rights, in general, are well-protected. The judicial system is considered to be competent and fair but corruption and bribery remain problems in this area. Violence and corruption related to the trafficking of drugs continue to undermine institutions. However, the government is implementing fiscal, judicial and constitutional reforms to improve judicial effectiveness and government integrity with the aim of advancing the economy. However, political polarization has slowed down the pace of reforms. Colombia's overall score declined 1.1 from the 2020 score mainly due to a decline in *government spending* score. The overall score still remains above the regional and world averages. (Miller, Kim & Roberts 2021,

146–147.) Colombia's Economic Freedom profile 2021 can be found in Appendix 5. Index of Economic Freedom 2021 (Source: Heritage Foundation 2021b)

5.6.7 Corruption Perceptions Index

Transparency International has been issuing the Corruption Perceptions Index every year since 1995. The index captures the level of perceived public sector corruption in 180 countries. Countries get scores from 0 (highly corrupt) to 100 (very clean) and are ranked based on this score. (Transparency International 2020.) Table 20 presents the scores and rankings of Colombia and its peer countries in the past four years and 2010.

Table 20. Corruption Perceptions Index (Transparency International 2021)

	CPI 2020		CPI 2019		CPI 2018		CPI 2017		CPI 2010
	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Colombia	92nd	39	96th	37	99th	36	96th	37	78th
Argentina	72nd	42	66th	45	85th	40	85th	39	106th
Brazil	94th	38	106th	35	105th	35	96th	37	69th
Costa Rica	**42nd**	**57**	**44th**	**56**	**48th**	**56**	**38th**	**59**	**41st**
Ecuador	92nd	39	93rd	38	114th	34	117th	32	127th
Peru	94th	38	101st	35	105th	36	96th	37	78th

There is more variation in the rankings than in the scores, which could indicate that the performance in comparison to other countries is changing significantly. Costa Rica is clearly the strongest in the group falling a bit above the middle of the scale from highly corrupt to very clean. Other countries perform worse, scoring below the regional average of the Americas 43. If Colombia was ranked very high in the Economic Freedom index, it was certainly not thanks to its government integrity as its score in the Corruption Perceptions Index is very low. The situation seems to have deteriorated in the past 10 years, unlike in Ecuador, which has made significant improvements, even though its performance remains low. Furthermore, Transparency International reports that the worsening of corruption in Colombia dates back even further than a decade, as the rank went from 57 in 2002 to 94 in 2012. This decline happened despite the improved political stability and strong economic growth driven by a mining boom and better security conditions. The government of President Santos even directly tackled corruption by implementing a new anti-corruption act and creating a new anti-corruption office in 2011. However, these institutional reforms seem not to have been able to reduce corruption. (Gutiérrez 2013.)

Nevertheless, the recent development in Colombia is not only negative. The overall bribery rate (proportion of citizens that reported having paid a bribe for public services in the previous 12 months) has declined from 30% in 2017 to 20% in 2019, which corresponds to the average bribery rate in LAC. Also, more people think that the government is doing a good job in fighting corruption. In 2019, the percentage was 40% and in 2017, 31%. (Pring & Vrushi 2019.) In the 2020 index, the score and rank had improved from the previous year and Colombia was ranked 92nd with 39 points (Transparency International 2021).

Out of all LAC countries, Peru and Colombia have the highest proportion of citizens who consider government corruption to be a big problem (96% and 94% respectively). These countries lead also in the share of people having little or no trust in the government, court and police, the percentage being over 90. As for the overall bribery rate, Peru has the highest bribery rate (30%) after Venezuela and Mexico, and Costa Rica the lowest (7%). Despite its overall weak performance in the CPI, Brazil has the third-lowest bribery rate (11%) in Latin America and the Caribbean. (Pring & Vrushi 2019.)

As for the state of corruption in LAC in general, the corruption rate correlates with those of emerging economies in other regions and is significantly higher than in advanced economies. However, the differences between countries are significant. For instance, in Chile and Uruguay, the perceived corruption levels are comparable to those of advanced economies. These countries perform well in other governance indicators as well and have relatively high GDP per capita. (Lipton, Werner & Gonçalves 2017.)

Trust in government and other officials, the police and courts is very low in general and around half of the Latin American citizens think that most or everyone working in these institutions is corrupt. Thus, it is not surprising that only 33% report corrupt practices to authorities after having experienced corruption. Incidents are not reported out of fear of retaliation and because corrupt officials rarely face any legal consequences. (Pring & Vrushi 2019, 14, 19.)

5.6.8 Worldwide Governance Indicators

Worldwide Governance Indicators measure institutional quality based on 6 different dimensions of governance. The indicator results are reported on a scale from -2.5 to 2.5, where higher values correspond to better governance, and in percentile ranks among all countries ranging from 0 (lowest rank) to 100 (highest rank). Data is available for every

year since 1996 but the changes between years are not statistically different. (Worldwide Governance Indicators 2020.) Thus, it is worth observing a longer period, like in Figure 32, where the performance of Colombia and its peers in six dimensions of governance is depicted with scores of every second year between 1996 and 2020.

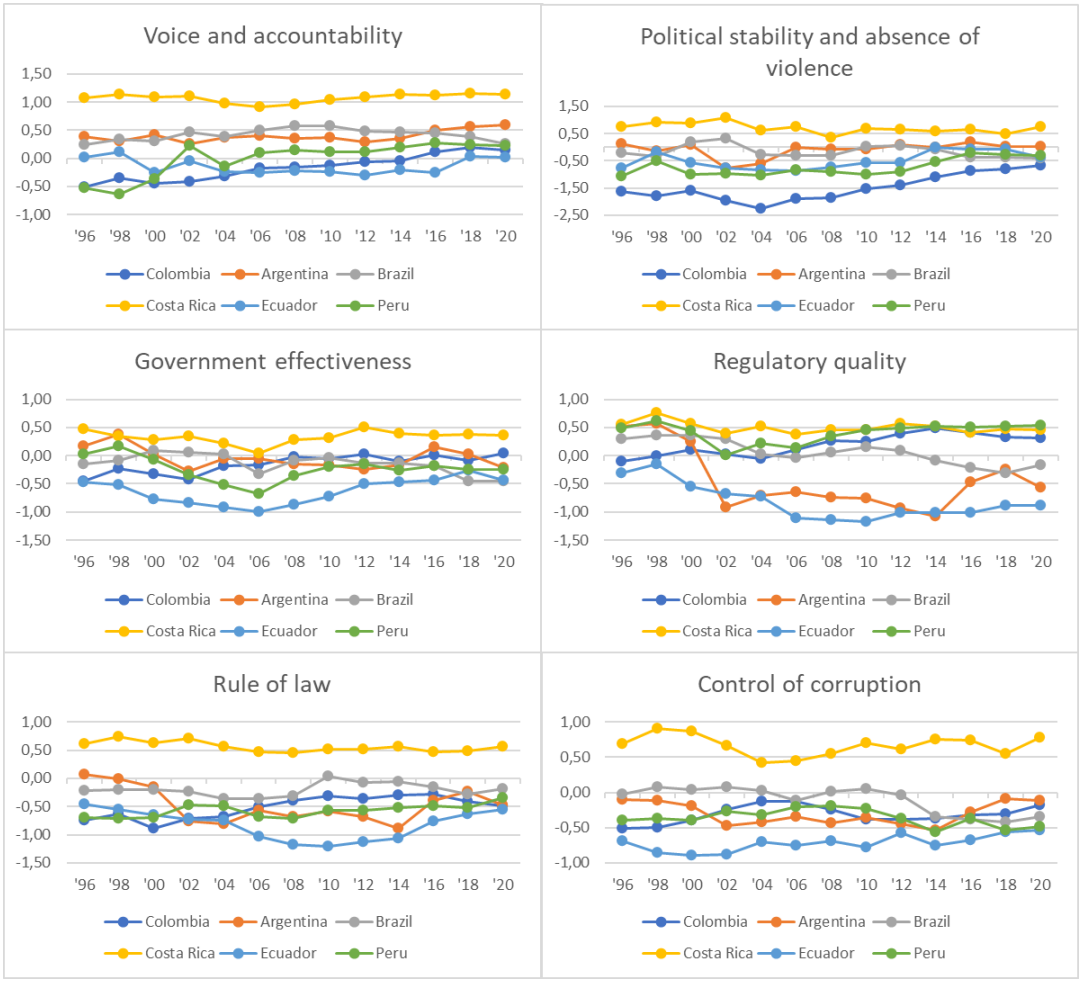

Figure 32. Worldwide Governance Indicator scores in 1996-2020 (-2.5=weak, 2.5=strong) (Worldwide Governance Indicators 2021)

Out of the six countries studied, Costa Rica has been performing better than others in all indicators throughout the years. In *voice and accountability*, the countries that started from the bottom of the group, Colombia and Peru, have been able to improve significantly but still remain at a lower level than others, except for Ecuador. In terms of *political stability and absence of violence and terrorism*, Colombia is the weakest country of the group throughout the time studied, despite substantial progress made after 2004. In *government effectiveness*, the countries get quite converging results. Also, in this indicator, Colombia has advanced significantly and has become the second-best country

after starting as the worst country. Its recent scores are close to 0, which marks the global median. In *regulatory quality*, countries are divided: Peru, Costa Rica and Colombia are relatively strong, whereas, Argentina, Brazil and Ecuador have weakened and are all now situated below the global median. In *rule of law*, which is an essential indicator for the business environment, which includes factors like contract enforcement, only Costa Rica is above the global median. The WGI scores in *control of corruption* are in line with the results of the Corruption Perceptions barometer treated in the previous section. Only Costa Rica performs better than the global median. Other countries have either maintained their weak position or even worsened, except Colombia, which has made progress in reducing corruption, improving its score from -0.51 in 1996 to -0.18 in 2020. Despite this, corruption remains a great challenge for the country. In general, the charts indicate that Colombia has made huge leaps in most indicators as the charts show a clear upward trend for the country.

Figure 33 shows the governance indicators performance ranks in percentiles in 2020. The percentile ranks make it easier to compare the countries' performance on a global level. The error margins are not included in the chart and it should thus be kept in mind that when comparing two countries, there is no statistically significant difference between them if the bars are of similar height because in this case, the error margins would overlap. However, it can be seen that Costa Rica clearly outperforms others in all indicators except *regulatory quality*, in which Peru and Colombia get similar scores as Costa Rica.

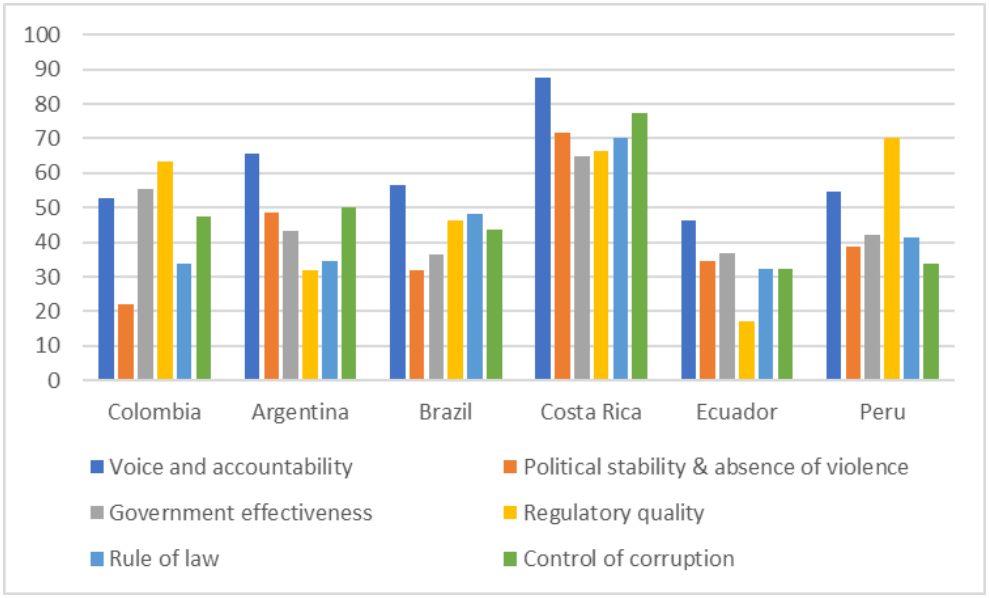

Figure 33. Worldwide Governance Indicator percentile ranks in 2020 (0=minimum, 100=maximum) (Worldwide Governance Indicators 2021)

Colombia's weakness is still *political stability and absence of violence and terrorism* even though the security situation has improved significantly from the 1990s and early 2000s when the country was situated in the lowest 10th percentile. In 2004, Colombia's percentile rank was the lowest 2.43, which means that it was considered one of the most politically unstable and violent countries in the world. The most recent percentile rank was 22.17.

Figure 34. Overall performance in Worldwide Governance Indicators in Latin America 2019 (Worldwide Governance Indicators 2021)

Figure 34 demonstrates the performance of Latin American countries in all WGI indicators combined. Costa Rica is situated among the best performing percentile range of Latin American countries (global percentile range of 50th–75th). Argentina, Brazil and Peru are among the second-best group of Latin American countries. Colombia and Ecuador are below the lowest global quartile, situated between 10th and 25th percentiles.

5.6.9 Customs Capabilities Database

The Customs Capabilities Database by the Global Express Association includes information on countries' customs procedures, rankings on relevant TTF indicators as well as the signing of international agreements related to TTF. All countries compared in this study expect Colombia have ratified the TFA Agreement, which has been discussed in section 2.1.2Importance of trade and transport facilitation. The International Convention on the simplification and harmonization of Customs procedures known as the Revised Kyoto Convention that entered into force in 2006 has only been signed by Argentina. (Global Express Association 2019; World Customs Organization 2020.)

5.6.10 Global Connectedness Index

The Global Connectedness Index analyzes the degree of globalization in different countries based on their cross-border flows of *trade*, *capital*, *information* and *people*. Countries are scored on a scale of 0 to 100 on each component. This overall score consists of *depth* and *breadth* score both of which the scale is 0–50. The connectedness index covers 169 countries. (Altman & Bastian 2020.) Table 21 includes the index scores and ranks of Colombia and its peers in 2015–2019. To compare the development of the index scores on a longer period, Figure 35 depicts the scores starting from the year 2001.

Table 21. Global Connectedness Index scores and ranks (DHL 2021)

	GCI 2019		GCI 2018		GCI 2017		GCI 2016		GCI 2015	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Colombia	87th	48	87th	47	89th	46	93rd	45	89th	47
Argentina	83rd	49	91st	46	92nd	45	92nd	45	96th	45
Brazil	**60th**	**56**	**65th**	**55**	**61st**	**55**	**63rd**	54	**61st**	**54**
Costa Rica	74th	52	73rd	51	80th	48	84th	47	97th	44
Ecuador	92nd	46	95th	45	101st	43	100th	43	98th	44
Peru	67th	54	67th	53	63rd	54	61st	**55**	65th	54

Brazil outperforms others in recent years and it has also been at the top most years throughout the 2000s. It was ranked 60th out of 169 countries in 2019. None of the countries can be considered particularly well connected as most of them rank below the world average score of 50, and Brazil and Peru only slightly above. The trendlines in Figure 35 indicate that all countries have improved their connectedness, some more than others.

