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Regional trade integration and industrialization. Colombia and South America in the first half of 20th Century

Autor:

Maria Isabel Restrepo Estrada

Director:

Antonio Tena Junguito

DEPARTAMENTO DE CIENCIAS SOCIALES

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Regional trade integration and
industrialization. Colombia and South
America in the first half of the 20th
Century

Maria Isabel Restrepo Estrada

supervised by
Dr. Antonio TENA-JUNGUITO

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SUMMARY

This thesis includes three studies to assess historical evidence of the failure of Colombia and South America to achieve regional integration and the role played by exports other than coffee in the period of greatest industrial development in Colombia during the 20th Century. A wide range of theories and empirical models are deployed for this purpose. First regional integration is evaluated in the whole American continent with a new database of global bilateral trade for two time periods: 1870-1913 versus 1914-1950, and from this study the Andean countries, and particularly Colombia, emerge as the least regionally integrated territories.

Following this, the performance of other Colombian exports apart from traditional coffee exports, is evaluated with the aid of a new database of exports at a product level between 1922 and 1950. The high dependence of Colombia on coffee exports underlines the importance of manufacturing exports on regional-integration levels. This leads to an examination of the role of intensive and extensive exports in the international trading pattern of Colombia, in a period in which one of the most important periods of industrial expansion took place in the country (with a consequent increase in the range of products exported by the country, in terms of numbers but not of value). Finally, the role of intra-industry trade at the regional integration levels is assessed with a new database by products exported/imported to/from seven South American countries for 1922, 1928, 1935, 1942 and 1950.

This research proved that there was greater regional integration with countries with similar factor endowments in terms of intra-industry trade, and that more regional trade occurs when countries have a convergent regional demand structure, reflected in income differentials. In addition, it was found that in the case of Colombia, border sharing did not facilitate regional trade since geographical barriers made land

trade very difficult with most bordering countries. Furthermore, other trade costs have arisen that can help to explain the failure of regional integration. Poverty levels, as well as low demand and recurrent dependence on merchant fleets in North America and Europe, had counterproductive effects on regional trade levels.

Finally, there was a wide variation in the number of exported products and destinations. Colombia exported a large number of products to nearby countries and even had a closer relationship with countries of Central America and the Caribbean than with some of its neighbors in the South. However, there was a limited duration period of some products in several markets, especially new industrial products. The new industrial manufacturers sought to supply the growing domestic demand and exports continued to rely on a few natural products. The entry of new products in the regional market was in some cases subject to external shocks. The regional trade boom during World War II emerged as a compensation for the fall in European demand, but once reopened this market began to decline and returned to pre-war levels.

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INTRODUCTION

A. THEORETICAL BACKGROUND

Under the law of comparative advantage, all countries can benefit from international specialization and free trade. Specialization between countries makes it possible for them to consume more goods and services than they would otherwise consume in its absence. In the view of Ricardo, comparative advantage depended on comparative differences in labor productivity, while the Heckscher-Ohlin (H-O) theorem postulates that the comparative advantages experienced by countries, are based on the relative abundance of factors of production. This means that an economy will export labor- or capital-intensive goods according to its abundant factor and will import labor- or capital-intensive goods on the basis of the sparse factor.

However, many economists believe that traditional theories fail to provide a complete explanation of the structure of world trade. Many empirical studies have found that much of the world trade takes place between industrialized countries which share relatively similar factor endowments. In fact, it has been observed that an increasing proportion of the trade flows of goods between these countries belong to the same industrial category, which has been called “intra-industry trade”.

It should be noted that in both the traditional and new theories factor endowment differences play an important role in international trade theory, for both the pattern and volume of trade. According to the H-O theorem, goods exported and imported differ in their factor content. However, intra-industry trade includes goods of an analogous factor intensity. In the latter case, product differentiation and increasing returns to scale, may explain the emergence of this type of trade. The

preference of consumers for variety can lead to each country specializing in a wide range of products and hence there will be intra-industrial trade, as well as the traditional form of inter-industrial trade.

Moreover, as stated in the neoclassical microeconomic theory, preference relations determine the mechanism of demand. Linder suggested that a country exports products for which there is a large local market. That is to say, the production of goods seeks to supply the domestic market and the exports of these goods are aimed at countries with similar tastes and income levels. Although this premise only applies to trade in manufacturing goods, it implies that there is a higher level of trade between countries with a similar per capita income.

At the empirical level, in a product differentiation framework with increasing returns to scale, the gravity approach suggests that bilateral trade is determined by the “economic mass” of two countries and natural barriers to trade, in particular, trade costs related to geographic distance. However, the traditional approach ignores the presence of zeros in trade flows. Alternative developments to the gravitational equation, allow us to capture the "information" that these zero flows provide. These can be due to the mechanisms of entry and exit of the markets and the costs of exporting, among other factors.

Recent research highlights the importance of taking account of the number of products, the number of countries and even the frequency with which commercial transactions are carried out. It is expected that only the most productive goods will be able to absorb export costs. According to Melitz (2003) trade forces the least productive firms to leave the foreign markets and only to serve their domestic market resulting in a reallocation of market shares towards more productive

exporting firms. This *selection* will increase the intensity of competition in the world market (Grossman and Helpman, 2015). The analysis of the extensive margin of trade explains the establishment of new commercial relations between two countries beyond the gravitational model which explains the extent of trade, once the relationship exists (intensive margin).

In the case of many countries, most of the growth in exports takes place at the intensive margin. This is due to the broadening of the commercial relations that are supported by increasing specialization, which may be either across or within products. In this case, within-product specialization can be observed through horizontal or vertical intra-industry trade. However, the growth at the extensive margin of exports is of crucial importance for developing countries. The benefits of diversification of exports at the product and market level, result from the reduction of risks of shocks in international markets.

In light of the New Economic Geography, Redding and Venables (2004) assert that a country's export growth can be broken down into two parts, depending on the conditions of demand and the internal characteristics of the supply. On the one hand, export growth is based on the country's foreign-market access and on the other, on the internal-supply capacity, which depends on countries' internal geography (such as access to ports), on their business environment and on their foreign-market access. Then while the internal-supply capacity is based on the changes within the country, the foreign-market access is based on the country's location relative to sources of import demands. According to the authors since 1970 the export growth of several countries and regions can be attributed to the growth in demand for imports, particularly from nearby countries, that is, due to an increase of their foreign-market access.

Geography and history are essential to understand the patterns of trade flows. They determine the commodity composition and geographical distribution of a country's international trade. A higher level of integration would then be expected between similar countries, which are close and where there are low transaction costs. From the current standpoint, according to Baldwin and Venables (1995, p. 1605) "integration in Europe has occurred between economies with similar structures and large volumes of intra-industry trade". The benefits of greater regional integration include greater efficiency derived from the larger market size and economies of scale. In addition, the increase in the range of products obtained through greater intra-industry trade exchanges helps to reduce the monopolistic power of local producers.

B. HISTORICAL BACKGROUND

The second half of the 19th Century and the first decades of the 20th Century were characterized by rapid economic globalization in which capital and labor moved easily between countries (O'Rourke & Williamson, 1999). The impact of this globalization was uneven in Latin America, where Argentina, Brazil and Chile performed best, while the Andean countries and especially Colombia were the worst. Colombia's export performance during the wave of globalization in the late 19th Century was extremely poor, and even exports per capita in 1913 were equal to those of Guatemala and only surpassed those of Haiti in Latin America.

During the second half of the 19th Century, Colombian foreign trade diversified and precious metals were replaced by products such as tobacco, cinchona bark and coffee. Although most of these exports can be attributed to global economic cycles, coffee became established as a permanent export product and went from representing 8% of exports

in 1860 to 79% in the mid-1920s. The main markets for Colombian trade were the United States, Great Britain, France, the Netherlands, Italy, Germany, the Caribbean countries and some neighboring republics. In general, there was extremely little trade with several countries in South America.

It has been observed that in the mid-19th Century the country's exports exceeded imports, particularly from 1867 to 1872 and in 1898 and 1899. In 1905, there was a great impetus in the international trade of the country, as much in exports as in imports. From 1911 to 1914, Colombian trade with Europe increased. However, after World War I, the United States became the country's main trading partner.

From the beginning of the 1920s, there was an expansion of exports in Colombia which coincided with an improvement in the terms of trade, an increase in external financing and the arrival of resources from the indemnification of Panama, resulting in an expansion of public spending, as well as the country's imports. Many of the public resources were devoted to the development of railways, since at that time the country lacked a transport system that could help overcome the problem of the fragmentation of the markets. In fact, the available railway lines had merely served to partly link the areas of coffee production with ports of export. Thus, in addition to the evident geographical divisions with the border countries, the transport infrastructure was hardly sufficient to establish an effective link with the internal market.

The considerable growth of imports, particularly between 1924 and 1928, was concentrated in machinery for the textile industry and materials necessary for the construction of railroads. However, following the crisis of 1929, there emerged in Colombia an economy that was geared towards industrialization. The negative effect of the

Great Depression on Colombia was much less severe than in the rest of Latin America. In fact, the growth of exports of coffee and gold and the protection given to the industry, helped to keep production above the level reached in 1928. The industrial expansion allowed the country to grow at an average rate of 3.8% between 1929 and 1939. However, World War II had negative effects on the economy which only grew by 1.1% between 1940 and 1943.

In spite of the great industrial expansion of the 1930s, the diversification of production was small and of low technology. The sectors with the highest industrial growth were food, beverages, tobacco and textiles, which, because of urban expansion, were the goods with the highest domestic demand. Since 1937, trade in Colombia, especially with Europe, has shifted to the United States and, temporarily, to Latin America. During the years of the War, the increase in the trade flow with South America was predominantly in imports. This trade imbalance with the region became more evident, since in 1942 more than half of Colombia's exports to the region went to Venezuela.

One of the factors that affected the low level of regional trade was the problem of geographical access. Despite their contiguity, many bordering South American countries were distant owing to the inadequacy of their communications systems. The land route was onerous and even prohibitive. Most of these countries relied almost entirely on foreign vessels for the transport of their foreign trade (see Table A.3), which meant that they faced a truly critical situation during the World Wars. In the Yearbook of Foreign Trade of Colombia for 1942 it is stated that "with reference to the exchange with Latin America, notably with South America, it can be asserted that the range of action is limited especially by the lack of a national merchant marine

and by the fact that the Pan American Union is not yet able to consolidate itself in this sense, within practical and orderly channels”.

At the end of World War II, the merchant navy of the world had been decimated and the priorities of the victorious countries did not include paying attention of the export needs of the Latin American countries. In 1945, Colombia, Venezuela and Ecuador created the Grancolombiana Merchant Fleet, which was financed by the National Federation of Coffee Growers of Colombia (45%), the Agriculture and Livestock Bank of Venezuela (45%) while the remaining 10% was lent to Ecuador by the National Federation of Coffee Growers of Colombia. In 1947, the fleet already had three lines that operated between its ports and New York. However, in 1952 Venezuela withdrew from the Fleet.

Recently, the more stable growth of the Latin American region since the 1990s has renewed interest in the question of regional integration and the long-term causes of its apparent historical failure. Latin America’s regional trade share was half of that of North America both in 1928 (11% vs. 25%) and in 1990 (14% vs. 31%). The South American region includes countries of different sizes, population density and patterns of growth and development. Colombia appears to be an interesting case, not only because of its low level of regional integration and its high dependence on the US market, but also as a result of its export and industrial expansion that was due, among other things, to the earnings derived from the coffee trade.

C. RESEARCH OBJECTIVES

The main objective of this thesis is to assess historical evidence for the failure of regional integration in Colombia and South America and the

role played by exports other than coffee in the period of greatest industrial development in Colombia throughout the 20th Century.

The specific objectives of this thesis are:

1. To examine how the patterns of S-S and N-N trade and revealed trade preference groups, can explain the conventional view that there is a historical handicap in South America with regard to regional trade.
2. To evaluate how variables of competitiveness and trade costs might be determinants of the size but also of the opening/exiting of markets of Colombian exports, in the industrial take-off period of the country.
3. To determine if there were more intra-industry trade between Colombia and those countries of South America with similar factor endowments and greater geographic and cultural proximity.

D. OUTLINE OF THE THESIS

This thesis is divided into three chapters. A brief overview of the structure of this thesis is given below.

Chapter 1 explores the regional trade integration in the Americas between 1870 and 1950 through a gravity model. A comparative analysis is carried out between the N-N and S-S trade, to observe the global patterns of integration between a region that is much more integrated than the other. Following the Linder Hypothesis, a variable is added to capture Differences in Demand Structure (DDS).

Chapter 2 examines the export basket of Colombia in products other than coffee, which was the main product exported by the country but which did not have a significant market at the regional level. The aim is to investigate the role of entry into new/existing markets for new/existing products and the extent of established relationships for Colombian exports. The breakdown by skill-intensity of exports are examined through the value added per worker within each production category of Colombia's first industrial census, in a framework of export margins.

Chapter 3 examines the role of intra-industry trade in Colombia's regional integration levels, since countries with similar factor endowments are expected to be involved in this type of trade. For this purpose, were analyzed the type of products that were involved in the double-way trade between Colombia and seven countries of South America. After this, the Grubel and Lloyd index is constructed as a dependent variable to assess the determinants of intra-industry trade using a Tobit model, where a variable of differences in factor endowments is used.

1

THE ROOTS OF REGIONAL TRADE IN THE AMERICAS 1870 TO 1950

1.1. INTRODUCTION

There are a number of variable factors that can explain the lack of regional trade in Latin America such as the geographical features of the common borders, low economic development, market size problems, and even the nature of the institutions inherited from the colonial regime. Compared with other regions (such as Europe, East Asia and even North America), South America had a smaller share of regional trade during the late 19th Century and much of the 20th Century. However, one would expect that a low degree of integrated regional trade could be explained by high regional transaction costs. In the absence of trade barriers between regional and international markets, this would be a sign of a lack of regional market potential.

In the Americas, the varying strategies of the metropolis during the colonial period, laid the historical foundations of the trade networks in both the North and South of the continent. However, we know more about the relevance of intra-colonial fiscal transfers than the intra-colonial trade of the American Empire (see Irigoin & Grafe, 2012). We only have limited evidence on price convergence in some regions of the Spanish Empire (see Gallo & Newland, 2004). Thus, it is difficult to evaluate the regional effects of political and monetary disintegration on trade since the days of Independence (Irigoin, 2009).

The new Latin American Republics tried to emulate the economic and political integration of the emerging United States. However, contrary to their expectations, there was slower growth during the post-independence period and export specialization in primary commodities towards the end of the 19th Century led international integration to grow at a faster rate than regional integration. During the inter-war years, the European and North American protectionist backlash following the Great Depression restricted the spread of Atlantic globalization in favor of a rise in a preference for regional trade, and this was accentuated during the Second World War (see Carreras-Marín, Badia-Miró & Peres Cajías, 2013; Badia-Miró, Carreras-Marín & Meissner, 2014).

Recently, the more stable growth of the Latin American region since the 1990s has renewed interest in the question of regional integration and the long-term causes of its apparent historical failure. The idea that Latin America had suffered from a low level of regional integration, can be attributed to the very limited comparative data provided by the League of Nations (1942) for the 1920s and 1930s. Latin America's regional trade share was half of that of North America both in 1928 (11% vs. 25%) and in 1990 (14% vs. 31%). This data, as expected, shows how less developed regions were not as integrated as were the industrialized regions of Europe and North America.

Nevertheless, it is not so obvious why the regional trade of other regions, such as East Asia, appears to be historically more integrated than the Latin American region. From the 1920s, the integration of Asian regional trade was similar to that of the European experience. Both regions had traded around half of their total trade with their own region, and this trend persisted in Asia and increased to two thirds in Europe in the 1990s (see Anderson-Norheim, 1993. Table 2.2). Although Asia was similar to Latin America in terms of political

fragmentation, remoteness and delayed economic development, it had a very different historical experience with regard to regional integration¹.

Bilateral trade patterns and their determinants usually receive little attention in the economic analysis of intra-regional trade. Nevertheless, the estimates of international bilateral trade flows have a long tradition. Tinbergen (1962) was a pioneer in the use of gravity equations, and since then, this approach has been supplemented by very different theoretical and estimation techniques (see Anderson, 1979; Helpman & Krugman, 1985; Anderson and van Wincoop, 2003). Alongside the determinants of bilateral trade flows, the empirical literature includes “natural” determinants such as geography, GDPs, transport and transaction costs or “supernatural” causes such as trade agreements or commercial policy decisions (Frankel, Stein & Wei, 1995; Eichengreen & Frankel, 1995).

The formation of trade groups is a dynamic feature, as there is a growing volume of natural trade agreements to provide incentives for investing in trade linkages. Thus “historical accidents” that bring economies together may well be broadened and perpetuated by the investment linkages that they induce. From a theoretical standpoint, the literature is not conclusive about the causes of “natural” trade regions being formed. On the one hand, the Ricardian and Heckscher-

¹ First, the imperialist policies of the Western countries established an initial network of East Asian trade following the Treaty of Nanking (1842), which Britain signed with China at the end of the Opium War. Later, Japanese imperialism gave an impetus to the integration of East Asia’s northern economies. During the Meiji Period (1868-1912), Japan annexed Ezo (Hokkaidô) in 1869, the Ryûkyû Islands in 1879, Taiwan in 1895, and Korea in 1905-1910. By 1913, in East Asia around 42 per cent of the region’s trade was intra-regional, and by 1938, this had increased slightly to 46 per cent. While Asia reduced its regional trade from the end of the War until the 1970s, it partly recovered its 1930s level in the late 1970s and during the 1980s, showing a U-Shaped pattern (See Petri, 1993, p. 30-32).

Ohlin-Samuelson models predict greater trade between countries that are technologically different, while on the other hand, the Linder hypothesis predicts that countries with similar demand structures will trade more with each other (Hallak, 2010).

The analytical basis of this chapter is the concept of intra-regional trade preferences and the existence of trade networks. We will examine which factors determine the regional flows from 1870 to 1950 in South and North America using descriptive statistics, a cluster analysis and intensity indices of regional trade preferences. The main hypothesis of the chapter is then tested with regard to the existence of a historical handicap of regional trade in the Americas through an augmented gravity model. This is designed to evaluate regional trade integration throughout history in light of the influence of the “commodity lottery” boosted by globalization and the blockades resulting from the Atlantic trade war.

Our strategy is to differentiate trade into the South –S– and North –N– and to examine how the patterns of S-S and N-N trade (and revealed trade preference groups), can explain the conventional view of a historical handicap existing in regional trade in South America. Since there is a serious lack of research studies on South-South trade, one of the main contributions of this chapter, is its analysis of the period involved.

1.2. HISTORICAL EVIDENCE OF INTRA-REGIONAL TRADE IN SOUTH AND NORTH AMERICA

Some caveats should be made regarding the unusual features of Latin American regional integration levels and trends since independence. First, on the whole, the Latin American republics were bigger and poorer than their European counterparts. The larger geographical size

of the American continent and the lower economic activity inside the region, did not provide ideal conditions for the reconstruction of the former regional imperial trade networks. The extent of the continent, even if the Americas are divided between the North and the South, included geographical frontiers that continued to expand until the end of the 19th Century. This meant there were long distances for transport and little cooperation between the new republics which mattered insofar as it increased the costs incurred for shipping goods.

Second, the new American republics, including the USA, were largely dependent on trade tariffs as the main source of fiscal revenue needed for building the new states after their political independence in the early 1820s. In contrast, ‘old Europe’ was emerging from a Mercantilist period, and was able to reduce its trade barriers following the end of the Napoleonic Wars in a period of long trade liberalization that would only end with a moderate return to protectionism at the end of the century (Coatsworth & Williamson, 2004; Tena-Junguito, Lampe & Tamega, 2012).

Additionally, in the late 19th Century, both North and South America began to be actively involved in the world market. The reduction of shipping costs increased the demand for commodities and minerals produced in the Americas and this had a direct influence on regional trade (Bulmer-Thomas, 2003). Some recent studies suggest that in the case of South America, intra-regional trade may have increased as a result of less restrictive trade policies or greater productivity in the early 20th Century (Badia-Miró, Carreras-Marín & Meissner, 2014).