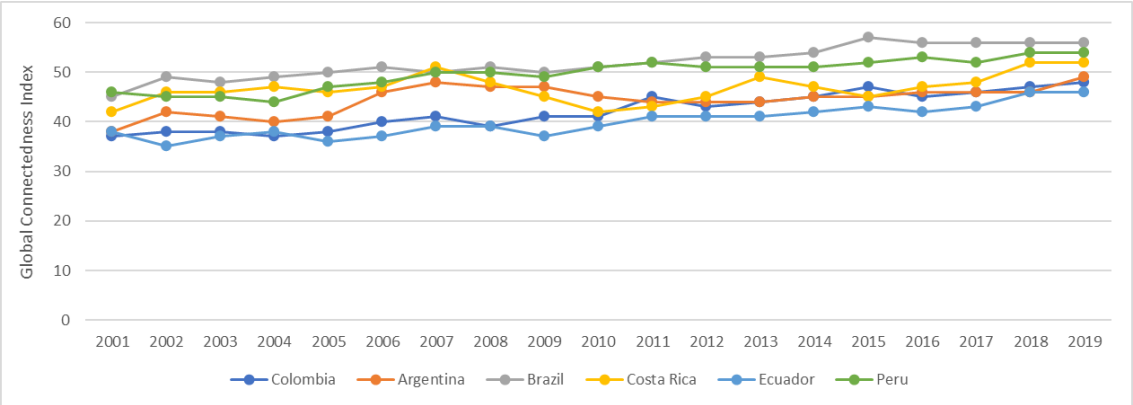

Figure 35. Global Connectedness score trend (DHL 2021)

In Table 22, the overall score is divided into depth and breadth scores (scale 0–50). It can be seen that Brazil is strong in breadth but not so much in depth of its international flows. In other words, Brazil has connections that are globally more dispersed than those of other countries but its international flows are relatively modest in comparison to its equivalent domestic flows. Most comparator countries have a similar situation as their breadth scores are higher than the depth scores. In contrast, Costa Rica leads other countries in depth.

Table 22. Global Connectedness depth and breadth scores (DHL 2021)

	GCI 2019		GCI 2018		GCI 2017		GCI 2016		GCI 2015	
	Depth	Breadth	Depth	Breadth	Depth	Breadth	Depth	Breadth	Depth	Breadth
Colombia	17	31	16	31	16	30	16	29	17	30
Argentina	19	30	17	29	15	30	14	31	14	31
Brazil	14	**41**	14	**41**	14	**41**	12	**42**	12	**42**
Costa Rica	**27**	25	**26**	25	**24**	24	**24**	23	**22**	22
Ecuador	15	31	15	30	14	29	13	30	14	30
Peru	20	34	19	34	19	35	19	36	19	35

According to the latest Global Connectedness report, only about 25% of the LAC region's cross-border flows are intraregional despite the countries' historical and linguistic ties as well as regional integration efforts. In general, the LAC countries have low breadth scores, in other words, they have connections with few specific countries, and as said, with countries outside the region. Countries in the Northern part of the region usually have the major part of their international flows with the United States. The second-largest trading partner is Spain, with 8% of total flows due to colonial history. China comes third with a share of 7%. (Altman & Bastian 2020, 62.) Figure 36 illustrates the international flows of Colombia and its peer countries. The United States is clearly the most important

partner country for all, except for Argentina and Ecuador. International flows with the US dominate especially in the Northernmost countries of the group.

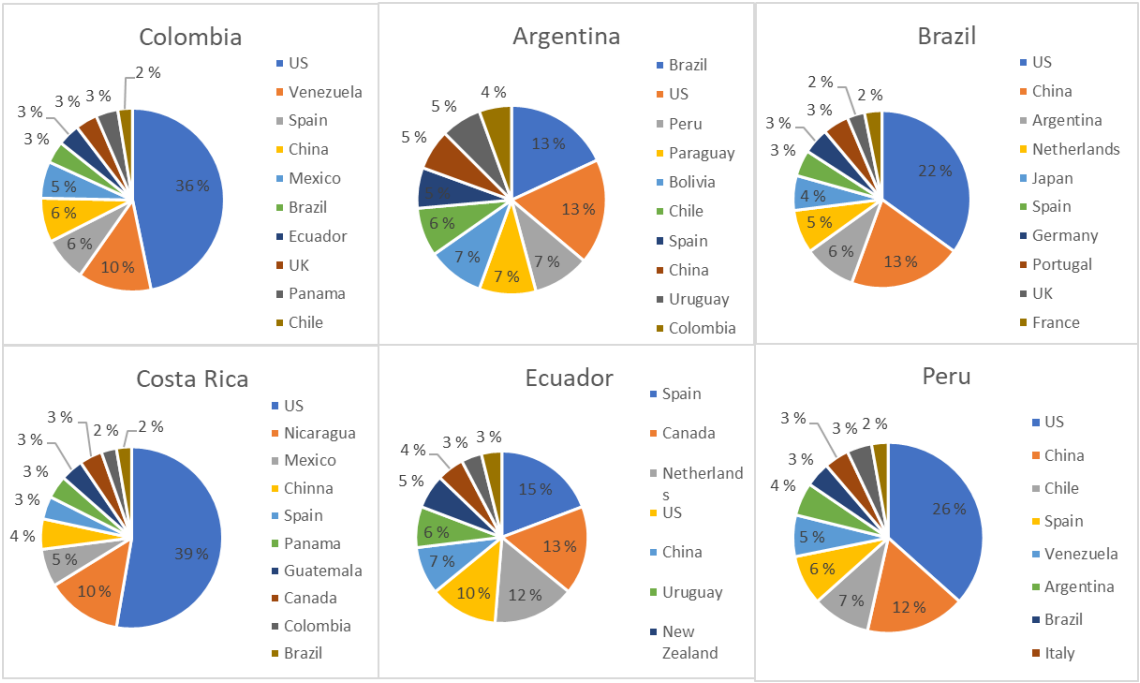

Figure 36. Shares of international flows in 2019 (DHL 2021)

In Table 23, the Global Connectedness index is further divided into its components. This shows what international flows consist of. Brazil outperforms others in all pillars except *people*. In the *trade* pillar, all countries have high breadth scores. Brazil almost achieves maximum points, 50. This indicates that all countries have a widespread network of trading partners, which is not typical for LAC countries according to the Global Connectedness report. All countries except Costa Rica have low scores in depth, which means that they have more domestic merchandise and services trade than international trade. Low scores are easily explained by the fact that the group includes economies that have huge domestic markets. A small country, Costa Rica, exports more of its production.

Table 23. Global Connectedness pillar scores in 2019 (DHL 2021)

	Trade			Capital			Information			People		
	Depth	Breadth	Overall	Depth	Breadth	Overall	Depth	Breadth	Overall	Depth	Breadth	Overall
Colombia	8	37	45	24	26	50	35	24	59	15	22	37
Argentina	8	40	48	25	20	45	**38**	24	62	19	19	38
Brazil	5	**48**	**53**	24	**37**	**61**	36	**29**	**65**	4	**34**	38
Costa Rica	**20**	28	48	**32**	22	54	35	19	54	**23**	26	**49**
Ecuador	13	34	47	N/A	N/A	N/A	30	21	51	18	25	44
Peru	13	37	50	24	32	56	33	23	56	17	28	45

More detailed information of Colombia's connectedness and its drivers is included in DHL's country report in Appendix 6. Global Connectedness Index 2019 (Source: DHL 2021)

5.6.11 Liner Shipping Connectivity Index

The Liner Shipping Connectivity Index (LSCI) is an index created by UNCTAD. It measures maritime connectivity, in other words, how well countries are connected by the sea. The index is computed every year for all countries that have regular containerized liner shipping services and the results are available online starting from the year 2006. The index is the average of 6 different components related to container traffic capacity and container ship services of a country. The maximum value of the index is 100, which is given to the highest-scoring country in 2006 (China). Other countries' index scores are calculated in relation to the maximum. (UNCTAD 2021a.) Table 24 presents Liner Shipping Connectivity Index scores and ranks in Colombia and its peer countries in 2017–2020.

Table 24. Liner Shipping Connectivity Index (UNCTAD 2021a)

	LSCI 2020		LSCI 2019		LSCI 2018		LSCI 2017	
	Rank	Index	Rank	Index	Rank	Index	Rank	Index
Colombia	**34**	**48.9**	**36**	**46.5**	**34**	**46.7**	**32**	**47.4**
Argentina	60	33.1	54	33.4	53	33.2	52	32.8
Brazil	48	36.4	47	35.7	48	35.4	48	34.8
Costa Rica	72	24.4	75	21.1	79	18.0	78	17.2
Ecuador	45	38.5	57	32.8	66	26.3	56	31.4
Peru	43	39.6	42	38.9	45	38.0	43	37.9

It can be seen from the table that Colombia has been the best-connected country of the group in recent years ranking the 34th best-connected country globally. This has actually

been the case since 2011 when Colombia gained the leading position from Brazil (UNCTAD 2021a.) Figure 37 illustrates the development of the LSCI index scores since 2006. Besides Colombia, Peru and Ecuador have made significant progress, whereas in Brazil and Argentina the development has been steadier. Costa Rica remains the lowest-performing country in LSCI.

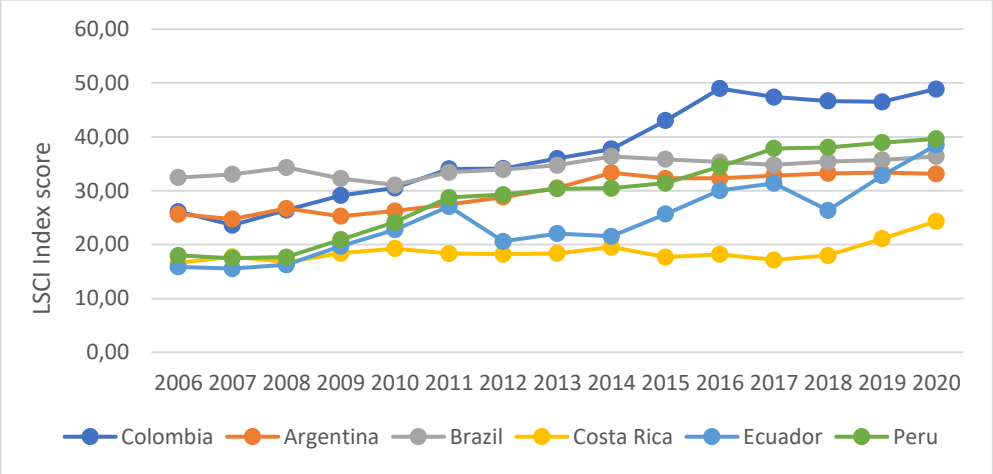

Figure 37. Liner Shipping Connectivity Index development in 2006–2020, maximum 2006=100 (UNCTAD 2021a)

UNCTAD publishes country profiles on its website. The general country profile provides a snapshot of the country's economic and financial situation. The maritime profile depicts the country's situation in maritime transport and international trade. The Maritime Profile of Colombia can be found in Appendix 7. Maritime profile of Colombia (Source: UNCTAD 2020)The profile includes a list of the top 10 partners calculated based on bilateral liner shipping connectivity. (UNCTAD 2020.) The partner countries of Colombia and comparators are presented in Table 25.

Table 25. Bilateral liner shipping connectivity in 2019 (UNCTAD 2020)

	Colombia	Argentina	Brazil	Costa Rica	Ecuador	Peru
1.	Panama	Brazil	Argentina	Panama	Peru	Colombia
2.	Peru	Uruguay	Uruguay	Mexico	Colombia	China
3.	Mexico	China	China	UK	China	Chile
4.	China	Singapore	Singapore	Colombia	South Korea	Mexico
5.	Chile	Hong Kong	Spain	US	Mexico	South Korea
6.	Dominican Rep.	South Korea	Hong Kong	Belgium	Hong Kong	Hong Kong
7.	South Korea	Morocco	South Korea	Guatemala	Japan	Panama
8.	Netherlands	Spain	Italy	Jamaica	Taiwan	Ecuador
9.	Hong Kong	Italy	US	Germany	Panama	Japan
10.	Belgium	Malaysia	Morocco	Dominican Rep.	Guatemala	Dominican Rep.

Not surprisingly, the top 10 partners include big economies that are well connected globally and have important container ports, like the US and China, Hong Kong, South Korea and Singapore in Asia and the Netherlands, the UK, Belgium and Spain, in Europe. Another visible factor in bilateral connectivity is geographical proximity. For example, Costa Rica, Ecuador and Peru are well connected to their neighbor Colombia and nearby Panama.

5.6.12 Air Connectivity Index, Air Trade Facilitation Index and eFreight Friendliness Index

Air Connectivity Index measures how well countries are connected to the global air transport network. The index results cover only two years: 2007 and 2012. (Shepherd et al. 2016, Arvis & Shepherd 2011.) The scores and ranks for Colombia and its peer countries for these years can be seen in Table 26. The data is quite old already but it illustrates clearly that none of the countries were well connected to other countries by air in 2007. The situation has substantially improved by 2012 and especially Brazil can be considered to be very well connected to the global air transport network.

Table 26. Air Connectivity Index 2007 and 2012 (Shepherd et al. 2016, Arvis & Shepherd 2011)

	ACI 2012		ACI 2007	
	Rank	Index	Rank	Index
Colombia	78	1.64	117	3.02
Argentina	66	1.92	133	2.41
Brazil	**41**	**3.29**	125	2.67
Costa Rica	74	1.75	**110**	**3.24**
Ecuador	107	1.10	134	2.39
Peru	93	1.40	160	1.81

Unlike the Air Connectivity Index, which includes data on both passenger and cargo transport, the Air Trade Facilitation Index and eFreight Friendliness Index cover only cargo transport by air. The difference between these two is that the Air Trade Facilitation Index is a general indicator of the trade facilitation environment related to air cargo, whereas the eFreight Friendliness Index focuses solely on the capabilities of countries to electronically process cargo transactions. (Shepherd et al. 2016.) Table 27 presents the

ranks and index scores of Colombia and its peers in the Air Trade Facilitation Index and the eFreight Friendliness Index in 2016, which is the only year available for these indices.

Table 27. Air Trade Facilitation Index and eFreight Friendliness Index (Shepherd et al. 2016)

	ATFI 2016		EFFI 2016	
	Rank	Index	Rank	Index
Colombia	60	73.11	80	1.05
Argentina	**36**	**84.86**	109	0.07
Brazil	N/A	N/A	78	1.25
Costa Rica	50	78.78	**35**	**30.95**
Ecuador	67	69.62	37	30.88
Peru	62	72.81	57	16.63

The index ranges are 0–100, with a higher score indicating better performance, though the highest-ranking country in EFFI, the United Arab Emirates, scores only 47.37. The best-performing country of the group in the Air Trade Facilitation Index is Argentina, even though it fails miserably in implementing ICT in air cargo, as can be seen from its low performance in the eFreight Friendliness Index. Costa Rica beats others in EFFI by ranking 35th of 135 countries studied. In addition to Argentina, Colombia and Brazil also score very low in electronic processing of air cargo.

5.7 Overview of the selected indicator results

This section reviews some of the results of the trade and transport facilitation indicators presented above. The discussion of the results is divided into two parts according to the categories established in the literature review on determinants of logistics performance. The first part is dedicated to components assessing transport infrastructure and logistics, and the second to factors related to institutional quality.

5.7.1 Quality of the transport infrastructure and services

Colombia does not rank very high in the overall quality of transport infrastructure. In fact, according to the **Enterprise Surveys** conducted in 2017 and 2018, 42.4% of companies identified transportation as a major constraint in Colombia. This is significantly more than the average in Latin America and the Caribbean, 23.7%. (World Bank 2020b.) In the **Executive Opinion Survey** conducted by the World Economic Forum in 2016, 20.1% of

the companies selected *high costs or delays caused by domestic transportation* as one of the *most problematic factors for importing* and 19.3% as the *most problematic factors for exporting* (Geiger et al. 2016). In the *quality of trade and transport infrastructure* component of the **Logistics Performance Index**, Colombia's score is 2.67 (on a scale of 1–5) and rank 72nd (World Bank 2018b). Only Costa Rica and Peru get even lower points. Of the pillars of the **Enabling Trade Index**, Colombia gets its lowest score (3.0 on a scale of 1–7) in the *availability and quality of transport infrastructure* pillar, ranking it 94th from 136 countries. Peru receives the same score and only Costa Rica's performance is worse. (World Economic Forum 2021.) Also, in the **Global Competitiveness Index's** *transport infrastructure* pillar, Colombia performs second-worst of the six countries, as only Peru gets a lower score (Schwab 2019). The LPI scores are reviewed in Table 28 and infrastructure scores of the ETI and GCI in Table 29.

Table 28. Quality of trade and transport infrastructure in Logistics Performance Index (scale 1–5) (World Bank 2018b)

	LPI 2018: Infrastructure	
	Rank	Score
Colombia	72	2.67
Argentina	62	2.77
Brazil	**50**	**2.93**
Costa Rica	84	2.49
Ecuador	69	2.72
Peru	111	2.28

Table 29. Overall quality of the transport infrastructure in the Enabling Trade Index (scale 1–7) and Global Competitiveness Index (scale 0–100) (World Economic Forum 2021; Schwab 2019)

	ETI		GCI	
	Rank	Score	Rank	Score
Colombia	94	3.0	92	43.8
Argentina	73	3.4	72	47.7
Brazil	82	3.2	85	45.6
Costa Rica	115	2.6	88	44.4
Ecuador	**48**	**3.9**	**64**	**52.8**
Peru	95	3.0	97	42.4

When ETI and GCI rankings are compared with each other, most countries get very similar ranks. However, the ranks of Costa Rica and Ecuador are quite different in the two indicators. This is because the *availability and quality of the transport infrastructure* pillar of the ETI includes only indicators measuring the quality of transport infrastructure

of different modes of transport, whereas the *transport infrastructure* pillar of the GCI also contains variables measuring the quality of services and connectivity. Thus, for example, Costa Rica is ranked only 115th out of 136 countries in ETI because of the weaknesses in the country's infrastructure.

For a closer look at the quality of transport infrastructure of Colombia and its peer countries, it is worthwhile to study different modes of transport separately, as in Table 30. Based on the scores, it can be seen that especially, the quality of roads and railroad infrastructure is considered weak in Colombia, even though the government has been realizing transport infrastructure projects, including building new roads and improving the existing ones (Ministry of Transport of Colombia 2020b). The scores have still improved from the previous year. In 2019, Colombia scored 65.4 in *road connectivity*, 39.7 in *quality of road infrastructure* and 4.8 in *railroad density* (47.9, 37.9 and 3.7 in 2018). None of the peer countries get high scores in road or railway transport, except that Argentina gets a very high score (94.5) in *road connectivity* and Ecuador a relatively good score (65.0) in *quality of road infrastructure*. In other modes of transport, Colombia performs better and the *quality of port infrastructure* and *airport connectivity* are considered very good.

Table 30. Availability and quality of transport infrastructure and services in Enabling Trade Index (scale 1–7) and Global Competitiveness Index (scale 0–100) (World Economic Forum 2021; Schwab 2019)

	Colombia		Argentina		Brazil		Costa Rica		Ecuador		Peru	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Road connectivity	97	65.4	**12**	**94.5**	69	76.1	103	63.3	100	64.2	102	64.0
Quality of road infrastructure	104	39.7	92	43.4	115	33.5	117	33.0	**35**	**65.0**	110	36.4
Railroad density	89	4.8	**65**	**16.1**	78	8.9	n/a	n/a	n/a	n/a	95	3.6
Efficiency of train services	99	12.2	79	28.1	86	24.3	n/a	n/a	n/a	n/a	**74**	**31.7**
Quality of railroad infrastructure (1–7)	104	1.4	**87**	**2.1**	93	1.9	97	1.8	n/a	n/a	91	1.9
Airport connectivity	31	68.7	48	59.1	**17**	**89.7**	77	43.3	83	39.9	50	58.2
Efficiency of air transport services	78	57.6	83	57.2	85	56.8	64	62.6	**58**	**64.6**	92	54.2
Quality of airport infrastructure (1-7)	65	3.0	61	3.1	**34**	**3.8**	67	3.0	51	3.2	66	3.0
Efficiency of seaport services	72	51.5	81	48.2	104	37.1	79	48.5	**55**	**58.1**	84	47.1
Quality of port infrastructure (1-7)	**39**	**4.1**	55	3.6	71	3.2	109	2.4	49	3.9	63	3.5
Efficiency of transport mode change (1-7)	111	3.3	129	2.7	131	2.6	99	3.5	**87**	**3.6**	102	3.4

For assessing transport and logistics services, it is worth looking at the following components of the **Logistics Performance Index**: *ease of arranging competitively priced*

international shipments, *competence and quality of logistics services*, *ability to track and trace consignments* as well as *the frequency with which shipments reach consignees within schedules or expected delivery times*. In comparison with its peers, Colombia performs rather well in these LPI components and outperforms its income group and region average, as discussed in 5.6.1. It receives the highest score compared with its peers in *international shipments* (3.19) and the lowest score in overall *competence and quality of logistics services* (2.87). (World Bank 2018b.) LPI scores in quality of logistics services in Colombia and peer countries are visualized in Figure 38.

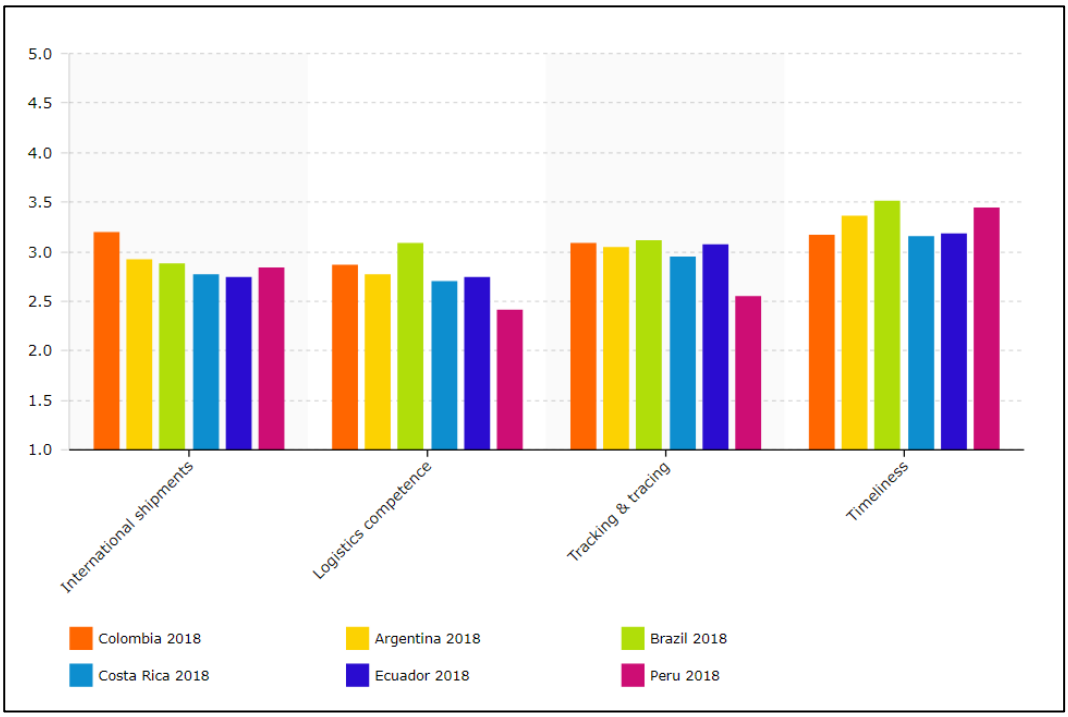

Figure 38. Quality of logistics services in Logistics Performance Index (World Bank 2018c)

Sea freight and, container traffic in particular, as well as air freight, play an important role in moving goods internationally, thus indices measuring connectivity by sea and air are essential in evaluating logistics services. In **Liner Shipping Connectivity Index**, which is based on container traffic capacity and container ship services, Colombia ranks 34th globally and outperforms its peers (Table 31). As for air freight, Colombia ranks globally 31st in a*irport connectivity*. In *the efficiency of air transport services*, Colombia's score is 57.6/100, which is mid-range globally and also compared with its peers. Brazil is very strong in *airport connectivity* and *infrastructure* but Costa Rica and Ecuador have better scores in *air transport services* (Table 30). In *the efficiency of transport change* of the

Enabling Trade Index, Colombia ranks 111th out of 136 countries. Improving the multimodality in cargo transport is also recognized as a development priority by the current government in Colombia (Ministry of Transport of Colombia 2020c, 62).

Table 31. Liner Shipping Connectivity Index (UNCTAD 2021a)

	LSCI 2020	
	Rank	Index
Colombia	**34**	**48.9**
Argentina	60	33.1
Brazil	48	36.4
Costa Rica	72	24.4
Ecuador	45	38.5
Peru	43	39.6

The Air Trade Facilitation index and the eFreight Friendliness Index measure the Trade Facilitation environment related to air freight. The EFFI focuses in particular on the electronic processing of air cargo transactions. The scores of both indices are visible in Table 32. In the ATFI, Argentina gets the highest score and is ranked 36th out of 124 countries. Other countries are situated midway in the global ranking. In the EFFI in turn, Argentina gets the lowest score and is close to the global bottom. Also, Colombia and Brazil lag behind their peers in this indicator. Thus, even though Colombia gets a high score in the **TFI** *automation* component that measures electronic and automated processing of cargo transactions in general, it does not perform well in the electronic processing of air cargo.

Table 32. Air Trade Facilitation Index and eFreight Friendliness Index (Shepherd et al. 2016)

	ATFI 2016		EFFI 2016	
	Rank	Index	Rank	Index
Colombia	60	73.11	80	1.05
Argentina	**36**	**84.86**	109	0.07
Brazil	N/A	N/A	78	1.25
Costa Rica	50	78.78	**35**	**30.95**
Ecuador	67	69.62	37	30.88
Peru	62	72.81	57	16.63

To summarize the overall performance of Colombia in transport and logistics, there is room for improvement in transport infrastructure, especially in railway and road infrastructure, but the country is well connected to international trade by air and sea. In

the availability and quality of logistics services measured by the LPI, Colombia performs on average better than its Latin American peers. However, the efficiency of train services is low. The evaluations of international organizations are in line with the reports on the state of logistics by the Colombian Ministry of Transport. The same infrastructure challenges are recognized in these reports, as has been described in section 5.5 on the Colombian transport sector.

5.7.2 Institutional quality

A great variety of institutional factors have been identified to affect the logistics performance, one of them being self-evidently customs and border issues. The *efficiency of customs and border management clearance* is the **LPI** component where Colombia gets its lowest score, 2.61. As can be seen from Table 33 33, only Ecuador and Costa Rica get higher scores. (World Bank 2018b.)

Table 33. Efficiency of customs and border management clearance in Logistics Performance Index (scale 1–5) (World Bank 2018b)

	LPI: Customs	
	Rank	Score
Colombia	75	2.61
Argentina	98	2.42
Brazil	102	2.41
Costa Rica	70	2.63
Ecuador	**48**	**2.80**
Peru	86	2.53

Table 34 contains selected customs and trade indicators of the ETI index *efficiency and transparency of border administration* as well as *operating environment* pillars (pillars 3 and 7). *Customs services* and *customs transparency indices* are calculated based on data from the Customs Capabilities database of the Global Express Association. Colombia performs worse than its peers in the *customs services index* that measures the quality and comprehensiveness of services offered by customs authorities and related agencies. In the *transparency of customs* procedures and regulations, most countries get maximum points. Argentina gets the worst score in *irregular payments in exports and imports*. Other countries are situated close to the middle of the scale between ‘very common’ and ‘never’ in *paying bribes in connection with imports and exports*. Argentina and Brazil are ranked close to the global bottom in *time predictability of import procedures*, meaning that the

time required for border clearance of imports fluctuates significantly. Argentina gets the highest score in overall participation in *multilateral trade rules*. (World Economic Forum 2021.)

Table 34. Efficiency and transparency of border administration as well as openness to multilateral trade rules in the Enabling Trade Index 2016 (World Economic Forum 2021)

	Colombia		Argentina		Brazil		Costa Rica		Ecuador		Peru	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Customs services index (0–1)	80	0.51	59	0.63	71	0.57	**38**	**0.70**	62	0.61	51	0.65
Customs transparency index (0–1)	**1**	**1.00**	40	0.90	**1**	**1.00**	**1**	**1.00**	**1**	**1.00**	40	0.90
Irregular payments in exports and imports (1–7)	73	3.6	126	2.4	97	3.1	71	3.7	65	3.9	**51**	**4.4**
Time predictability of import procedures (1–7)	82	3.8	134	2.5	135	2.4	78	3.8	87	3.7	**57**	**4.1**
Openness to multilateral trade rules (0–100)	64	68.1	**51**	**73.3**	92	60.0	67	67.9	74	65.4	59	69.7

According to the **Enterprise Surveys**, 24% of firms in Colombia *identify customs and trade regulations as major constraint* (Table 35). This is more than the Latin American average 19.3%. Peru does significantly better, as the share is only 10.6%. In Colombia, it takes 12.5 days *to clear direct exports* and 18.6 days *to clear imports through customs*. The average in LAC countries is 7.7 and 20.7 respectively. (World Bank 2020c.)