In the 1930s, European protectionist trade policies partly interrupted Atlantic globalization, due to the withdrawal of Europe towards the regional trade in the manufacturing sector and the decline in the demand for commodities. Intraregional trade in the Americas was

apparently higher before the reduction in transport costs increased globalization, but we do not have clear evidence of this except during the initial period of the commodity boom in the 1870s. During the interwar years and especially at the end of the thirties there was a growth in the share of exports to the own region relative to the total volume of exports (Figures 1.1, 1.2 and 1.3).

Thorp (1992) notes that in the 1930s, South American countries introduced a number of regional trade liberalization policies. In fact, the expansion of exports played a crucial role in the economic recovery of the region. When the Second World War broke out, these countries turned again to protectionist measures as a response to the trade restriction policies of the European markets (Edwards, 1994). This can be observed clearly in Figure 1.1, which shows an increase in the proportion of exports to the region by most South American countries and Mexico (see also Figure 1.2).

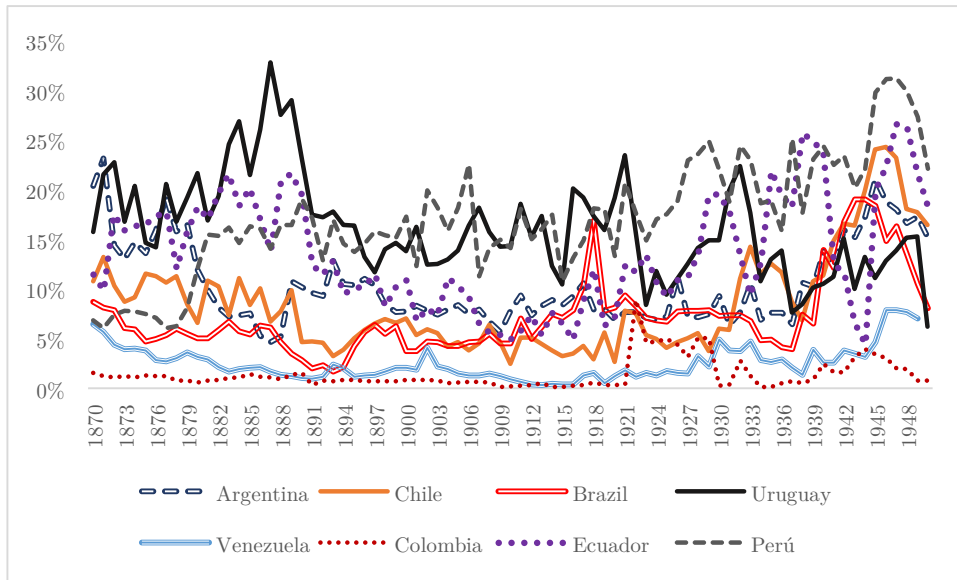


Figure 1.1. South America's regional share of exports

The commercial blockades that occurred during the World Wars, especially during the Second World War, apparently led to the creation of the first significant regional trade in Latin America before the ISI period (Carreras-Marín, Badia-Miró & Peres Cajías, 2013). As Figure 1.1 makes clear, the Second World War provided the opportunity for an intra-regional trade boom in some of the countries in our sample, notably Peru, Chile and Brazil. Others, such as Argentina, were also affected by this boom but did not alter their prewar regional integration trend in any significant way. By the late forties and early fifties, the ISI model had spread throughout Latin America, and according to Bértola & Ocampo (2012) some countries employed a "mixed model" which, as well as import substitution, included the promotion of exports and regional integration. As is generally pointed out in the literature, this model had a positive effect on the export of manufactured goods from these countries to the region, and effectively fostered a more diversified economy.

In North America (see Figure 1.2), the United States has historically been an important trading partner of both Canada and Mexico. In the 1870s more than 40% and less than 20%, respectively, of their total exports were destined to the US. In the 1890s, Mexico forged a stronger relationship with the US economy and, by the turn of the century, the Mexican regional share of exports surpassed that of Canada and peaked at around half of its total trade. The importance of the US in bilateral trade with these two countries is key to understanding the regional performance of North America in comparison with the South. In fact, the bilateral share of exports for Mexico and Canada was lower than 4%, on average, during the first years of globalization.

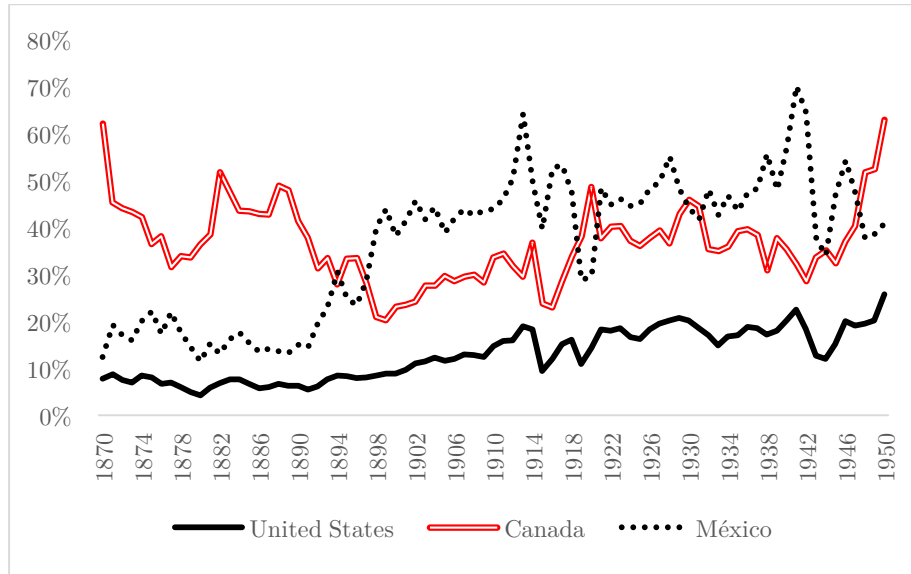


Figure 1.2. North America's regional share of exports

From the early 19th century, the U.S. was the biggest economy in the region and during the Belle Époque period, it increased its relative economic importance through the rapid growth of exports, GDP and population. However, its participation in global trade did not match the growth of its internal market.² Furthermore, in the context of the rapid Atlantic globalization of the American continent, the US increased bilateral trade with its closest neighbors, ranging from 8% before 1890 to almost 20% in 1913. Thus, it is reasonable to postulate that there was a "United States effect" driving greater regional trade in the North. This "US effect" is crucial to understanding the SS-NN differences in regional integration.

On the basis of this assumption, Figure 1.3 shows the share of intraregional exports for the S-S and N-N regions with their trends obtained from the Hodrick-Prescott (1997) filter. Both regions were

² The export-to-GDP ratio at current prices of the US was around 11% and practically stagnated between 1870 and 1913 (see Federico -Tena, 2016b).

close before 1880 and it seems that they showed a similar trend until the late 19th Century. From then until the mid-thirties, there was a widening gap between the two regions, which was characterized by growth in the North and stagnation in the South. Although the gap remained, between the thirties and forties, there was an intra-regional trade boom in both regions. In the case of South America, this regional trade was only possible because of the exogenous shock caused by the Second World War.

A possible explanation for the differences between both regions is that the "US effect" led to higher N-N regional trade. It is possible that, to a great extent, the result of intraregional trade depended on the existence of commercial hubs in each region. However, this is not apparent in the case of the South. With regard to bilateral trade flows, a number of sub-networks can be observed that we seek to explore through a cluster analysis (Figure 1.4).

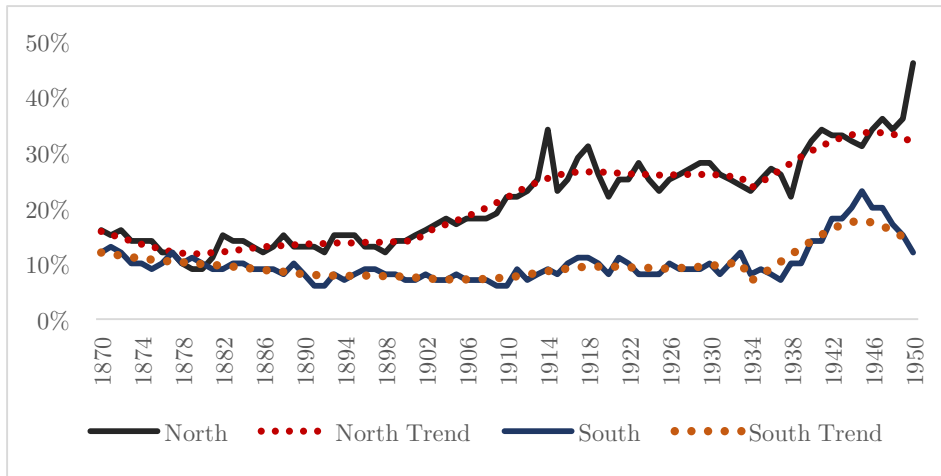


Figure 1.3. Share of intraregional exports per region

The optimal k-means clustering is calculated here for two periods: 1870-1913 and 1914-1950 (Figure 1.4). The purpose of this was to observe the similarity or differences between these countries using information on standardized regional exports. In both periods, there are five groups in the South and three in the North, in terms of the volume of exports to the region, which means that on average there is a great distance between most countries of the region. The most similar countries in both periods are the clusters formed by Chile and Peru, and by Ecuador, Colombia and Venezuela. Although Argentina is the largest country in terms of trade flows to the region, it is not a commercial hub and its trade is mainly concentrated in the Southern Cone.