Table 35. Trade indicators in Enterprise Surveys (World Bank 2020b)

	Colombia	Argentina	Ecuador	Peru	*LAC*	*World*
Days to clear direct exports through customs	12.5	**6.5**	9.2	8.4	*7.7*	*7.5*
Days to clear imports from customs	18.6	19.3	34.8	**14**	*20.7*	*12.1*
Percent of firms identifying customs and trade regulations as major constraint	24	20	26	**10.6**	*19.3*	*16.8*

The *trading across borders* component of the **Doing Business Index** score is the simple average of the scores a country gets for time and cost of obtaining, preparing, processing, presenting and submitting documents for port or border handling, customs clearance and inspection procedures related to imports and exports. The calculations are based on a scenario where 15 tonnes of containerized car parts would be moved between a country's natural trading partner. (World Bank 2021b.) The scores and ranks in *trading across*

borders are presented in Table 36. Table 37 and 38 contain the components of this score, hours and dollars spent for import and export formalities.

Table 36. Overall score in trading across borders of the Doing Business Index (World Bank 2020c)

	Colombia		Argentina		Brazil		Costa Rica		Ecuador		Peru	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Trading across borders	133	62.7	119	67.1	108	69.9	**80**	**77.6**	103	71.2	102	71.3

Table 37. Time and cost to export in trading across borders (World Bank 2020c)

	Colombia	Argentina	Brazil	Costa Rica	Ecuador	Peru	*LAC*
Border compliance (hours)	112	21	49	20	96	48	*55.3*
Border compliance (USD)	630	150	862	450	560	630	*516.3*
Documentary compliance (hours)	48	25	12	24	24	24	*35.7*
Documentary compliance (USD)	90	60	226	80	60	50	*100.3*

Table 38. Time and cost to import in trading across borders (World Bank 2020c)

	Colombia	Argentina	Brazil	Costa Rica	Ecuador	Peru	*LAC*
Border compliance (hours)	112	60	30	80	24	72	*55.6*
Border compliance (USD)	545	1200	375	500	250	700	*628.4*
Documentary compliance (hours)	64	166	24	26	120	48	*43.2*
Documentary compliance (USD)	50	120	107	75	75	80	*107.3*

Comparing the figures in the tables shows that the monetary costs of exporting from Colombia are relatively high. Complying with export formalities is more expensive only in Brazil. The number of hours required for export formalities is significantly higher than in any of the peer countries. As for imports, the number of hours needed is higher than the Latin American average and higher than in most peer countries but complying with import documents costs less than in peer countries and the costs are less than half of the average in LAC countries. (World Bank 2020c.) However, the results in the Doing Business Index differ from those of the domestic Logistics Performance Index in which clearance time was the shortest in Colombia, as discussed in Section 5.6.1.

In the Trade Facilitation Indicators of the OECD, Colombia performs on average better than its peers, as its score in overall trade facilitation performance, 1.46, is the highest of the group (Table 39). In indicators concerning *documents* and *automation*

related to export and import *formalities*, Colombia gets the best scores of the group. The ranking order of the countries seems to be very different from that of the World Bank's *trading across borders* indicator. This is most likely due to different calculation methods of the indicators. For instance, the TFI indicators consist of diverse variables, like if and where information on fees is published, are fees calculated on an *ad-valorem* basis, how many types of fees are collected. Whereas, the *cost to export* and *import* indicators of the Doing Business Index are based on trading costs involved in a hypothetical scenario.

Table 39. Overall trade facilitation performance and selected Trade Facilitation Indicators in 2019 (scale: 0–2) (OECD 2020)

	Colombia	Argentina	Brazil	Costa Rica	Ecuador	Peru
Average trade facilitation performance	**1.46**	1.31	1.24	1.40	1.08	1.43
Information availability	1.55	1.43	1.29	1.43	1.15	**1.57**
Fees and charges	1.54	1.54	1.50	1.57	1.36	**1.77**
Formalities - documents	**1.63**	1.11	1.22	1.50	1.00	1.56
Formalities - automation	**1.77**	1.46	1.31	1.62	1.17	1.39
Formalities - procedures	1.25	**1.44**	1.16	1.28	1.41	1.21
Governance and impartiality	1.78	1.56	**1.89**	1.44	1.11	**1.89**

In addition to border policies, other institutional factors are also relevant in evaluating the business and logistics environment. Some of these indicators are covered in the following. **Worldwide Governance Indicators** evaluate the quality of institutions on several dimensions of governance (Worldwide Governance Indicators 2020). From Table 40, it can be seen that apart from Costa Rica, which gets relatively good scores in all indicators selected for this table, there is quite a lot of variation in the scores for each county. Colombia and Brazil get very weak scores in *political stability and absence of violence and terrorism* and Ecuador in *regulatory quality* and *rule of law*. In control of corruption, Ecuador and Peru perform worse than other countries. (Worldwide Governance Indicators 2021.)

Table 40. Selected Worldwide Governance Indicators in 2020 (Scale: 0–100) (Worldwide Governance Indicators 2021)

	Colombia	Argentina	Brazil	Costa Rica	Ecuador	Peru
Political stability and absence of violence and terrorism	22.17	48.58	32.08	**71.70**	34.43	38.68
Regulatory quality	63.46	31.73	46.15	66.35	17.31	**70.19**
Rule of law	33.65	34.62	48.08	**70.19**	32.21	41.35
Control of corruption	47.60	50.00	43.75	**77.40**	32.21	33.65

In addition to the Worldwide Governance Indicators, several other indicators measure corruption. In Transparency International's global **Corruption Perceptions Index**, Colombia, Brazil, Ecuador and Peru receive very similar scores and are ranked as 92nd and 94th most corrupt out of 180 countries. The average score in Latin America is 43. (Transparency International 2021.) As can be seen from Table 41, all comparator countries apart from Costa Rica score below the Latin American average. The CPI scores are in line with the latest results of the **Enterprise Surveys** (Table 42) according to which around half or more than half of the companies in peer countries consider *corruption as a major constraint*, which is more than the average in LAC countries, 44.7%. In Colombia, this share is as high as 62.1%.

Table 41. Corruption Perceptions Index (Transparency International 2021)

	CPI 2020	
	Rank	Score
Colombia	92nd	39
Argentina	72nd	42
Brazil	94th	38
Costa Rica	**42nd**	**57**
Ecuador	92nd	39
Peru	94th	38

Table 42. Corruption and Crime indicators in Enterprise Surveys (World Bank 2020b)

	Colombia	**Argentina**	**Ecuador**	**Peru**	***LAC***	***World***
Percent of firms identifying corruption as a major constraint	62.1	50.0	49.4	53.6	*44.7*	*31.4*
Percent of firms experiencing losses due to theft and vandalism	21.2	14.5	17.3	18.9	*23.3*	*16.2*
Percent of firms identifying crime, theft and disorder as a major constraint	26.0	14.0	18.0	25.7	*25.3*	*17.2*

In the same way as in WGI, Costa Rica is in a league of its own in the **GCI** and **ETI** indicators that measure the quality of *institutions*, *operating environment* and in particular *physical security* (Table 43). Other countries receive low scores in most of these indicators.

Table 43. Institutions and operating environment in Global Competitiveness Index (rank out of 141 countries; scale 0–100) and Enabling Trade Index (rank out of 136 countries; scale 1–7; bottom two rows) (Schwab 2019; World Economic Forum 2021)

	Colombia		Argentina		Brazil		Costa Rica		Ecuador		Peru	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Organized crime	131	34.5	100	51.0	132	33.8	**77**	**59.1**	94	54.6	134	33.4
Terrorism incidence	128	85.6	70	99.8	74	99.8	**1**	**100**	76	99.8	92	99.1
Reliability of police services	107	43.3	101	44.1	117	38.5	**61**	**60.3**	100	46.4	131	30.2
Judicial independence	111	31.5	112	30.8	94	35.6	**46**	**58.4**	128	22.3	122	25.5
Burden of government regulation	123	28.0	125	27.1	141	11.4	**42**	**66.1**	130	24.7	128	25.5
Property rights	91	51.3	112	45.8	103	48.9	**44**	**66.1**	114	44.6	121	42.4
Intellectual property protection	92	47.0	85	48.7	95	46.4	**49**	**60.1**	108	43.6	124	37.1
Government ensuring policy stability	101	40.2	118	32.9	130	28.0	**48**	**57.3**	127	29.8	78	46.7
Business costs of crime and violence (1–7)	125	2.8	113	3.5	127	2.7	**85**	**4.2**	107	3.7	124	2.8
Business costs of terrorism (1–7)	131	2.9	50	5.5	**10**	**6.2**	23	5.9	46	5.6	104	4.5

Organized crime is a real problem in Colombia, Brazil and Peru. Not surprisingly, in these countries, *crime and violence impose the most costs on businesses*. In Colombia and Peru, 26% of *companies identify crime, theft and disorder as a major constraint on business*. This is only slightly above the Latin American average, though. (World Bank 2020b.) Apart from Costa Rica, none of the countries get good scores in the trustworthiness of the law enforcement and court institutions. *Political stability* is particularly low in Brazil and Ecuador. Government regulation is especially burdensome in Brazil, as its score is only 11.4/100. Colombia performs better than most of its peers in the *protection of property rights* (51.3) and *IP rights* (47.0) as well as in the *burden of government regulation* (28.0). Although, these scores are not very good at a global level.

To recap Colombia's performance in institutional quality indicators presented in this section, the country's challenges are mainly related to customs services, security and corruption. Despite Colombia's weak performance in border administration indicators of the World Bank and the WEF, the country scores on average better than its peers and countries of the same region and income group in OECD's **Trade Facilitation Indicators**. This might be due to different source data. The TFIs focus on trade regulation, whereas the ETI, Doing Business Index and Enterprise Surveys are based on survey data.

6 FINDINGS AND CONCLUSIONS

Based on research literature on trade and transport facilitation, it was concluded that business and logistics environment are affected by factors related to infrastructure and institutions. Thus, indicators that assess the quality of transport infrastructure and institutional quality were used in analyzing the Colombian business environment. In this chapter, the findings of the analytical part of the thesis are summarized followed by a discussion of the theoretical contribution and managerial implications of the thesis. The chapter concludes with a discussion on the limitations of the study and ideas for further research.

6.1 Summary and discussion of findings

The analysis of the Colombian business and logistics environment builds on previous literature which suggests that countries' logistics performance is affected by indicators of institutional quality as well as factors related to transport infrastructure and logistics. Thus, indicators related to the quality of institutions and transport infrastructure were used in assessing the business and logistics environment of Colombia and its peers. What makes the framework for analysis of this thesis unique is that the analysis was based on a larger number of indicators than in previous studies. In addition, the indicator results were complemented with an analysis of the current economic development and the state of the transport and logistics sector. The findings of the analysis are summarized in the following.

The analytical part of this thesis starts with an outlook to the Colombian economy and trade relations. The economy in Colombia is characterized by macroeconomic stability, robust economic growth and strong domestic demand. Colombia has traditionally had a relatively good credit rating and it has thus been able to receive cheap funding for its investment projects. (Kokkoniemi, 2019.) However, the corona crisis had severe repercussions for the Colombian economy and public debt levels rose fast. Colombia's credit rating was downgraded in 2021 due to the rising government debt to GDP ratio and political unrest. (IHS Markit 2021.)

The export sector in Colombia is dependent on fossil fuels. Even though the diversification of export articles has increased for the past years, the economy is still vulnerable to oil price fluctuations. The country has made efforts in making the business

environment attractive for foreign investments and opening up the country for trade. It is one of the best-performing Latin American countries in ease of doing business. Colombia is active in regional integration and has signed numerous free trade agreements globally, including FTAs with the EU and the US. However, bureaucracy and local norms set obstacles to applying the FTAs in practice. Thus, deregulation is one of the aims of the current government. (Kokkoniemi, 2019.)

After the economic overview, the current state of the Colombian logistics and transport infrastructure is studied. Geographic conditions make creating an efficient transport infrastructure difficult in Colombia. The country is divided by mountain chains and impermeable rain forests, which makes building roads and connecting the production and consumption hubs in the center of the country to maritime ports challenging. The share of unpaved roads is high compared with other Latin American countries and the quality of roads in general is poor. (International Trade Center 2021.) As for rail transport, most of the railway network is currently inactive (Ministry of Transport of Colombia 2020b, 72).

Colombia has access to both the Pacific and the Caribbean Sea but the Pacific side port infrastructure is underdeveloped. There is only one port, Buenaventura, with importance in terms of international trade. Ports in the Caribbean are better equipped and have better connections to the center of Colombia. (Ministry of Transport of Colombia 2020b, 141.) Development of the maritime ports in the Pacific would offer great opportunities to reach the Asian market. Colombian ports perform well in Latin American rankings. In total maritime container traffic, Colombian ports are ranked fifth and Cartagena port on the Caribbean coast is the fourth biggest port in Latin America. (Ministry of Transport of Colombia 2020b, 127–128.) Colombia is also clearly ahead of its peers in maritime container transport and is ranked globally 34th in **Liner Shipping Connectivity Index** (UNCTAD 2021a).

Colombia has good airport connectivity and in particular, the US market is easy to reach by air. El Dorado airport in Bogotá is one of the busiest airport hubs in Latin America. In recent years, Colombian airports have been expanded to cater to a growing number of tourist flows. More projects are foreseen in the future to further increase the capacity. (PRS Group 2017, 11.)

Colombia enjoys an extensive network of navigable rivers but like the railway network, inland waterways are currently not used at their full potential. However, current infrastructure projects include increasing the cargo capacity in navigable rivers as well as

reviving cargo transport in inactive railways. The aim is also to develop intermodal transport corridors to enhance the efficiency of trade logistics. (Ministry of Transport of Colombia 2020c.) Massive infrastructure projects are expected in the near future, which could open opportunities for Finnish companies to sell their transport infrastructure solutions.

The last part of the analysis examines Colombia's performance in trade and transport facilitation indicators compared with its peer countries Argentina, Brazil, Costa Rica, Ecuador and Peru. Colombia outperforms its peers in several indices. In the **Global Competitiveness Index**, Colombia is the most competitive country of the group ranking 4th regionally and 57th globally (Schwab 2019). Also, in the **Doing Business Index** Colombia is significantly ahead of its peers, ranking 67th out of all countries (World Bank 2019). Colombia also has the best score in the **Index of Economic Freedom** and is 49th on a global scale and 6th at the regional level. It outperforms others in *business, labor, investment* and *financial freedom* indicators. Also, scores in *fiscal health, monetary freedom* and *trade freedom* are particularly high. (Heritage Foundation 2021b.) In the **Trade Facilitation Indicators**, Colombia gets the highest score of the group (OECD 2020). In the **Logistics Performance Index**, Colombia is the second-best country of the comparator group and is placed 58th globally (Brazil is 56th) (World Bank 2018b).

Despite Colombia's relatively high overall scores in the abovementioned trade and transport facilitation indicators, its performance in some areas is poor. The challenges are often the same in most other Latin American countries. Colombia's weakest scores in the **Index of Economic Freedom** are in the *rule of law* indicators, particularly *judicial effectiveness* and *government integrity*. *Rule of law* and *regulatory efficiency* are the areas where Latin American countries in general struggle the most. Colombia scores well in all indicators related to *regulatory efficiency* indicators (*business, labor* and *monetary freedom*), though (Heritage Foundation 2021b.). In the **GCI**, Colombia's weakest pillars are *innovation capability* and *institutions*, which are among the typical challenges for Latin American countries (Schwab 2019). Also, in the **Enabling Trade Index**, Colombia's most problematic areas correspond mainly to those of most Latin American countries. Colombia receives its weakest scores in the *transport infrastructure*, *transport services* and *operating environment* pillars. It is the *efficiency and accountability of public institutions* as well as *physical security* that lower the overall score of the *operating environment* pillar. Weak performance in these pillars and pillar components is

characteristic of the business environment in Latin American countries in general. (Geiger et al. 2016.)

In the **Worldwide Governance indicators**, Colombia's strengths are *regulatory quality* and *voice and accountability* and weaknesses *political stability* as well as *absence of violence and terrorism*. In the overall WGI score, Colombia is along with Brazil and Ecuador among the worst countries of the group, despite a continuous upward trend. (Worldwide Governance Indicators 2021.)

Even though Colombia ranks high in competitiveness and ease of doing business indicators in general, its transport infrastructure lags behind in international comparisons. In fact, 42.4% of Colombian companies consider that transport is a major constraint for business (World Bank 2020b). Compared with its peers, Colombia, along with Costa Rica and Peru, gets the lowest scores in transport infrastructure pillars of the LPI, ETI and GCI. The *quality of road* and *railway infrastructure*, in particular, is low. Performance in other modes of transport is better. *Airport connectivity* and *seaport infrastructure* get very good scores even. When it comes to transport and logistics services, Colombia performs rather well in comparison to its peers. (World Economic Forum 2021; Schwab 2019; World Bank 2019.) Also, the maritime container services are considered very good and Colombia clearly outperforms its peers in the **Liner Shipping Connectivity Index** (UNCTAD 2021a). However, the *efficiency of transport mode change* is low. As for *ICT infrastructure*, Colombia gets a good score in the ETI's *availability and use of the ICT* pillar. In its *Government Online Service Index* component, Colombia is even placed 27th out of 136 countries. In the GCI's *ICT adoption* pillar, in turn, Colombia's performance is relatively weak. This pillar focuses on mobile and internet subscriptions, whereas the ICT pillar of the ETI includes variables on the use of the internet for commercial and governmental transactions. (World Economic Forum 2021; Schwab 2019.)

International assessments on Colombia's transport infrastructure are in line with the reports on the state of logistics of the Colombian Ministry of Transport. In fact, the Colombian government follows closely international evaluations, such as the LPI and GCI, to monitor the success of measures taken to improve the quality of transport infrastructure. Despite significant progress in infrastructure-related scores in past years, transportation still hinders competitiveness. (Ministry of Transport of Colombia 2020b.) The Colombian government is currently investing heavily in infrastructure projects with the aim of increasing especially the use of railways, inland waterways and intermodal transport corridors in trade (Ministry of Transport of Colombia 2020c).

As for institutional quality indicators, Colombia's challenges lie in customs and border management, corruption and insecurity. In the World Economic Forum's *customs services index* (part of the **Enabling Trade Index**), Colombia scores lower than its peers (World Economic Forum 2021). In the World Bank's *trading across borders* indicator, Colombia performs in general worse than its peers because time and cost of exporting are high (World Bank 2020c). However, in the **Trade Facilitation Indicators** of the OECD, Colombia is stronger than any of its comparator countries and also scores above the averages of the whole region and income group (OECD 2020). The difference in the scores could be due to the fact that the indicators measure different aspects of border procedures. The TFI assesses adequateness of trade regulations, quality and comprehensiveness of services by customs and related agencies, whereas *trading across borders* actual time and cost of export and import clearance. In other words, the OECD evaluates the customs legislation in place, whereas the WEF and World Bank customs practices.

Although, the security situation has improved in Colombia and reforms to combat corruption have been realized, criminal activities and corrupt practices persist. *Business costs of crime and violence* are particularly high and *organized crime* is thriving in Colombia, Brazil and Peru (Economic Forum 2021; Schwab 2019). According to the **Enterprise Surveys**, 62.1% of companies identify *corruption as a major constraint for business*. In the **Corruption Perceptions Index**, Colombia is among the most corrupt countries of the comparator countries, ranking 92nd globally. The situation has improved though, as the overall bribery rate has declined from 30% in 2017 to 20% in 2019, which corresponds to the average bribery rate in LAC. The scores of Brazil, Ecuador and Peru are equally bad or even worse. (Transparency International 2021; Pring & Vrushi 2019.) In the WGI's *control of corruption* indicator, Colombia gets better scores than these three countries (Worldwide Governance Indicators 2021).

The areas in which Colombia's performance is very strong explain the country's high overall scores in business environment indices. These fields include often indicators related to the macroeconomy, finance and openness to trade. In the **Enabling Trade Index**, Colombia gets high scores in the *market access* indicators (World Economic Forum 2021). In the **Global Competitiveness Index**, Colombia outperforms its peers for example in parameters related to the *financial system*, *business dynamism* and *labor market*. Also, the score in *macroeconomic stability* is high. (Schwab 2019.) In the **Ease**

of Doing Business, Colombia is the 11th best country in the world in *getting credit* (World Bank 2020c).

To conclude the summary of findings, it can be stated that Colombia is ranked as one of the best business environments in many TTF indicators but lags behind in road and railway infrastructure, border management efficiency, corruption and insecurity. Despite significant progress achieved in these indicators for the past years, persisting problems continue to affect Colombia's competitiveness. However, the challenges of Colombia are shared with most other countries in the region. On the other hand, connectedness by air and sea as well as seaport infrastructure are considered very good. The maritime container services, in particular, are ranked high and the US market is easily reached by air. Colombia also enjoys the advantage of having access to both the Atlantic and the Pacific, which offers a relatively short connection to China and the Asian market as well as to the cities on the West Coast of the United States. Nevertheless, the seaport capacity on the Pacific coast is currently underdeveloped. Another geographical advantage is Colombia's extensive system of navigable rivers. However, the rivers are not used at their full potential. Significant infrastructure projects are foreseen in the near future, including increasing the cargo capacity of the rivers and developing inactive railways to create efficient intermodal transport corridors. It remains to be seen, however, whether implementing these projects will be postponed due to the unstable economic situation caused by the COVID-19.

6.2 Contributions

This thesis aimed to describe the Colombian business and logistics environment. The description comprises an overview of the Colombian logistics and trade environment as well as an analysis of the country's performance in international trade and transport facilitation indices. Colombia's logistics performance was compared with that of its Latin American peers.

The theoretical contribution of the descriptive analysis presented in this thesis is twofold. Firstly, this study complements existing research on trade and transport facilitation by focusing on a less studied market, Colombia. Secondly, it provides a framework for analyzing the business environment from the point of view of logistics. What makes this research framework one of a kind is that it combines an analysis of the state of logistics with a great number of trade and transport facilitation indicators. To the

best of the author's knowledge, there is no other study that would use this many TTF indicators as source data. Furthermore, the indicators presented in this thesis can be used for assessing the logistics performance of virtually any country in the world.

The key implication of this study is to give companies insight on what to expect when planning to do business in Colombia. It helps companies to consider possible risks related to organizing logistics and to the overall business environment in Colombia. Moreover, the set of indicators included in this study is a great tool that offers resources to see the updated situation of the business and logistics environment in years to come and to examine further those indicators that are relevant for the reader. As the indicators presented in this thesis cover most countries of the world, the same indicators can be used to study the logistics performance of any country in the world. One major Finnish company has already benefited from the material provided in this thesis for investigating logistics in another Latin American country.

6.3 Limitations and future research topics

The most important quality of this work is its comprehensiveness, which is also the greatest limitation of the study because it restricts the depth of the analysis. It was not possible to discuss TTF indicators and their components on a deeper level nor present all the scores in tables for Colombia and its peers. In fact, given the length and scope of this work, it was possible to only scratch the surface of the information available on logistics performance in Colombia. Also, the scope of the study forced to keep the analysis of the peer countries superficial. Further studies similar to this one should be carried on Colombia's peer countries to help managers decide between potential markets for business entry.

Another limitation of this study is related to the narrowing of the topic – or the lack of it. Since the scope of the study does not involve defining possible products, company size, the role of Colombia in the business venture (i.e., export/import market, foreign direct investment, part of a global value chain), the business environment was analyzed at an abstract level. Thus, the study does not take into consideration different needs of companies and the results of the study, such as the typical challenges of the Colombian business environment, are obviously not pertinent for all managers. However, the framework of this study could be applied in the future for case studies by complementing this research data with new data that would be relevant for a specific case.

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APPENDICES

Appendix 1. Most important product groups in exports and imports by value in 2020 (Source: International Trade Center 2019)

Product label	Value exported in 2020 (USD billion)	Share in Colombia's exports (%)
All products	31,05	100
Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	12,92	41,63
Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad ...	2,99	9,65
Coffee, tea, maté and spices	2,54	8,17
Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage	1,43	4,61
Plastics and articles thereof	1,32	4,26
Edible fruit and nuts; peel of citrus fruit or melons	1,28	4,14
Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal ...	0,60	1,93
Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television ...	0,51	1,65
Sugars and sugar confectionery	0,51	1,63
Iron and steel	0,48	1,54
Miscellaneous chemical products	0,44	1,43
Essential oils and resinoids; perfumery, cosmetic or toilet preparations	0,42	1,36
Miscellaneous edible preparations	0,38	1,23
Pharmaceutical products	0,36	1,16
Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	0,36	1,15
Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	0,36	1,15
Aluminium and articles thereof	0,32	1,03
Paper and paperboard; articles of paper pulp, of paper or of paperboard	0,24	0,79
Articles of apparel and clothing accessories, not knitted or crocheted	0,20	0,64
Soap, organic surface-active agents, washing preparations, lubricating preparations, artificial ...	0,17	0,55

Product label	Value imported in 2020 (USD billion)	Share in Colombia's imports (%)
All products	43,49	100
Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	5,16	11,86
Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television ...	4,98	11,45
Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	3,47	7,98
Pharmaceutical products	2,51	5,76
Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	2,20	5,06
Plastics and articles thereof	2,08	4,78
Cereals	1,96	4,51
Organic chemicals	1,86	4,28
Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical ...	1,48	3,41
Iron and steel	1,17	2,70
Miscellaneous chemical products	1,07	2,47
Residues and waste from the food industries; prepared animal fodder	0,93	2,13
Rubber and articles thereof	0,71	1,64
Articles of iron or steel	0,66	1,51
Aircraft, spacecraft, and parts thereof	0,65	1,51
Fertilisers	0,64	1,47
Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal ...	0,59	1,36
Essential oils and resinoids; perfumery, cosmetic or toilet preparations	0,55	1,26
Other made-up textile articles; sets; worn clothing and worn textile articles; rags	0,51	1,17
Paper and paperboard; articles of paper pulp, of paper or of paperboard	0,51	1,17
Commodities not elsewhere specified	0,42	0,97
Beverages, spirits and vinegar	0,42	0,96
Tanning or dyeing extracts; tannins and their derivatives; dyes, pigments and other colouring ...	0,36	0,83
Aluminium and articles thereof	0,35	0,80
Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, ...	0,34	0,79

Appendix 2. Development of Colombia's services trade in 2016-2020 (USD billion)

(Source: International Trade Center 2019)

Service label	Exported Value in 2016	Exported Value in 2017	Exported Value in 2018	Exported Value in 2019	Exported Value in 2020	Share in all exported services in 2020 (%)
All services	7,771	8,461	9,653	9,977	5,107	100,00
Travel	4,523	4,921	5,557	5,652	1,585	31,03
Transport	0,890	1,057	1,239	1,484	1,566	30,67
Other business services	1,640	1,708	1,881	1,983	1,121	21,95
Telecommunications, computer, and information services	0,325	0,344	0,457	0,351	0,351	6,88
Government goods and services n.i.e.	0,136	0,156	0,174	0,183	0,211	4,14
Personal, cultural, and recreational services	0,048	0,080	0,070	0,090	0,093	1,82
Charges for the use of intellectual property n.i.e.	0,046	0,062	0,106	0,093	0,089	1,75
Financial services	0,130	0,117	0,101	0,105	0,063	1,24
Insurance and pension services	0,023	0,017	0,017	0,014	0,017	0,33
Maintenance and repair services n.i.e.	0,010	0,001	0,051	0,023	0,010	0,19
Service label	**Imported Value in 2016**	**Imported Value in 2017**	**Imported Value in 2018**	**Imported Value in 2019**	**Imported Value in 2020**	**Share in all imported services in 2020 (%)**
All services	11,301	12,438	13,505	13,880	9,199	100,00
Transport	2,605	2,831	3,093	3,198	2,302	25,02
Financial services	0,527	1,056	1,137	1,318	1,514	16,46
Travel	4,254	4,475	4,824	4,976	1,421	15,45
Insurance and pension services	0,950	0,998	1,000	1,051	1,071	11,64
Other business services	1,558	1,523	1,622	1,363	1,055	11,47
Telecommunications, computer, and information services	0,707	0,828	0,886	0,970	1,010	10,97
Charges for the use of intellectual property n.i.e.	0,439	0,420	0,594	0,734	0,617	6,71
Government goods and services n.i.e.	0,142	0,140	0,132	0,114	0,108	1,17
Personal, cultural, and recreational services	0,106	0,080	0,112	0,094	0,057	0,62
Maintenance and repair services n.i.e.	0,012	0,085	0,103	0,064	0,045	0,49
Construction	0,002	0,001	0,000	0,000	0,000	0,00
Manufacturing services on physical inputs owned by others		0,002	0,002			0,00

Appendix 3. Enabling Trade Index 2016, Economy profile of Colombia (Source: World Economic Forum 2021)

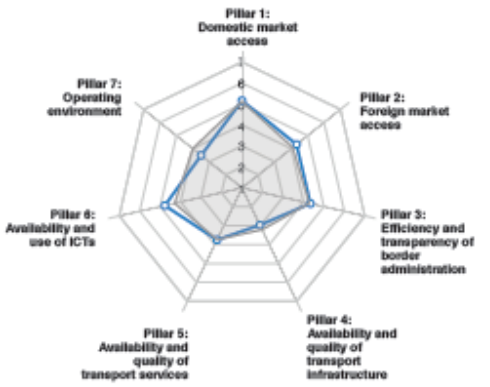
Economy Profiles

Colombia 85th / 136

Enabling Trade Index 2016

Performance Overview	Rank / 136	Score (1-7)	Trend	Distance from best
Enabling Trade Index	85	4.1		
Subindex A: Market access	56	4.7		
Pillar 1: Domestic market access	68	5.2		
Pillar 2: Foreign market access	57	4.3		
Subindex B: Border administration	80	4.3		
Pillar 3: Efficiency and transparency of border administration	80	4.3		
Subindex C: Infrastructure	78	3.8		
Pillar 4: Availability and quality of transport infrastructure	94	3.0		
Pillar 5: Availability and quality of transport services	83	3.7		
Pillar 6: Availability and use of ICTs	58	4.8		
Subindex D: Operating environment	129	3.5		
Pillar 7: Operating environment	129	3.5		

Edition	2014	2016
Rank	80 / 134	85 / 136
Score	4.1	4.1



Colombia drops slightly in the 2016 edition to 85th, approaching the average for the Latin American region. It performs well in terms of market access, with a fairly simple tariff structure, and its exports enjoy friendly terms abroad. Colombia's borders, however, remain key bottlenecks, with compliance on both the import and export side being time intensive and costly. Colombia scores well on its ICT infrastructure, but transport, especially rails and road, lags behind. The overall operating environment, especially in terms of its public institutions, stands as another barrier to enabling trade over the medium term. On this pillar, Colombia ranks near the bottom globally overall, though with openness to foreign investment serving as a positive note.