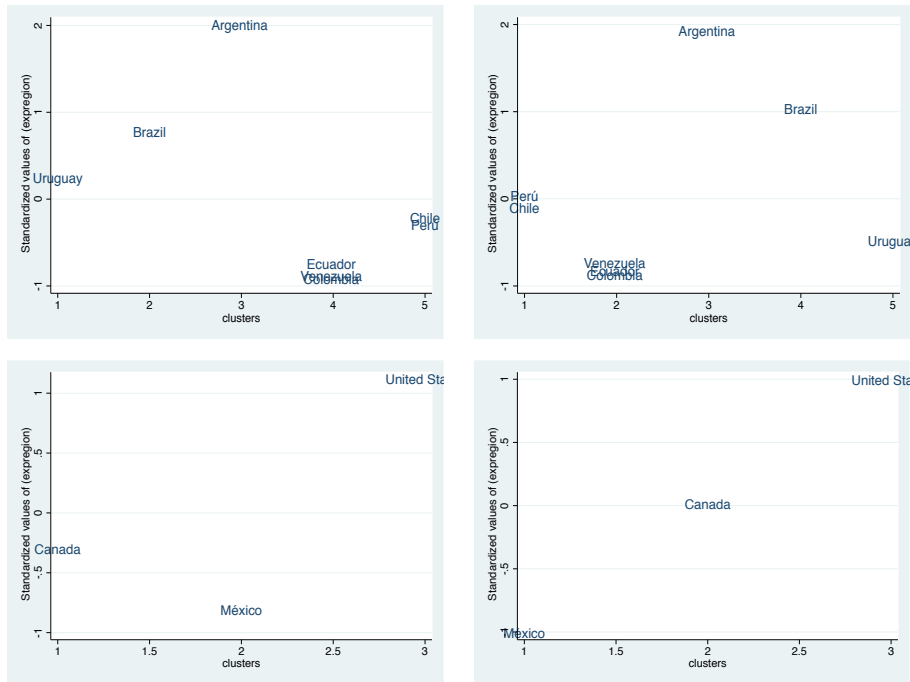


Figure 1.4. Clusters by exports to the region: 1870-1913 (left), 1914-1950 (right)

1.3. REVEALED INTRAREGIONAL PREFERENCES

In light of this descriptive evidence on the behavior of intraregional trade, an attempt will be made to examine the role of each country in terms of its preference for exports or imports to or from the region. We follow Iapadre and Tajoli (2014) who define indices for revealed trade preferences. These indices allow us to observe if a country has a greater preference for exports than for imports or vice versa. According to Iapadre and Tajoli (2014) these indices are not affected by the problems of range variability, range asymmetry and dynamic ambiguity that can arise with other indices (Iapadre, 2006).

The problem of range variability implies that these indices are influenced by the size of the region in terms of total trade, and that they should not strictly be used to compare different regions (Iapadre & Plummer, 2011). The range asymmetry problem means that the range of the index is not symmetrical with regard to the geographical neutrality.³ Finally, the problem of dynamic ambiguity refers to when intra- and extra-regional trade intensity indices move in the same direction.⁴

The revealed import/export preference indices are used as a control for these factors, and to evaluate the propensity for intraregional trade for South and North American countries (Iapadre and Tajoli, 2014). These are formed of two components: the regional trade intensity index (HI_{ir})⁵ and an “extra-regional” trade intensity index (HE_{ir})⁶:

³ When the weight of regional trade is equal to the weight of world trade.

⁴ See Iapadre (2006).

⁵ The maximum value does not depend on the size of the partner.

⁶ It measures the intensity of trade relations between country i and all other countries, except region r .

$$HI_{ir} = (T_{ir}/T_{iw})/(T_{or}/T_{ow})$$

$$HE_{ir} = (1 - (T_{ir}/T_{iw})) / (1 - (T_{or}/T_{ow}))$$

Where: T_{ir} are exports (or imports) between country i and region r . T_{iw} are exports (or imports) between country i and world w . T_{or} are exports (or imports) between the rest of the world (excluding country i) and the region. T_{ow} are exports (or imports) between the rest of the world and the world.

To avoid problems of range asymmetry and dynamic ambiguity, the indices of revealed import and export preferences are estimated by means of the ratio between the difference and the sum of HI_{ir} and HE_{ir} :

$$RMP_{ir} = (HMI_{ir} - HME_{ir}) / (HMI_{ir} + HME_{ir})$$

$$RXP_{ir} = (HXI_{ir} - HXE_{ir}) / (HXI_{ir} + HXE_{ir})$$

In this case, the range goes from minus one (no regional trade) to one (only regional trade) and is equal to zero when there is geographical neutrality. The difference between RMP_{ir} and RXP_{ir} shows the relative⁷ importance of the region in the imports and exports of country i .

Tables 1.1 and 1.2 show the estimation for both the intraregional export preference index (RXP_{ir}) and the intraregional import preference index (RMP_{ir}) for 10 year benchmarks between 1870 and 1950 for the countries of South and North America. Since there is a paucity of data for world totals in 1940, the indices are calculated for 1938.

⁷ It takes into account the volume of trade with the rest of the world.

Table 1.1. Intraregional export preference index

	1870	1880	1890	1900	1910	1920	1930	1938	1950
Argentina	0.46	0.49	0.61	0.19	0.16	0.67	0.36	0.35	0.44
Brazil	0.49	0.32	-0.18	-0.23	-0.12	0.32	-0.29	0.06	0.18
Uruguay	0.65	0.67	0.66	0.19	0.21	0.65	0.31	-0.11	-0.22
Chile	0.59	0.39	-0.27	-0.64	-0.64	-0.47	-0.55	0.05	0.53
Colombia	-0.99	-0.99	-0.71	-1.00	-0.99	-0.92	-0.95	-0.85	-0.83
Venezuela	-1.00	-1.00	-1.00	-1.00	-1.00	-0.72	-0.65	-0.87	-0.02
Peru	0.23	0.46	0.66	0.46	0.42	0.46	0.85	0.63	0.63
Ecuador	-0.08	0.76	0.65	0.25	-0.46	-0.16	0.46	0.7	0.41
Mexico	0.05	0.25	0.66	0.46	0.57	0.44	0.46	0.25	0.75
United States	0.62	0.34	0.50	0.51	0.67	0.39	0.66	0.56	0.65
Canada	0.89	0.56	0.68	0.21	0.53	0.42	0.63	0.41	0.79

Table 1.2. Intraregional import preference index

	1870	1880	1890	1900	1910	1920	1930	1938	1950
Argentina	0.69	0.84	-0.01	0.41	0.19	0.46	0.62	0.33	0.57
Brazil	-0.19	0.29	0.52	0.57	0.44	0.90	0.85	0.67	0.59
Uruguay	0.82	0.84	0.53	0.74	0.44	0.87	0.66	0.38	0.59
Chile	-0.65	-0.73	-0.88	-0.80	-0.80	-0.54	-0.81	-0.77	-0.71
Colombia	-0.98	-0.89	-0.94	-0.98	-0.99	-0.99	-0.93	-0.97	-0.91
Venezuela	-1.00	-1.00	-0.98	-0.98	-0.98	-0.98	-0.99	-0.97	-0.96
Peru	-1.00	-1.00	-0.92	-0.89	-0.93	-0.83	-0.87	-0.66	-0.70
Ecuador	-0.88	-0.81	-0.68	-0.88	-0.98	-0.94	-0.84	-0.81	-0.95
Mexico	0.58	0.55	0.48	0.82	0.79	0.89	0.86	0.47	0.99
United States	0.61	0.53	0.57	0.54	0.49	0.55	0.60	0.63	0.66
Canada	0.60	0.60	0.63	0.84	0.79	0.91	0.88	0.92	0.83

In Figure 1.5, there is a summary of the results obtained by the estimation of a *revealed trade leadership* index which is calculated from the gap between the two indices ($RTL_{ir} = (RXP_{ir} - RMP_{ir})/2$). An index greater than zero implies that the country has a higher intraregional preference for exports than for imports, while a value lower than zero means that there is a higher intraregional preference for imports.

In the case of South America, on the one hand, Argentina, Brazil and Uruguay showed a higher intraregional preference for imports, which means that these countries had an important role as destination markets for the region. In contrast, it was noted that Chile, Colombia, Venezuela, Peru and Ecuador had a higher intraregional preference for exports, which suggests that these countries were more suppliers than consumers in the South America region. Finally, in the case of North America, a higher intraregional preference for imports was observed for most years, for both Mexico and Canada, while in the case of the United States the trend varied.

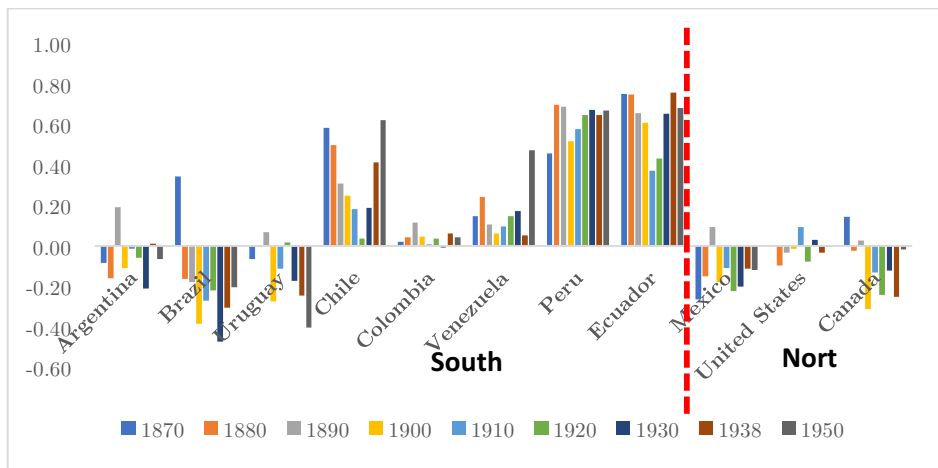


Figure 1.5. Revealed trade leadership index

These results show that there are two different patterns of trade leadership in the South that remain consistent throughout the period, while the US played a key role in the North. Not only did Argentina, Brazil and Uruguay show a different tendency with respect to both the cluster and the index, they also showed no signs of being regional commercial hubs, or of what is called the “US effect” in the North.

As mentioned previously, the regional trade is affected by the participation of the region in world trade. This explains how the propensity to trade within the region decreased during the years of the commodity boom, especially in the South, and why the regional propensity for trade was higher during the Second World War. These factors are explored in the following section in which a gravity model is employed for estimating the determinants of bilateral trade flows.