The Enabling Trade Index in detail

	Rank / 136	Value	Trend
Pillar 1: Domestic market access	**68**	**5.2**	
1.01 Tariff rate %	79	6.4	
1.02 Complexity of tariffs	44	6.4	
1.03 Share of duty-free imports %	81	60.3	
Pillar 2: Foreign market access	**57**	**4.3**	
2.01 Tariffs faced %	37	3.5	
2.02 Margin of pref. in destination markets 0–100 (best)	59	46.0	
Pillar 3: Efficiency and transparency of border administration	**80**	**4.3**	
3.01 Customs services index 0–1 (best)	80	0.51	
3.02 Efficiency of the clearance process 1–5 (best)	115	2.2	
3.03 Time to import: Documentary compliance hours	86	64.0	
3.04 Time to import: Border compliance hours	109	112.0	
3.05 Cost to import: Documentary compliance US$	40	50.0	
3.06 Cost to import: Border compliance US$	95	545.0	
3.07 Time to export: Documentary compliance hours	98	60.0	
3.08 Time to export: Border compliance hours	123	112.0	
3.09 Cost to export: Documentary compliance US$	68	90.0	
3.10 Cost to export: Border compliance US$	109	545.0	
3.11 Irregular payments and bribes: imports/exports	73	3.6	
3.12 Time predictability of import procedures	82	3.8	
3.13 Customs transparency index 0–1 (best)	1	1.00	
Pillar 4: Availability and quality of transport infrastructure	**94**	**3.0**	
4.01 Available airline seat kilometres millions	47	434.4	
4.02 Quality of air transport infrastructure	75	4.2	
4.03 Quality of railroad infrastructure	104	1.4	
4.04 Liner Shipping Connectivity Index 0–157.1 (best)	26	53.0	
4.05 Quality of port infrastructure	82	3.7	
4.06 Road quality index	94	3.9	
4.07 Quality of roads	118	2.8	

	Rank / 136	Value	Trend
Pillar 5: Availability and quality of transport services	**83**	**3.7**	
5.01 Ease and affordability of shipment 1–5 (best)	99	2.6	
5.02 Logistics competence 1–5 (best)	81	2.7	
5.03 Tracking and tracing ability 1–5 (best)	93	2.6	
5.04 Timeliness of shipments to destination 1–5 (best)	76	3.2	
5.05 Postal service efficiency	64	4.7	
5.06 Efficiency of transport mode change	111	3.3	
Pillar 6: Availability and use of ICTs	**58**	**4.8**	
6.01 Mobile-cellular telephone subscriptions /100 pop.	68	115.7	
6.02 Internet users % pop.	68	55.9	
6.03 Fixed-broadband Internet subscriptions /100 pop.	66	11.2	
6.04 Mobile-broadband subscriptions /100 pop.	80	41.0	
6.05 ICT use for biz-to-biz transactions	71	4.6	
6.06 Internet use for biz-to-consumer transactions	60	4.6	
6.07 Government Online Service Index 0–1 (best)	27	0.79	
Pillar 7: Operating environment	**129**	**3.5**	
7.01 Protection of property	71	4.1	
7.02 Efficiency and accountability of public institutions	135	2.6	
7.03 Access to finance	67	4.0	
7.04 Openness to foreign participation	65	4.5	
7.05 Physical security	136	2.2	

Note: Values are on a 1-to-7 scale unless indicated otherwise. Trend lines depict evolution in values since the 2012 edition (or earliest edition available). For detailed definitions, sources, and periods, consult the interactive Economy Profiles and Rankings at http://wef.ch/getr16

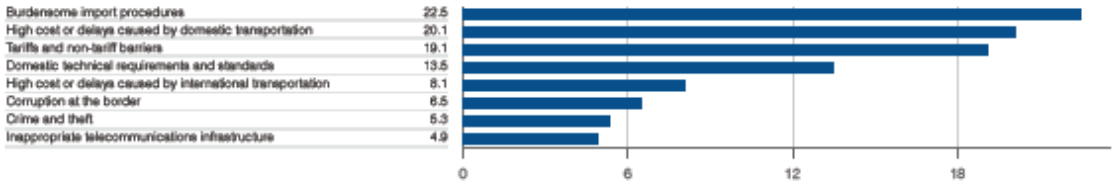
Key Indicators, 2015

Source: International Monetary Fund, World Economic Outlook Database (April 2016); World Trade Organization, *Merchandise Trade Statistics* (22 November 16)

Population millions	48.2	**Trade openness** % GDP	30.7
GDP US$ billions	293.2	**Share of world trade** % world total	0.27
GDP per capita US$	6083.5	**Merchandise trade balance** US$ billions	-18.37

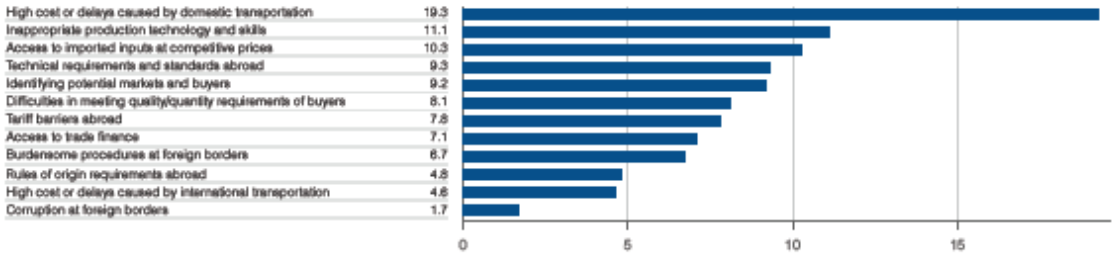
Most problematic factors for importing

Source: World Economic Forum, Executive Opinion Survey 2015



Most problematic factors for exporting

Source: World Economic Forum, Executive Opinion Survey 2015



Note: From the list of factors, respondents to the World Economic Forum's Executive Opinion Survey were asked to select the five most problematic factors in their country and to rank them between 1 (most problematic) and 5. The score corresponds to the responses weighted according to their rankings.

Trade facilitation in focus

Source: OECD; World Trade Organization, Trade Facilitation Agreement Facility

Trade facilitation performance

OECD Trade Facilitation Indicators, 2015

Subject area	Score (0-2)	Upper-middle income average
Information availability	1.90	
Involvement of trade community	2.00	
Advance rulings	1.57	
Appeal procedures	1.38	
Fees and charges	1.50	
Formalities - documents	1.67	
Formalities - automation	1.40	
Formalities - procedures	1.31	
Border agency cooperation - internal	2.00	
Border agency cooperation - external	1.50	
Governance and impartiality	1.50	
TFA articles not covered by performance assessment		

Trade Facilitation Agreement (TFA)

Ratification: No (as of 31/10/2016)

TFA articles for which notifications have been made on 13/6/2014*

Categories A B C Other = notification concerns only part of the article

	Number of sections with notifications
1.1 1.2 1.3	3/3
2.1 2.2	2/2
3	1/1
4	1/1
6.1 6.2	2/2
10.1 10.2	2/2
7.3 7.4	2/2
7.1 7.5 7.6 7.7 7.8 10.1 10.3 10.4 10.5 10.6	10/10
8	1/1
8	3/3
no specific article	
1.4 5.3 7.2 5.1 6.2 5.3 7.8 9 10.7 10.8 10.9 11 12	12/13

Note: performance does not indicate level of compliance with TFA

* List of TFA articles

1.1 ..Publication
1.2 ..Information available through Internet
1.3 ..Enquiry Points
1.4 ..Notification
2.1 ..Opportunity to comment and information before entry into force
2.2 ..Consultations
3 ....Advance rulings
4 ....Right to appeal or review
5.1 ..Notifications for enhanced controls or inspections
5.2 ..Detention
5.3 ..Test procedures
6.1 ..General disciplines on fees and charges imposed on/in connection with importation and exportation
6.2 ..Specific disciplines on fees and charges imposed on/in connection with importation and exportation
6.3 ..Penalty disciplines
7.1 ..Pre-arrival processing
7.2 ..Electronic payment
7.3 ..Separation of release from final determination of customs duties, taxes, fees and charges
7.4 ..Risk management
7.5 ..Post-clearance audit
7.6 ..Establishment and publication of average release times
7.7 ..Trade facilitation measures for authorized operators
7.8 ..Expedited shipments
7.9 ..Perishable goods
8 ....Border agency cooperation
9 ....Movement of goods under customs control intended for import
10.1 Formalities and documentation requirements
10.2 Acceptance of copies
10.3 Use of international standards
10.4 Single window
10.5 Preshipment inspection
10.6 Use of customs brokers
10.7 Common border procedures and uniform documentation requirements
10.8 Rejected goods
10.9 Temporary admission of goods and inward and outward processing
11 ...Transit
12 ...Customs cooperation

Appendix 4. Global Competitiveness Index 2019, Economy profile of Colombia (Source: Schwab 2019)

Colombia

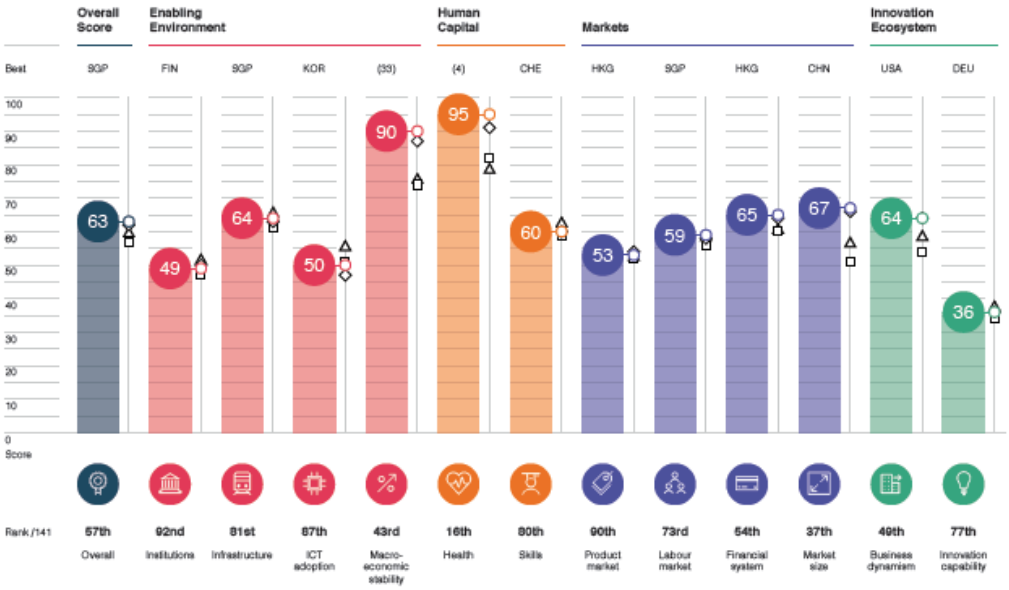
57th/141

Global Competitiveness Index 4.0 2019 edition

Rank in 2018 edition: 60th/140

Performance Key ◇ Previous edition △ Upper-middle-income group average ☐ Latin America and the Caribbean average

Overview 2019



Selected contextual indicators

Population millions	49.8	GDP (PPP) % world GDP	0.55
GDP per capita US$	6,684.4	5-year average FDI inward flow % GDP	4.2
10-year average annual GDP growth %	3.3		

Social and environmental performance

Environmental footprint gha/capita	2.2	Global Gender Gap Index 0-1 (gender parity)	0.7
Renewable energy consumption share %	23.6	Income Gini 0 (perfect equality) -100 (perfect inequality)	49.7
Unemployment rate %	9.1		

Colombia

57th/141

Index Component	Value	Score [1]	Rank/141	Best Performer
1st pillar: Institutions 0–100	-	49.3 ↓	92	**Finland**
Security 0–100	-	45.1 ↑	127	**Finland**
1.01 Organized crime 1–7 (best)	3.1	34.5 ↑	131	Finland
1.02 Homicide rate per 100,000 pop.	24.9	17.3 ↑	130	Multiple (14)
1.03 Terrorism incidence 0 (very high) -100 (no incidence)	85.6	85.6 =	128	Multiple (25)
1.04 Reliability of police services 1–7 (best)	3.6	43.3 ↑	107	Finland
Social capital 0–100	-	50.8 ↓	69	**New Zealand**
1.05 Social capital 0–100 (best)	50.8	50.8 ↓	64	New Zealand
Checks and balances 0–100	-	42.9 ↓	99	**Finland**
1.06 Budget transparency 0–100 (best)	50	50.0	45	Multiple (2)
1.07 Judicial independence 1–7 (best)	2.9	31.5 ↑	111	Finland
1.08 Efficiency of legal framework in challenging regulations 1–7 (best)	3.0	33.0 ↑	97	Finland
1.09 Freedom of the press 0–100 (worst)	42.8	57.2 ↓	106	Norway
Public-sector performance 0–100	-	51.3 ↑	67	**Singapore**
1.10 Burden of government regulation 1–7 (best)	2.7	28.0 ↑	123	Singapore
1.11 Efficiency of legal framework in settling disputes 1–7 (best)	3.0	33.7 ↑	108	Singapore
1.12 E-Participation 0–1 (best)	0.92	92.1 =	23	Multiple (3)
Transparency 0–100	-	36.0 ↓	85	**Denmark**
1.13 Incidence of corruption 0–100 (best)	36.0	36.0 ↓	85	Denmark
Property rights 0–100	-	51.1 ↓	78	**Finland**
1.14 Property rights 1–7 (best)	4.1	51.3 ↑	91	Finland
1.15 Intellectual property protection 1–7 (best)	3.8	47.0 ↓	92	Finland
1.16 Quality of land administration 0–30 (best)	16.5	55.0 =	68	Multiple (5)
Corporate governance 0–100	-	72.0 ↑	22	**New Zealand**
1.17 Strength of auditing and accounting standards 1–7 (best)	5.0	66.0 ↑	54	Finland
1.18 Conflict of interest regulation 0–10 (best)	8.0	80.0 =	12	Kenya
1.19 Shareholder governance 0–10 (best)	7.0	70.0 ↑	28	Kazakhstan
Future orientation of government 0–100	-	44.7	110	**Luxembourg**
1.20 Government ensuring policy stability 1–7 (best)	3.4	40.2	101	Switzerland
1.21 Government's responsiveness to change 1–7 (best)	3.3	38.4	95	Singapore
1.22 Legal framework's adaptability to digital business models 1–7 (best)	3.5	41.0	84	United States
1.23 Government long-term vision 1–7 (best)	3.6	43.0	84	Singapore
1.24 Energy efficiency regulation 0–100 (best)	37.5	37.5	69	Italy
1.25 Renewable energy regulation 0–100 (best)	43.6	43.6	80	Germany
1.26 Environment-related treaties in force count (out of 29)	19	65.5	107	Multiple (6)
2nd pillar: Infrastructure 0–100	-	64.3 ↑	61	**Singapore**
Transport infrastructure 0–100	-	43.8 ↑	92	**Singapore**
2.01 Road connectivity 0–100 (best)	65.4	65.4 ↑	97	Multiple (3)
2.02 Quality of road infrastructure 1–7 (best)	3.4	39.7 ↑	104	Singapore
2.03 Railroad density km/1,000 km[]2	1.9	4.8 ↑	89	Multiple (24)
2.04 Efficiency of train services 1–7 (best)	1.7	12.2 ↓	99	Japan
2.05 Airport connectivity score	144,423.4	68.7 =	31	Multiple (8)
2.06 Efficiency of air transport services 1–7 (best)	4.5	57.6 ↑	78	Singapore
2.07 Liner shipping connectivity 0–100 (best)	50.1	50.1 ↑	33	Multiple (5)
2.08 Efficiency of seaport services 1–7 (best)	4.1	51.5 ↑	72	Singapore
Utility infrastructure 0–100	-	84.9 ↓	72	**Iceland**
2.09 Electricity access % of population	97.0	97.0 ↓	91	Multiple (67)
2.10 Electricity supply quality % of output	9.1	94.7 ↑	51	Multiple (10)
2.11 Exposure to unsafe drinking water % of population	19.5	82.2 ↓	79	Multiple (28)
2.12 Reliability of water supply 1–7 (best)	4.9	65.6 ↑	66	Iceland