1.4 REGIONAL TRADE WITH GRAVITY

1.4.1. Gravity model

The gravity model postulates the notion that trade between two countries is proportional to the product of their economic size and inversely related to the distance between them, by analogy with the formula of gravitational attraction between two masses. Since it has worked consistently well as a means of conducting an empirical analysis of international trade (Anderson, 1979; Anderson & van Wincoop, 2003), it has led many authors to suggest new theoretical and methodological foundations for the evaluation of trade patterns.

Early versions of the model took the geographical distance between two countries and their GDP, to explain bilateral trade flows. However, in recent years the literature has stressed the need for a suitable formulation of the model and the variables used in order to obtain

reliable results. In theoretical terms, Anderson and van Wincoop (2003) derive the following micro-founded gravity equation for bilateral trade flows between countries i and j :

$$X_{ij} = \frac{Y_i Y_j}{Y_w} \left(\frac{t_{ij}}{P_i P_j} \right)^{1-\sigma} \quad (Eq. 1.1)$$

Where Y_i , Y_j and Y_w are the nominal incomes from the exporter, importer and world, respectively. σ is the elasticity of substitution between goods from different countries, based on the assumption that $\sigma > 1$ because consumers in country j prefer variety. P_i and P_j are country i 's and country j 's price indices, which Anderson and van Wincoop (2003) call the multilateral resistance terms -MRT-. t_{ij} is the gross trade cost associated with exports from i to j and has to be measured against P_i and P_j .

Anderson & van Wincoop (2003) show that a well-specified gravity model should control for relative trade costs, i.e., the inclusion of the MRT not only takes into account the bilateral trade costs but also those costs relative to the rest of the world. According to Baier & Bergstrand (2009), the MRTs are essential for understanding the impact of border barriers on bilateral trade.

The main issue is that P_i and P_j are not observed and have to be estimated. When considering symmetric trade costs, Anderson and van Wincoop (2003), lay down 41 conditions for market equilibrium and include observed variables like distances, borders and income shares to obtain the MRT terms. The drawback of their method is that it requires a lot of information and hence is not easily replicated (Gómez-Herrera, 2013).

Three alternatives are generally used in the literature to estimate the MRT terms. In the first place, some authors include a remoteness

variable which includes the bilateral distance, and the share of each country's GDP in the world GDP.⁸ However, this is not the most popular alternative because it lacks a theoretical basis. However, other authors include specific effects. For instance, Feenstra (2002) suggested including exporter and importer fixed effects; Baltagi, Egger and Pfaffermayr (2003) include country-pair, exporter-time and importer-time effects and, Egger and Pfaffermayr (2013) include fixed-pair and fixed-time effects. Finally, Baier & Bergstrand (2009) propose an approximation of P_i and P_j through a first-order Taylor -series expansion.

In terms of the estimation method, there is a large amount of literature on the most suitable econometric specifications of the gravity model. Some factors that should be taken into account when the model is estimated are as follows: data structure (cross-sectional or panel data), the possible heteroscedasticity in the error term, the presence of zeros in trade data and the problem of missing data. Additionally, there is no consensus about whether the model should be estimated in levels or in a log-linearized form.

The implementation of the log-linearized equation is supported by the fact that the theoretical construction of the model is a CES multiplicative expenditure function. This specification allows the coefficients to be interpreted as elasticities but omits the pairs of countries for which trade is zero. As has been discussed by some authors, this is undesirable to the extent that a) the missing observations contain information on why low levels of trade are observed (Eichengreen & Irwin, 1998) or b) missing data can occur due to lack of information. Silva & Tenreyro (2006) propose an approach

⁸ $Rm_i = \sum_j \frac{d_{ij}}{(Y_j/Y_{ROW})}$

to deal with the presence of zeros in the dependent variable and heteroscedasticity in the error term, using a pseudo-maximum-likelihood (PPML) technique.

1.4.2. Estimation

As there is no agreement about the best method of estimating the gravity model, the choice has to be made by considering each particular dataset (Martínez-Zarzoso, 2013). An expanded version of the gravity model in log-linearized form is estimated to evaluate the patterns of S-S and N-N trade. In addition to the variables usually included in the gravity model, a variable is included to test if the similarity in terms of the demand structure reduces or increases bilateral trade.

Following the Linder Hypothesis, we then add a variable to capture Differences in Demand Structure (DDS). As we had no systematic information on demand, the absolute value of the difference between the logarithms of per capita GDPs is used as a proxy. A positive estimate of the DDS validates the hypothesis that different income levels have a positive effect on trade. Conversely, a negative result of the DDS variable can validate the Linder hypothesis, which states that most trade occurs when countries have almost the same income category.

Econometric tests of the hypothesis usually proxy the demand structure in a country by its per capita income. According to Linder (1961, p. 17): “To the extent that per capita income determines the demand structure, trade between countries will be more intensive the more equal per capita incomes are”. This variable has been used to gauge differences in DDS by Helpman (1987), Gao (2003) and Baltagi, Egger & Pfaffermay (2003). Our augmented gravity model thus takes the following form:

$$\begin{aligned} \ln X_{ijt} = & \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 \ln dist_{ij} + \beta_4 DDS + \sum_{k=1}^n \beta_k Z_k \\ & + \gamma_{ij} + \delta_t + \varepsilon_{ijt} \quad (Eq. 1.2) \end{aligned}$$

Where i and j represents the exporter and importer countries, respectively, and t represents time. $\ln X_{it}$, $\ln GDP_{it}$, $\ln GDP_{jt}$ and $\ln dist_{ij}$ are the natural logarithms of: the exports⁹, the GDP's¹⁰ of the exporter and the importer countries and, the distance between i and j . $\sum_{k=1}^n Z_k$ represents the set of dummy variables: common border, common language, and whether both countries are from South America (S-S) or North America (N-N). Finally, γ_{ij} are country-pair specific effects and δ_t are specific time effects.

The literature has widely documented the problem of the availability and accuracy of trade data for some countries during the late 19th Century and a part of the 20th Century. To the best of our knowledge, this work represents the first attempt to evaluate South-South trade since 1870, with the aid of a new historical database of bilateral trade (see Appendix).

In this study, there is an analysis of the patterns of bilateral trade for South America (Argentina, Brazil, Uruguay, Colombia, Ecuador, Peru, Venezuela and Chile), and North America (Mexico, United States and Canada), by examining the largest number of trading partners of these countries for which information on bilateral trade is available. Bolivia and Paraguay are excluded from the sample because no GDP information is available for much of the period analyzed. Central

⁹ The gravitational theory suggests considering uni-directional trade, rather than averaging trade flows (Baldwin & Taglioni, 2006). Therefore, we have the exports in each direction for every country-pair.

¹⁰ GDP_j and GDP_i are proxies for demand and production. Note that the theoretical gravity model is based on aggregate GDP, not per capita GDP.

America was also not included in this study for the same reason, as well as the serious lack of information on bilateral trade before the 1950s.

Since we are interested in measuring the effects of time-invariant variables and this is impossible with the Fixed Effects model, Equation (1.3) is estimated by Feasible Generalized Least Squares (FGLS), following the formulation proposed by Mundlak (1978).¹¹ This formulation includes within and between effects and has been recently used by other authors (Egger and Url, 2006; Martínez-Zarzoso *et al.*, 2014). This methodology allows for the control of unobserved heterogeneity and, in turn, the estimation of time-invariant causes of the dependent variable.

The estimation was made for two periods (1870–1913 and 1914–1950) with standardized data, and then the coefficients for the periods were compared (Table 1.3). In both cases, the signs for GDP and distance are as expected, but the impact of the three variables on exports is higher in the first period.

Table 1.3. Gravity model

Dependent variable: Exports (log)	(1) 1870-1913	(2) 1914-1950
Exporter's GDP (log)	.6346*** (.0300)	.5320*** (.0210)
Partner's GDP (log)	.7181*** (.0289)	.3061*** (.0204)
Distance (log)	-1.317*** (.1067)	-.9418*** (.1018)

¹¹ This approach allows for the correction of selection bias emerging from the correlation disturbances (Wooldridge, 1995).

Common border	.3771 (.2376)	-.5240*** (.1360)
Common language	.0118 (.0995)	-.2696** (.1291)
DDS	-.1448*** (.0176)	-.0682*** (.0144)
S-S	-1.041*** (.1983)	.3786*** (.1455)
N-N	-3.022*** (.2484)	-1.059*** (.1812)
S-S* (WWI)	-	.0382 (.0307)
N-N* (WWI)	-	-.0429 (.0335)
S-S* (WWII)	-	.2257*** (.0245)
N-N* (WWII)	-	.1307*** (.0312)
S-S* (Great Depression)	-	-.1343*** (.0219)
N-N* (Great Depression)	-	-.1686*** (.0264)
<i>Number of observations</i>	6767	9347

Robust standard errors in parentheses. *Significant at 10%; **significant at 5%;
***significant at 1%

Contrary to expectations, Table 1.3 shows that sharing a border and language did not increase the propensity to trade. Both variables form a part of the natural reduction of transaction costs expected between neighbors with similar institutions. According to Bethell (1991, p. 587-88), geographical and topographic factors were responsible for the poor land transport infrastructure between border countries and this counter-intuitive result is independent of the maritime distance captured by the model (see Limão and Venables, 2001).¹²

On the other hand, a negative propensity for regional trade in the Americas is confirmed for both the North and the South in the first period. The commodity boom in Latin America and North America had an adverse effect on regional trade and this is consistent with the trend observed in Figure 1.3 for the first part of the period. Although the coefficient of North America in the period 1870-1913 is reduced in the second period, it is still negative. This means that, on the basis of the assumptions of the gravity model, Regional N-N and S-S trade grew less than it should have done.

Additionally, both regions decreased its regional propensity to trade during the Great Depression, while they show a positive propensity during the Second World War. In this case, the propensity to increase regionalization was higher in the South than in the North due to the lower involvement of the South in the 2nd World War.