Index Component	Value	Score	Rank/141	Best Performer
3rd pillar: ICT adoption 0–100	-	49.9 ↑	87	**Korea, Rep.**
3.01 Mobile-cellular telephone subscriptions per 100 pop.	129.9	100.0 =	43	Multiple (63)
3.02 Mobile-broadband subscriptions per 100 pop.	52.3	N/Appl.	101	United Arab Emirates
3.03 Fixed-broadband Internet subscriptions per 100 pop.	13.4	26.9 ↑	64	Switzerland
3.04 Fibre Internet subscriptions per 100 pop.	1.4	N/Appl.	65	Korea, Rep.
3.05 Internet users % of adult population	62.3	62.3 ↑	80	Qatar
4th pillar: Macroeconomic stability 0–100	-	90.0 ↑	43	**Multiple (33)**
4.01 Inflation %	3.8	100.0 ↑	1	Multiple (88)
4.02 Debt dynamics 0–100 (best)	80.0	80.0 =	43	Multiple (34)
5th pillar: Health 0–100	-	95.0 ↑	16	**Multiple (4)**
5.01 Healthy life expectancy years	70.4	95.0 ↑	15	Multiple (4)
6th pillar: Skills 0–100	-	60.5 ↑	80	**Switzerland**
Current workforce 0–100	-	53.4 ↑	82	**Switzerland**
6.01 Mean years of schooling years	8.3	55.1 ↑	89	Germany
Skills of current workforce 0–100	-	51.7 ↑	69	**Switzerland**
6.02 Extent of staff training 1–7 (best)	3.7	44.3 ↓	101	Switzerland
6.03 Quality of vocational training 1–7 (best)	4.5	57.7 ↑	47	Switzerland
6.04 Skillset of graduates 1–7 (best)	4.3	54.6 ↑	52	Switzerland
6.05 Digital skills among active population 1–7 (best)	3.8	46.6 ↓	94	Finland
6.06 Ease of finding skilled employees 1–7 (best)	4.3	55.1 ↑	59	United States
Future workforce 0–100	-	67.6 ↑	78	**Denmark**
6.07 School life expectancy years	14.6	81.1 ↑	61	Multiple (11)
Skills of future workforce 0–100	-	54.0 ↑	84	**Denmark**
6.08 Critical thinking in teaching 1–7 (best)	3.5	42.1 ↓	65	Finland
6.09 Pupil-to-teacher ratio in primary education ratio	23.6	66.0 ↑	88	Multiple (5)
7th pillar: Product market 0–100	-	52.7 ↓	90	**Hong Kong SAR**
Domestic competition 0–100	-	45.7 ↓	110	**Hong Kong SAR**
7.01 Distortive effect of taxes and subsidies on competition 1–7 (best)	3.0	33.8 ↑	126	Singapore
7.02 Extent of market dominance 1–7 (best)	3.3	39.0 ↓	102	Switzerland
7.03 Competition in services 1–7 (best)	4.9	64.3 ↓	78	Hong Kong SAR
Trade openness 0–100	-	59.7 ↓	61	**Singapore**
7.04 Prevalence of non-tariff barriers 1–7 (best)	3.9	47.7 ↓	125	Singapore
7.05 Trade tariffs %	5.90	60.7 ↑	77	Hong Kong SAR
7.06 Complexity of tariffs 1–7 (best)	6.4	90.1 ↓	40	Hong Kong SAR
7.07 Border clearance efficiency 1–5 (best)	2.6	40.3 =	74	Germany
8th pillar: Labour market 0–100	-	59.2 ↑	73	**Singapore**
Flexibility 0–100	-	55.0 ↑	88	**Singapore**
8.01 Redundancy costs weeks of salary	16.7	73.5 ↓	76	Multiple (8)
8.02 Hiring and firing practices 1–7 (best)	3.2	36.7 ↓	117	Hong Kong SAR
8.03 Cooperation in labour-employer relations 1–7 (best)	4.5	58.1 ↑	66	Singapore
8.04 Flexibility of wage determination 1–7 (best)	5.0	66.7 ↑	67	Estonia
8.05 Active labour market policies 1–7 (best)	2.9	32.2 ↑	90	Switzerland
8.06 Workers' rights 0–100 (best)	55.0	55.0 ↓	115	Multiple (2)
8.07 Ease of hiring foreign labour 1–7 (best)	4.1	51.8 ↑	75	Albania
8.08 Internal labour mobility 1–7 (best)	5.0	66.0 ↑	31	United States
Meritocracy and incentivization 0–100	-	63.3 ↑	66	**Denmark**
8.09 Reliance on professional management 1–7 (best)	4.3	55.5 ↑	67	Finland
8.10 Pay and productivity 1–7 (best)	3.6	44.0 ↑	94	Hong Kong SAR
8.11 Ratio of wage and salaried female workers to male workers %	0.75	68.4 ↑	64	Multiple (4)
8.12 Labour tax rate %	18.6	85.3 =	80	Multiple (24)

Index Component	Value	Score [4]	Rank/141	Best Performer
9th pillar: Financial system 0–100	-	64.6 ↑	54	Hong Kong SAR
Depth 0–100	-	41.9 ↑	61	United States
9.01 Domestic credit to private sector % GDP	47.8	50.3 ↓	75	Multiple (30)
9.02 Financing of SMEs 1–7 (best)	3.9	48.0 ↑	73	Finland
9.03 Venture capital availability 1–7 (best)	3.2	35.9 ↑	70	United States
9.04 Market capitalization % GDP	34.9	34.9 ↓	55	Multiple (15)
9.05 Insurance premium volume to GDP	2.4	40.3 ↑	50	Multiple (17)
Stability 0–100	-	93.1 ↑	29	Finland
9.06 Soundness of banks 1–7 (best)	5.8	79.7 ↑	27	Finland
9.07 Non-performing loans % of gross total loans	4.2	92.6 ↓	69	Multiple (3)
9.08 Credit gap %	-3.8	100.0 =	1	Multiple (98)
9.09 Banks' regulatory capital ratio % of total risk-weighted assets	17.7	100.0 ↑	60	Multiple (74)
10th pillar: Market size 0–100	-	66.7 ↑	37	China
10.01 Gross domestic product PPP $ billions	662	N/Appl.	32	China
10.02 Imports of goods and services % GDP	19.3	N/Appl.	132	Hong Kong SAR
11th pillar: Business dynamism 0–100	-	64.2 ↑	49	United States
Administrative requirements 0–100	-	79.3 ↓	40	United States
11.01 Cost of starting a business % of GNI per capita	14.0	93.0 =	92	Multiple (2)
11.02 Time to start a business days	11.0	89.4 =	65	New Zealand
11.03 Insolvency recovery rate cents to the dollar	67.2	72.3 ↑	29	Japan
11.04 Insolvency regulatory framework 0–16 (best)	10.0	62.5 ↓	65	Multiple (6)
Entrepreneurial culture 0–100	-	49.1 ↑	80	Israel
11.05 Attitudes towards entrepreneurial risk 1–7 (best)	3.9	48.1 ↑	81	Israel
11.06 Willingness to delegate authority 1–7 (best)	4.4	56.7 ↑	67	Denmark
11.07 Growth of innovative companies 1–7 (best)	3.9	47.9 ↑	87	Israel
11.08 Companies embracing disruptive ideas 1–7 (best)	3.6	43.7 ↑	72	Israel
12th pillar: Innovation capability 0–100	-	36.4 ↑	77	Germany
Interaction and diversity 0–100	-	36.9 ↑	87	Singapore
12.01 Diversity of workforce 1–7 (best)	4.3	54.4 ↑	87	Singapore
12.02 State of cluster development 1–7 (best)	3.6	43.2 ↓	87	Italy
12.03 International co-inventions per million pop.	0.16	4.5 ↓	73	Multiple (5)
12.04 Multi-stakeholder collaboration 1–7 (best)	3.7	45.4 ↑	70	Israel
Research and development 0–100	-	28.2 ↑	61	Japan
12.05 Scientific publications score	237.3	81.1 ↑	47	Multiple (9)
12.06 Patent applications per million pop.	0.79	10.7 ↓	72	Multiple (8)
12.07 R&D expenditures % GDP	0.2	8.1 ↑	88	Multiple (7)
12.08 Research institutions prominence 0–100 (best)	0.05	12.8 ↑	42	Multiple (7)
Commercialization 0–100	-	52.1 ↑	81	Luxembourg
12.09 Buyer sophistication 1–7 (best)	3.3	38.5 ↑	89	Korea, Rep.
12.10 Trademark applications per million pop.	451.96	65.8 ↑	75	Multiple (7)

[4] Scores are on a 0 to 100 scale, where 100 represents the optimal situation or 'frontier'. Arrows indicate the direction of the change in score from the previous edition, if available.

Note: For detailed methodology, definitions, sources, and periods, visit http://gcr.weforum.org/

Appendix 5. Index of Economic Freedom 2021 (Source: Heritage Foundation 2021b)

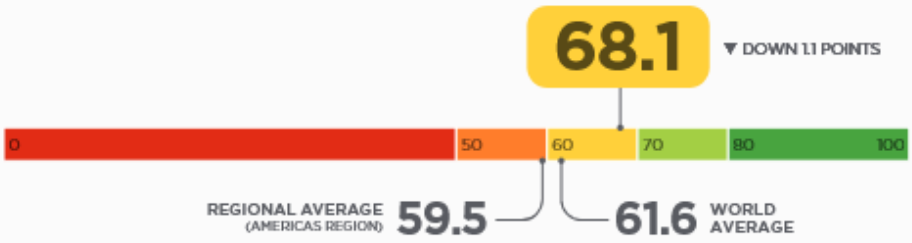
COLOMBIA

Colombia's economic freedom score is 68.1, making its economy the 49th freest in the 2021 *Index*. Its overall score has decreased by 1.1 points, primarily because of a decline in the **government spending** score. Colombia is ranked 6th among 32 countries in the Americas region, and its overall score is above the regional and world averages.

Colombia sank further in the moderately free category this year. Declines in the government spending and fiscal health indicators contradict the government's stated commitment to making budgetary reforms. Although additional constitutional and judicial changes are intended to improve judicial effectiveness and government integrity, rising political polarization has slowed the pace of reform.

IMPACT OF COVID-19: As of December 1, 2020, 36,934 deaths had been attributed to the pandemic in Colombia, and the economy was forecast to contract by 8.2 percent for the year.

ECONOMIC FREEDOM SCORE



HISTORICAL *INDEX* SCORE CHANGE (SINCE 1995): +3.6

RECENT FREEDOM TREND

QUICK FACTS

POPULATION:
50.3 million

GDP (PPP):
$785.8 billion
3.3% growth in 2019
5-year compound annual growth 2.4%
$15,644 per capita

UNEMPLOYMENT:
9.7%

INFLATION (CPI):
3.5%

FDI INFLOW:
$14.5 billion

PUBLIC DEBT:
52.9% of GDP

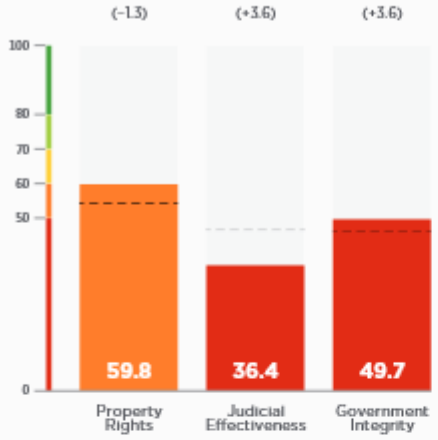
2019 data unless otherwise noted. Data compiled as of September 2020

BACKGROUND: Colombia is South America's oldest democracy and fourth-largest economy. Center-right president Iván Duque began his four-year term in 2018 and has pursued a reformist agenda. The Duque administration has been challenged by fluctuating approval ratings, antigovernment social unrest, and an opposition-controlled Congress that includes nonelected members of the former Revolutionary Armed Forces of Colombia (FARC) narco-terrorist group. Because of the previous administration's flawed peace deal, Colombia remains the world's top producer and exporter of cocaine. Although Colombia is not a member of China's One Belt, One Road initiative, a Chinese state-owned consortium is building its largest infrastructure project. Colombia is a founding member of the Pacific Alliance and has free-trade agreements with the U.S. and many other nations.

— — WORLD AVERAGE | ONE-YEAR SCORE CHANGE IN PARENTHESES

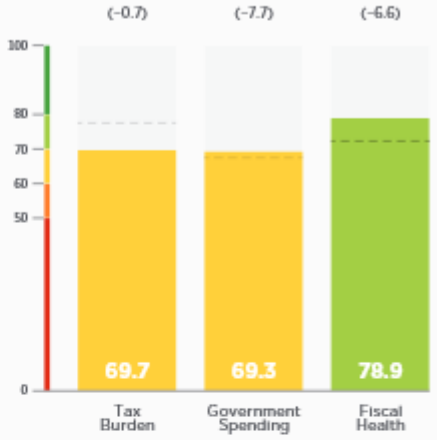
12 ECONOMIC FREEDOMS | COLOMBIA

RULE OF LAW



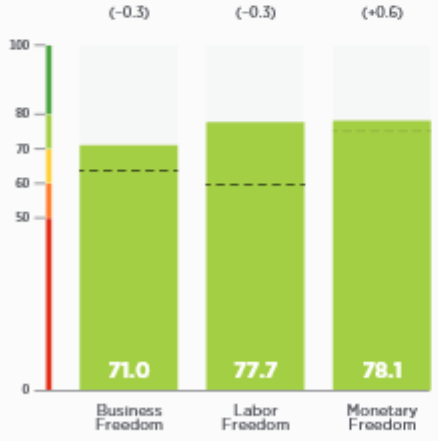
Property rights are usually recognized and protected. The judicial system is generally regarded as competent, fair, and reliable, although corruption, bribery, influence peddling, and abuse of privileged information persist. Violence and corruption engendered by drug trafficking continue to erode institutions at multiple levels of public administration. Corruption scandals involving the Catholic Church, the military, and the police have weakened trust in traditional institutions.

GOVERNMENT SIZE



The top individual income tax rate is 39 percent, and the top corporate tax rate has been cut to 32 percent. Other taxes include value-added and financial transactions taxes. The overall tax burden equals 22.0 percent of total domestic income. Government spending has amounted to 32.0 percent of total output (GDP) over the past three years, and budget deficits have averaged 3.1 percent of GDP. Public debt is equivalent to 52.9 percent of GDP.

REGULATORY EFFICIENCY



Minor incremental improvements in some business freedom metrics have not been enough to keep Colombia from losing ground in business freedom compared to other countries. Labor force participation decreased from 2018 to 2019. The government has provided billions in subsidies to producers of electrical energy, liquefied petroleum gas, and natural gas in 2020.

OPEN MARKETS

Colombia has 13 preferential trade agreements in force. The trade-weighted average tariff rate is 6.5 percent, and 153 nontariff measures are in effect. Foreign investment in some sectors is subject to investment registration and concession agreements with the government. Foreign investors may own 100 percent of financial institutions. Credit is generally allocated on market terms. Measures to boost liquidity in the financial sector were adopted in 2020.

Appendix 6. Global Connectedness Index 2019 (Source: DHL 2021)

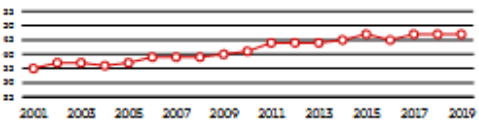
DHL GLOBAL CONNECTEDNESS INDEX 2020 | dhl.com/gci

COLOMBIA

KEY SCORES AND TRENDS

	Rank			Score		
	2019	2017	Change	2019	2017	Change
Overall	87/169	89/169	+2	47/100	47/100	0
Depth	131/169	129/169	-2	17/100	16/100	+1
Breadth	51/169	57/169	+6	31/100	30/100	+1
Trade Pillar	109/169	113/169	+4	45/100	43/100	+2
Capital Pillar	49/73	48/73	-1	51/100	51/100	0
Information Pillar	55/101	55/101	0	60/100	59/100	+1
People Pillar	81/103	77/103	-4	37/100	38/100	-1

CONNECTEDNESS SCORE TREND



ROOTED MAP

COLOMBIA'S GLOBAL CONNECTIONS

Top 10 Countries Ranked by Their Shares of Colombia's International Flows (Country Sizes on Map)

1. United States (26%)
2. Venezuela (10%)
3. Spain (6%)
4. China (6%)
5. Mexico (5%)
6. Brazil (3%)
7. Ecuador (3%)
8. United Kingdom (3%)
9. Panama (3%)
10. Chile (2%)

Map Colors: Colombia's share of other countries' international flows

12% 3% 1% 0.3% 0.1% 0.01%

Questions? Please refer to page 16 for an explanation of how to read this map.

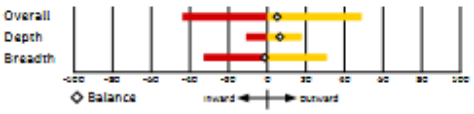
DEPTH (International flows relative to total activity)

	Rank		Level	
	Outward	Inward	Outward	Inward
Trade	160/169		—	
Merchandise Trade (% of GDP)	133/169	153/169	12%	16%
Services Trade (% of GDP)	136/169	149/169	3%	4%
Capital	50/99		—	
FDI Stock (% of GDP)	48/128	55/169	20%	64%
FDI Flows (% of GFCF)	42/128	44/169	6%	19%
Portfolio Equity Stock (% of Mkt Cap)	-	72/93	-	5%
Portfolio Equity Flows (% of Mkt Cap)	-	72/93	-	-0.4%
Information	73/100		—	
Internet Bandwidth (Bits per Second per Internet User)	81/169		c	
International Phone Calls (Minutes per Capita)	57/108		c	
Scientific Research Collaboration (per Million Population)	79/101		89	
Printed Publications Trade (USD per Capita)	74/103	116/106	$1.02	$1.78
People	98/113		—	
Tourists (Dep./Arr. per Capita)	67/93	111/120	0.09	0.08
International Students (% of Tertiary Education Enrollment)	109/137	109/113	2%	0%
Migrants (% of Population)	91/169	110/169	6%	2%

BREADTH (Distribution of international flows across countries)

	Rank		Level	
	Outward	Inward	Outward	Inward
Trade	47/169		—	
Merchandise Trade	50/168	40/169	50%	58%
Capital	50/82		—	
FDI Stock	119/126	47/129	7%	45%
FDI Flows	23/82	14/80	36%	48%
Portfolio Equity Stock	51/70	—	40%	—
Information	39/103		—	
International Phone Calls	-		-	
Scientific Research Collaboration	40/107		77%	
Printed Publications Trade	76/100	68/101	18%	40%
People	77/128		—	
Tourists	—	-	—	-
International Students	—	63/99	—	18%
Migrants	51/100	118/121	34%	7%

INWARD VS. OUTWARD CONNECTEDNESS



STRUCTURAL AND POLICY DRIVERS OF DEPTH OF CONNECTEDNESS

Structural Factors	Rank	Level
GDP per Capita (+)	82/168	56,432
Linguistic Commonality (+)	89/168	4.9%
Remoteness (-)	39/168	6.8
Population (-)	29/168	50.34m
Landlocked (-)	—	No

General Policies / Environment	Rank	Level
Ease of Doing Business (+)	64/107	70
Logistics Performance (+)	59/121	2.9
Press Freedom (+)	119/137	43
Labor Freedom (+)	17/183	78
Financial Freedom (+)	16/183	70

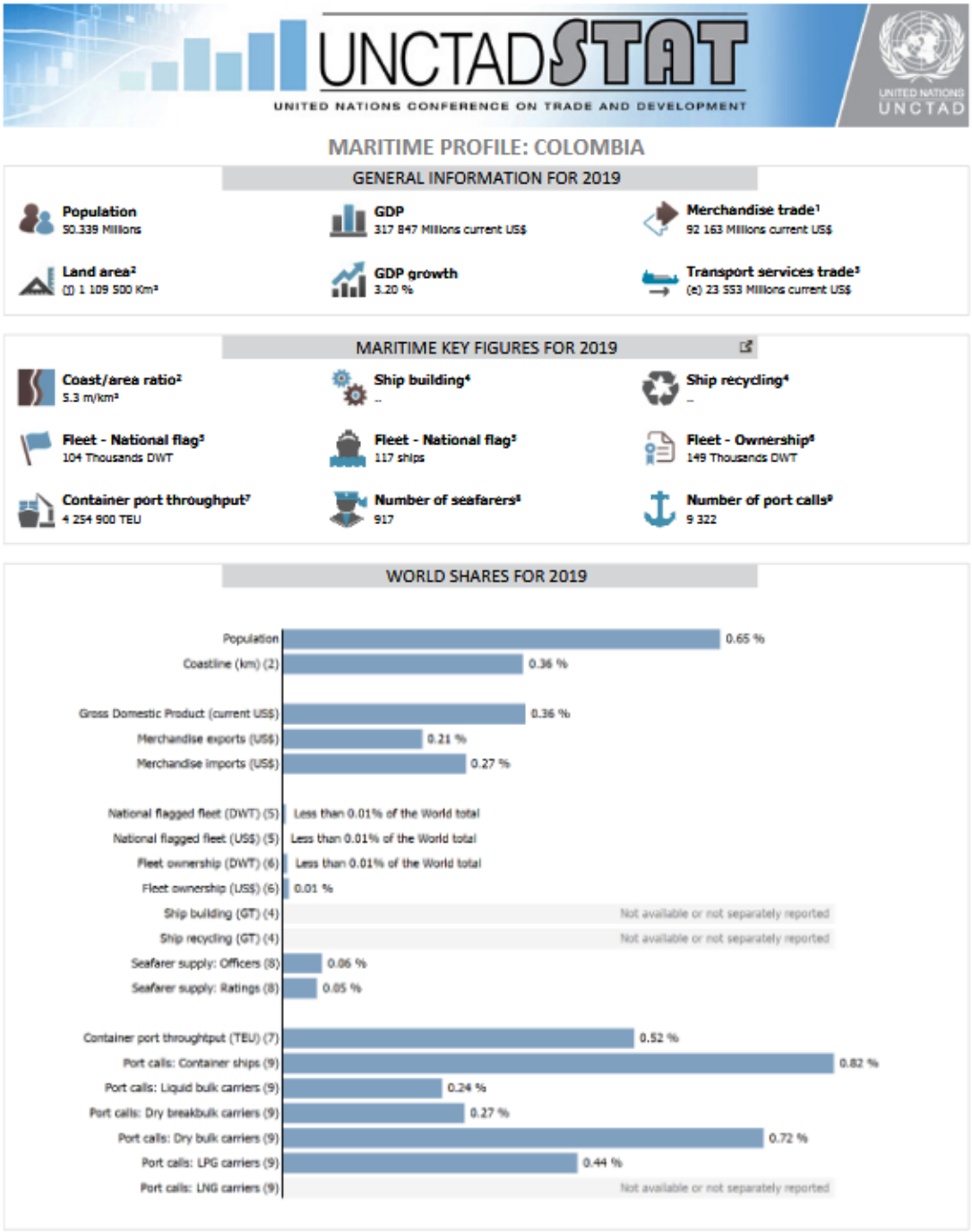
Globalization Policies / Environment	Rank	Level
Tariffs (Weighted Mean Applied) (-)	94/183	3.28%
Shipping Connectivity (+)	33/183	46
Capital Account Openness (+)	91/168	0.4
Visa-Free Travel Outward (+)	76/169	127
Visa-Free Travel Inward (+)	60/168	99

— Not Applicable · Data Not Available c Confidential Data (+) Positive Impact (-) Negative Impact

Depth: measures international activities of an economy by comparing the size of its international flows with measures of its domestic activity.

Breadth: is looking at how broadly the international component of a given type of activity is distributed across countries.

Appendix 7. Maritime profile of Colombia (Source: UNCTAD 2020)



COLOMBIA

INTERNATIONAL MERCHANDISE TRADE

Total merchandise trade

(millions of US$)	2005	2010	2015	2019
Merchandise exports	21 190	39 713	35 691	39 460
Merchandise imports	21 204	40 486	54 058	52 703
Merchandise trade balance	-14	-772	-18 367	-13 242

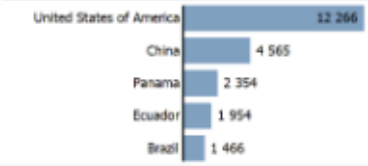
-5.5 %
Merchandise exports growth rate in 2019

Export structure by product group in 2019

(as % of total exports)

Top 5 partners in 2019

(exports, millions of US$)



INTERNATIONAL TRADE IN TRANSPORT SERVICES

Services exports by main category[10]

(as % of total services)	2005	2010	2015	2019
Transport	26.3	22.3	21.6	(e) 19.2
Travel	51.4	54.6	57.2	(e) 56.9
Other services	22.3	22.8	20.9	(e) 23.7

+1.9 %
Transport services exports growth rate in 2019

Total trade in transport services[10]

(millions of US$)	2005	2010	2015	2019
Transport services exports	787	1 144	1 601	(e) 1 909
Transport services imports	2 125	2 827	2 857	(e) 3 199
Transport services trade balance	-1 339	-1 683	-1 256	(e) -1 290

NATIONAL FLEET

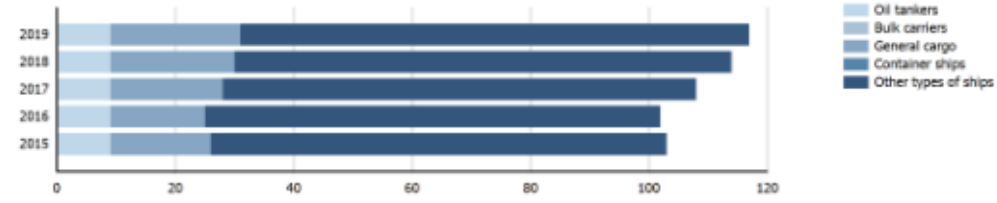
Carrying capacity by type of ship[5]

(Thousands DWT)	2005	2010	2015	2019
Total fleet	100.0	109.0	105.3	104.4
Oil tankers	10.0	7.8	24.6	20.3
Bulk carriers	4.0	..	0.0	0.0
General cargo	46.0	53.9	38.1	44.7
Container ships	..	..	0.0	0.0
Other types of ships	40.0	47.4	42.6	39.4

+4.2 %
Fleet growth rate in2019

Fleet by type of ship[5]

(Number of ships)



COLOMBIA

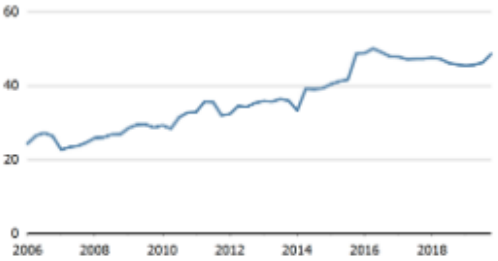
LINER SHIPPING CONNECTIVITY

Bilateral connectivity index - Top 10 partners in 2019[11]

Can only take values between 0 (minimum) and 1 (maximum)

Liner shipping connectivity index[11]

Maximum 2006=100 for China



PORT CALLS AND PERFORMANCE

Port calls, time spent in ports, vessel age and size in 2019[9]

	Number of arrivals	Median time in port (days)	Avg age of vessels	Avg size (GT) of vessels	Avg cargo carrying capacity (DWT) per vessel	Avg container carrying capacity (TEU) per container ship	Maximum size (GT) of vessels
All ships	9 322	0.85	12	36 298	44 925	3 882	168 028
Liquid bulk carriers	1 255	1.17	11	30 596	54 360	..	167 578
Liquefied petroleum gas carriers	243	1.21	13	9 133	10 649	..	25 994
Liquefied natural gas carriers	..	..	..	..	..	..	..
Dry bulk carriers	1 993	2.32	9	39 129	70 100	..	107 761
Dry breakbulk carriers	1 215	1.34	20	7 984	10 903	..	46 112
Roll-on/ roll-off ships	451	..	12	54 527	17 548	..	75 283
Container ships	3 902	0.53	11	42 745	..	3 882	141 649
Passenger ships	263	..	20	71 053	..	..	168 028

Port liner shipping connectivity index - Top 5 ports in 2019[11]

Maximum 2006=100 for China, Hong Kong SAR