The results displayed in Table 1.3 also confirm our second hypothesis on the importance of the Difference on Demand Structure (DDS) determinants on the regional propensity to trade. As mentioned previously, this variable shows that more regional trade occurs when countries have a convergent regional demand structure, which is

¹² For the influence of cultural proximity by language on bilateral trade see Felbermayr and Toubal (2010).

reflected by income differentials. This result validates the Linder hypothesis, and confirms that the demand structure is one of the key explanatory variables in the waves of trade regionalization in South and North America.

Finally, in order to give more robustness to this demand structure hypothesis, we examined the types of products exchanged by Argentina and Brazil, which showed a positive propensity to trade within the region and between them. The information for selected years for Argentina and Brazil is summarized in Table 1.4. The selection of these countries allows a long-term comparison, both due to their size but also to the stability of their bilateral trade relations.

In spite of the problems with some historical sources, we have drawn on the most disaggregated information at our disposal. It should be noted that, in the early years, we were confronted by a low level of disaggregation, which can be observed in Table 1.4, where, for example, in a specific year there were no manufactured products. However, this does not affect our analysis because we are concerned with assessing trends with regard to the respective products that these countries were trading.

Table 1.4. Bilateral trade between Argentina and Brazil (exports)

Group	Argentina to Brazil		Brazil to Argentina	
	<i>Main Products</i>		<i>Main Products</i>	
<i>1870</i>				
Primary	98.6%	01 - Meat and meat preparations: 85%.	96.5%	06 - Sugars, sugar preparations and honey: 59%
Manufactured	1.2%		--	

1. The roots of regional trade in the Americas

Other and unclassified	0.2%	04 - Cereals and cereal preparations: 6.6% 00 - Live animals: 2.5%	3.5%	12 - Tobacco and tobacco manufactures: 17.5% 07 - Coffee, tea, cocoa, spices, and manufactures thereof: 9%
<i>1885</i>				
Primary	93.1%	01 - Meat and meat preparations: 59.3% 04 - Cereals and cereal preparations: 23.2% 08 - Feeding stuff for animals (not including unmilled cereals): 9.2%	97.1%	07 - Coffee, tea, cocoa, spices, and manufactures thereof: 65.4% 12 - Tobacco and tobacco manufactures: 20.6% 06 - Sugars, sugar preparations and honey: 4.5%
Manufactured	3.6%		2.5%	
Other and unclassified	3.3%		0.38%	
<i>1892</i>				
Primary	97.6%	04 - Cereals and cereal preparations: 68% 01 - Meat and meat preparations: 19.6% 08 - Feeding stuff for animals (not including unmilled cereals): 3%	97.1%	07 - Coffee, tea, cocoa, spices, and manufactures thereof: 83.4% 12 - Tobacco and tobacco manufactures: 4.1% 04 - Cereals and cereal preparations: 3.2%
Manufactured	0.9%		--	
Other and unclassified	1.5%		2.9%	
<i>1901</i>				
Primary	95.7%	04 - Cereals and cereal preparations: 61% 01 - Meat and meat preparations: 24.4% 00 - Live animals other than animals of division 03: 6.8%	99.7%	07 - Coffee, tea, cocoa, spices, and manufactures thereof: 92.3% 05 - Vegetables and fruit: 2.5% 12 - Tobacco and tobacco manufactures: 2.1%
Manufactured	3.7%		0%	
Other and unclassified	0.6%		0.3%	
<i>1912</i>				
Primary	88.8%		93.8%	

1. The roots of regional trade in the Americas

Manufactured	--	04 - Cereals and cereal preparations: 86.8%	--	07 - Coffee, tea, cocoa, spices, and manufactures thereof: 83.5%
Other and unclassified	11.2%	01 - Meat and meat preparations: 1.3%	6.2%	12 - Tobacco and tobacco manufactures: 9.8%
		21 - Hides, skins and furskins, raw: 0.7%		24 - Cork and wood: 0.5%
<i>1924</i>				
Primary	94.6%	04 - Cereals and cereal preparations: 86,8%	98.8%	07 - Coffee, tea, cocoa, spices, and manufactures thereof: 70.3%
Manufactured	5.3%	05 - Vegetables and fruit: 3,8%	0.7%	05 - Vegetables and fruit: 9.9%
Other and unclassified	0.2%	61 - Leather, leather manufactures, n.e.s., and dressed furskins: 2,3%	0.5%	24 - Cork and wood: 9.1%
<i>1936</i>				
Primary	91.2%	04 - Cereals and cereal preparations: 91.2%	82%	07 - Coffee, tea, cocoa, spices, and manufactures thereof: 42.7%
Manufactured	0.4%	79 - Other transport equipment: 0.4%	0.2%	05 - Vegetables and fruit: 17.4%
Other and unclassified	8.4%	33 - Petroleum, petroleum products and related materials: 8.4%	17.8%	12 - Tobacco and tobacco manufactures: 5.5%
<i>1948</i>				
Primary	97.9%	04 - Cereals and cereal preparations: 81.5%	69.4%	24 - Cork and wood: 34.5%
Manufactured	1.9%	05 - Vegetables and fruit: 10.6%	30.0%	07 - Coffee, tea, cocoa, spices, and manufactures thereof: 19.6%
Other and unclassified	0.2%	29 - Crude animal and vegetable materials, n.e.s.: 1.6%	0.6%	65 - Textile yarn, fabrics, made-up articles, n.e.s., and related products: 15.5%

The information was standardized by drawing on the SITC Rev.3 as a means of classifying the goods that were being traded: we have used two-digit codes to classify products into primary goods (00-29), manufactured goods (32-89) and other or unclassified (91-97).

As shown in Table 1.4, until almost the third quarter of the 20th Century Argentina and Brazil mostly traded in a small range of commodities. A century earlier, there were important changes in the type of commodities exported by Argentina to Brazil, ranging from mostly meat and processed meat in the 1870s and 1880s to (largely) cereals and cereal products before the First World War. In the same period, there was a steady trend in exports from Brazil to Argentina, first in sugar and tobacco and later in coffee and other products such as yerba mate tea, vegetables and fruit, cork and wood.

With the exception of Brazil (in 1948), the exports mainly consisted of primary products. Until the mid-20th Century, the reciprocal demand structure of one of the most intensive bilateral trade relations in South America, was characterized by similar demand import structures with labor-intensive products, a factor which is strengthened by the findings obtained from the inclusion of the DDS variable in the model. Clearly, this exercise does not allow us to include land transport costs or evaluate other hypotheses to explain the failure of regional trade since this goes beyond the structure of demand and involves additional geographical and institutional factors.

1.5. CONCLUSION

Compared with other regions like Europe or South-East Asia, South America possessed a smaller share of regional trade during the late 19th

Century and much of the 20th Century. Our results confirm the conventional view of the existence of a historical ‘handicap’ with regard to regional trade in the Americas, especially during the commodity boom of the period of Atlantic globalization. Intra-regional trade, both in the North and in the South, showed a similar bias during the first period of globalization (negative) and the Second World War (positive).

Cultural proximity did not contribute meaningfully to overcome the problem of other negative variables discussed in the literature such as potential geographical difficulties in common borders, high regional shipping costs, and weak financial and trade networks. In addition, our analysis supports the hypothesis that the failure of regional trade is not due to similar demand structures but precisely the opposite. Contrary to expectations, regional trade in the North was lower than in the South when measured by gravity standards. This is consistent with the Linder hypothesis that maintains that, regardless of the volume of demand, regional trade was greater when the income gap between countries was narrower. Thus, the demand structure is one of the key explanatory variables in the waves of trade regionalization in South and North America.

In the case of South America, and unlike the “US” effect in the North, there was found to be an absence of a commercial hub that could have affected the overall performance of the region. In this chapter, we put forward the belief that the fragmented trade found for the whole region, can be viewed differently if account is taken of the differences between the countries of the region, in terms of the size of the volume of trade and intra-regional trade preferences.

Following this strategy, and by conducting a cluster analysis, we found there were five different groups in terms of the volume of exports to

the region, with Argentina and Brazil at the top and Colombia, Ecuador and Venezuela at the bottom, and two types of sub-regions in terms of revealed intra-regional trade leadership. In this case, Argentina, Brazil and Uruguay played a destination marketing role while Chile, Peru, Colombia, Ecuador and Venezuela were mainly origin markets.

Clearly, this initial exercise does not allow us to include regional land and shipping transport costs or evaluate other hypotheses that can explain the failure of regional trade. These go beyond the structure of demand and caused by additional geographical and institutional factors that require, without any doubt, further investigation.

2

BEYOND COFFEE: THE EXTENSIVE AND INTENSIVE MARGINS OF COLOMBIAN EXPORTS BETWEEN 1922 AND 1950

2.1. INTRODUCTION

During the 19th Century, Colombia only had transient export booms and was isolated from foreign capital flows. According to Palacios (2009), even at the beginning of the 20th Century, in 1913, British investment in the country represented between 0.63% and 1.09% of the total amount for Latin America and in 1915, the figure for the United States was between 0.16% and 1.6%. Colombia certainly had problems in joining the world market. The export trajectory showed a slightly diversified economy, where after gold, three products played a leading role: tobacco, cinchona bark and coffee. It is thus not surprising that there was a lag in the Colombian economy compared with the other countries in the continent.

As was seen in the last chapter, Colombia is undoubtedly one of the countries that was least integrated with its partners in South America between 1870 and 1950, but for much of this period this problem was internal as well. The distances from the production centers to the ports were considerable and added to this, were factors such as topography, difficult weather conditions and bad roads. In fact, the Colombian

Andean regions where there were good prospects for cultivating coffee, were quite isolated. According to Echavarría (1999), internal transport costs were always greater than those incurred by international trade. The lack of effective internal communications not only meant significant freight charges but also greater delays. Although transport costs were seasonal and varied a good deal depending on the weather conditions, it can be assumed that they declined during the period especially in the 1920s, when the Colombian transport system was improved.

Until the 1920s, in South America (and even throughout Latin America), exports largely consisted of natural resources. However, the nature of the exports varied between countries. In the case of Colombia, coffee exports not only supported the economy for much of the 20th Century, but also played a key role in improving the transport system. In fact, it became a means of national integration, which was necessary owing to the diverse geographical features of the country.

With regard to the geographical distribution of coffee exports, before the First World War, almost all Colombian exports were shipped abroad to the commission houses of the United States and Europe, the main commodity markets, in order of importance, being New York, London and Hamburg. These commission houses were very important for Colombian trade, since they bought and sold most of the Colombian exports and also controlled a large part of the purchases made by the country abroad (Bell, 1921).

The closure of the European markets as a result of the First World War accentuated the degree of Colombian dependence on the United States. Several authors have confirmed the close relationship of Colombia with the US market. In the 1920s the percentage of Colombian exports to that country accounted for 80% of its total

volume of trade, while imports were about 45%. According to Echavarría (1999) these values are atypical for Latin America, even when compared with other countries that depended on coffee exports.

After the war, the Colombian traders came to value the proximity of the markets in New York. With regard to Europe, Bell (1921) pointed out that “the United States possesses the great advantage of closer proximity to Colombia (the market centers of Europe being nearly two and one-half times farther than the American)”. But, according to McQueen (1926), Colombia had close trade links with the United States at a time when most Latin American markets depended on European countries.

Thus, proximity was not the only factor as some Central American coffee producers exported more goods to Europe than to the closest US ports. As Echavarría (1999) points out, local firms apparently sought markets where their products, especially coffee, could be sold and profits made in the shortest possible time. Palacios (2009) argues that in the United States corporations were more flexible than their European counterparts, and hence the United States began to replace Europe as the main consumer of coffee in the world.

The closure of European markets in 1939 was offset by an increasing demand for coffee by the United States. In this case, as Palacios (2009) argues, the collapse of the price of coffee was seen by the United States as a problem that could have political repercussions in Brazil, Colombia and Central America. As a means of countering the possible emergence of pro-fascist forces, they decided to finance the inventories that were accumulating in the producing countries.

Between the 1920s and 1950s, Colombia was regarded as a mono-export economy. Coffee dominated the country's exports; actually, some authors have noted that this product has given rise to the effects

of the Dutch disease (Meisel, 2010). It is therefore not surprising that the analysis of Colombian trade has been mainly based on the coffee market. However, there is a gap in the literature since there is a need for a more detailed analysis of export data to assess the extent of all the other products exported by the country, in terms of numbers and markets, especially in a period when industrialization took off.

One way to assess trade volumes by product, which in many cases are close to or equal to zero, is through an analysis of extensive and intensive export margins. This is not only important to measure the volume of what each country exports (intensive margin) but also to determine how new export relations are established or current relations abandoned (extensive margin). In fact, several recent studies on the evolving pattern of international trade, have recognized the importance of analyzing both margins of trade. Felbermayr and Kohler (2006) provide descriptive evidence of the role played by both margins in world trade in the manufacturing industry since the end of World War II. Furthermore, according to Besedeš and Prusa (2011) the fragility of trade relationships is an important factor underlying the longstanding differences in export growth between countries.

In the case of many countries, most of the growth in exports takes place at the intensive margin. This is due to the deepening of trade relations caused by increasing specialization. However, the growth at the extensive margin of exports is of crucial importance for developing countries. The diversification of exports at the product and market level is beneficial because it reduces the risk of shocks in international markets. A concentration of exports means that when prices in global markets fall, the terms of trade shocks may adversely affect investment and even consumption.

In the literature, the data on trade growth are broken down in different ways depending on the level of data disaggregation. Hummels & Klenow (2005) define the margins at a fairly disaggregated trade level, Evenett and Venables (2002) at a country-product level, while Helpman, Melitz & Rubinstein (2008) and Felbermayr and Kohler (2006) define it at the country level. The profitability of exports varies by destination, and thus it is higher if there is a high demand and low costs (either fixed or variable).

Here, the analysis of the Colombian exports relies on a framework of the margins of exports in a period when industrialization coincides with an increase in the range of exported products. Hence, we disaggregate the data at a product-country level. The purpose of this is to evaluate the skill intensity and growth rate of exports, according to the value added per worker within each production category, while taking into account the findings of the country's first industrial census. It is expected that it will be found that an essential factor driving the results is that differences in productivity have an impact on exports.

The starting point for this inquiry is to take the yearbooks of foreign trade for Colombia from 1922 to 1950 and then categorize them with the aid of the Standard International Trade Classification, Rev.4 (see Appendix). The goal of this chapter is to evaluate how variables of competitiveness and trade costs are potential determinants of both the size and the market opening/exiting of Colombian exports, in the industrial “take-off” period of the country. This is based on the assumption that through the separation of coffee and oil exports the contribution of each margin to the export growth is going to have a different pattern, in a situation where the extensive margin can play a greater role. If trade grows at the extensive margin, this can be interpreted as export diversification. Separating coffee will make it possible to discern the almost invisible role of other Colombian exports

in the period. The purpose of this is to connect the history of the beginnings of the industry with the external markets.

2.2. PRODUCTION AND TRADE

In the early 20th Century, the real exports per capita of Colombia were only 36% higher than when it ceased to be a colony and the country remained as one of the Latin American countries with the lowest levels of external opening, foreign investment and railway construction (Ocampo, 2013). Since the mid-19th Century, Colombia experienced, in some cases with less success than others, the production and export of various goods. Ocampo (2013) classifies these products, in accordance with their relative importance to Colombian exports, as primary, secondary and marginal.

However, despite the range of goods in the export basket, there was a clear trend that showed the three major export products accounted for over 60% of total exports, a proportion that reached values of over 90% in some years of the early 20th Century. Figure 2.1 shows the changing pattern of the export shares for the main products between 1922 and 1950.

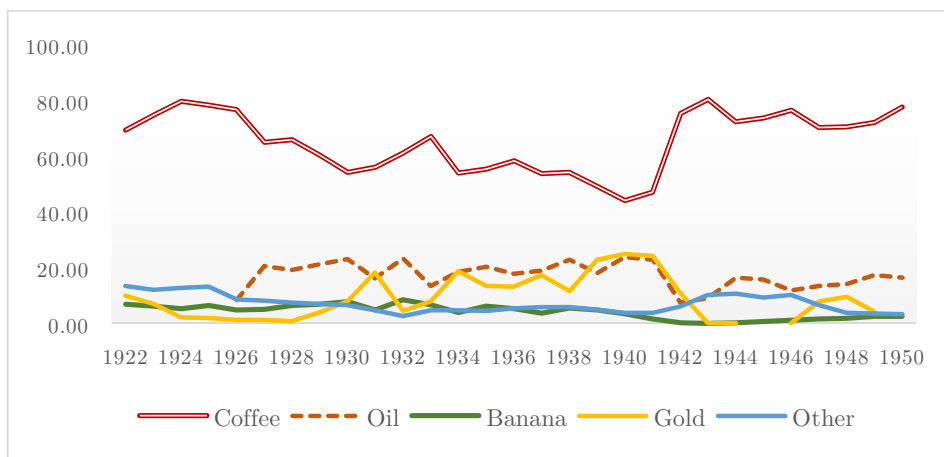


Figure 2.1. Main products. Share of total exports

The importance of coffee exports in the Colombian economy¹³ during the period of our analysis is undeniable; in fact, the country was considered by some authors to be a mono-export economy. In terms of cultivated areas and employment rates, coffee was (at least until 1940) the primary sector of the economy (Palacios, 2009). In 1922 and 1950 coffee accounted for 68.8% and 77.8% of the total exports of the country respectively, and the United States imported 81.9% and 90.5% of these exports¹⁴.

With regard to the relationship between coffee and other exports, it is worth asking whether during this period the Colombian economy may have suffered from the effects of Dutch disease¹⁵. Echavarría (1989, quoted by Wunder, 1992) argues that in the 1930s and 1940s the low

¹³ The impact of coffee exports on the State revenue was indirect because it generated the foreign exchange inflows needed for imports, and import tariffs were the main source of income for the State until the 1950s, since no taxes were levied on exports. In 1927, a "tax" was introduced on coffee exports and other "taxes" were imposed in the 1930s and 1940s, but the money obtained from this was reinvested in the coffee guild. Exports taxes were so insignificant in Colombia that in 1938 they only accounted for 3.5% of total foreign trade taxes (Echavarría, 1999).

¹⁴ Although, early in the century, Colombian producers sought to comply with European requirements in terms of taste and the packaging of the coffee beans, after the First World War the production processes were designed to meet the demands of the US buyers (Palacios, 2009). At that time, the United States was the largest coffee-consuming country in the world (Bell, 1921).

¹⁵ From a simplified standpoint, this phenomenon arises when a product in export boom generates significant foreign exchange for the country, which increases national income and the demand for both tradable and non-tradable goods. The former have perfect trade substitutes in the international market and thus their prices are determined exogenously. The latter are not traded abroad and hence their prices are determined by domestic supply and demand, and as a result, their prices increase when there is greater demand. The change in relative prices in favor of the non-tradable sector leads to greater wages in this sector, generating a displacement of mobile production factors. Thus, in addition to the change in relative prices there will be a change in production in favor of non-tradables at the expense of tradables.

income from coffee exports and the low inflow of foreign capital, led to a shift in relative prices in favor of industrial goods, thus giving rise to "Dutch benefits". Figure 2.2 shows that, apart from the fluctuations in the real exchange rate, the fall in the international price of coffee effectively reduced the value of coffee exports. In fact, the real revaluation between 1923 and 1929 was also accompanied by a fall in the international price of coffee when measured by the share of its exports.

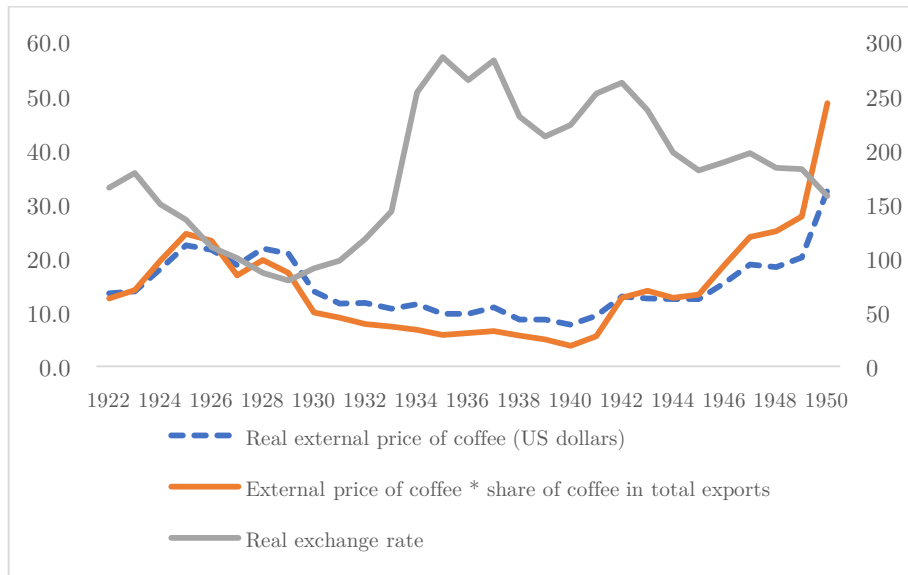


Figure 2.2. Real exchange rate and real external price of coffee

Figure 2.3 shows that the manufacturing and handicraft industries increased their share of GDP, while the share of the "other" category, where non-tradable sectors are located, remained virtually constant during the period. Thus, the appreciation of the real exchange rate was not reflected in a greater participation of the non-tradables sector (to the detriment of tradables) in production. In view of this, it is plausible

to argue that in this period, there were “Dutch benefits” in terms of what happened to the industrial sector.

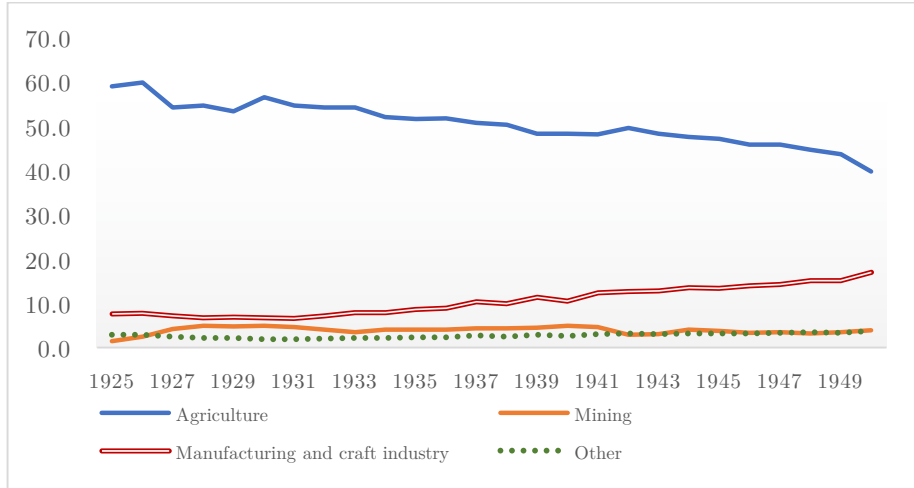


Figure 2.3. Contribution to GDP by sector

The revaluation of the real exchange rate, may have encouraged investment in production of tradable goods by reducing the relative cost of imports of capital goods, especially when they were trade substitutes for imports. This positive effect on industry, however, was the opposite of what could have happened in the agricultural sector (as seen in Figure 2.3). As Meisel (2010)¹⁶ argues, the phenomenon of “de-industrialisation” arising from Dutch disease, may not be applicable to an economy that is at an early stage of development. In this case, most of the tradable sectors comprise agricultural and non-industrial products. Therefore, the effect could rather be described as “de-agriculturalization”.

¹⁶ Meisel (2010) found that the Dutch disease explained the low performance of Colombian Caribbean banana exports in the same period. However, since this was based on a partial equilibrium analysis, the results could not be generalized.

In fact, in terms of production, there was little industrial activity before the 1930s, but it grew rapidly from that time. According to Echavarría and Villamizar (2006), Colombia is one of the few Latin American countries where the industrialization process corresponds fairly closely to the description of ECLAC, [Economic Commission for Latin America and the Caribbean] which states that the crisis of the 1930s marked the launch of the industrial sector in the region¹⁷.

Colombia's industrial growth during the 1930s was greater than that of any other Latin American country (Echavarría, 1999) in contrast with what had happened in previous decades in the large countries of the region. The findings of the First Industrial Census of the country (1945) showed that the number of industrial plants set up between 1929 and 1940 was 5.3 times greater than the number established in 1921-1929 (Echavarría and Villamizar, 2006). The sectors where a larger number of companies were set up were food, drinks, snuff, textiles and clothing, paper and printing and chemicals.

In 1945, industrial production was led by consumer goods (80.7%), followed by intermediate goods (16%) and a very low share of capital goods (3.3%). In fact, a more detailed examination reveals the great weight attached to industries of low added value and limited technological progress within the large sectors (Arango, 1983).

2.3. GEOGRAPHICAL DISTRIBUTION OF EXPORTS

Between 1922 and 1950, the country exported a large range of agricultural commodities and manufactured goods, although the diversity of the export basket is almost never discussed, because of the sheer volume of coffee and even oil exports during that period. As well

¹⁷ The limited evidence available for the period from 1900 to 1925 suggests that industrial growth was low (Arango, 1983).

as the need to calculate the share of the value of Colombian exports for each region, it is essential to evaluate the geographical distribution of these exports in terms of the number of products.

Figure 2.4 shows the series obtained when we calculate a coefficient used to measure the number of items¹⁸ exported by Colombia to each region out of the total number of exported products per year, which was about 153 items on average during the period. Note that although this ratio for each region should be less than, or equal to, 100, the sum between regions does not need to be 100; for example, of the 108 product categories exported by Colombia in 1928 to 38 destinations, America bought 98 and European countries 73. This gives us additional information about the increase or decrease in the number of items exported by the country to each region in a given year, and removes the bias caused by the volume of coffee and oil exports.

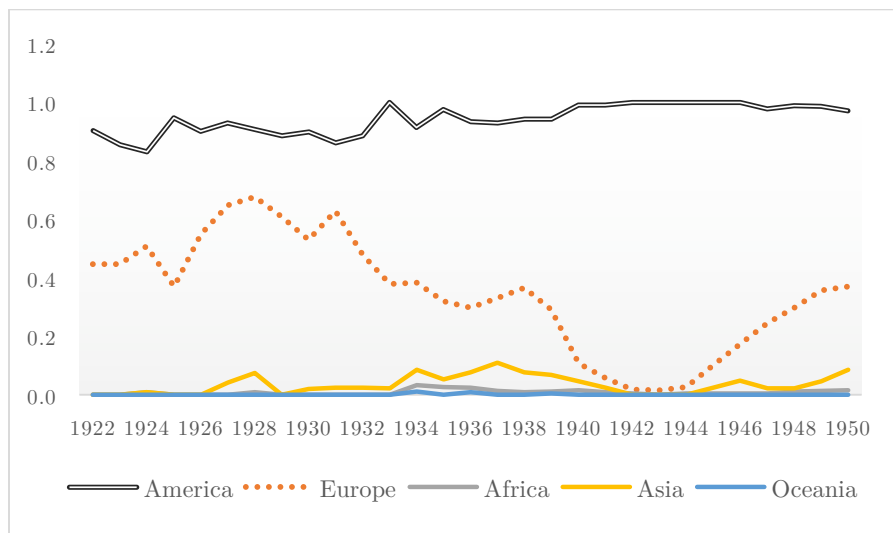


Figure 2.4. Share of the number of products exported by region

¹⁸ SITC Rev. 4 (4-digit level data).

It is observed that America is the continent to which a wider range of products is exported, followed by the countries of Europe and, the other regions appear like markets hardly relevant for Colombian exports. However, since the end of the twenties, the European market had a declining share of Colombian exports and during the Second World War it became practically nil. Germany, France and the United Kingdom were the European countries that bought most Colombian products before the war; however, following a significant increase in the amount of goods that entered that market between 1924-25 and 1927-28, there was a general decline in the imports of Colombian products.

As we have seen, America is the region to which the country exported the widest range of its products. As shown in Figure 2.5, the number of products exported to the region remained relatively stable until 1935. In 1936, the number of items exported to South America almost tripled, and from 1939 onwards, trade also grew with Central America and the Caribbean. During the war, there were variations that intensified trade within the countries of South America, in contrast with the European market. In 1946, Colombian exports went up to Europe and went down to South America.

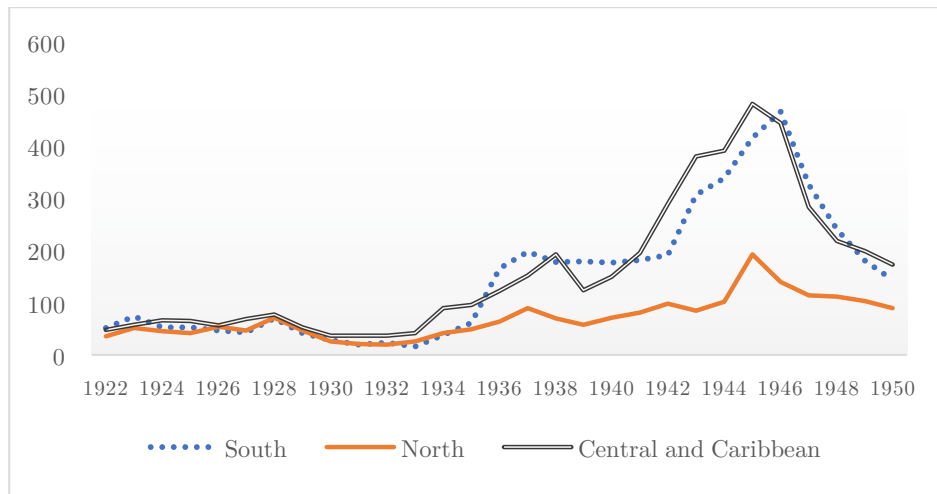


Figure 2.5. Number of products exported to America

Thus, the growth in exports to South America at the end of the period seems to be a consequence of the commercial blockade during World War II, and in the aftermath (between 1945 and 1946) the number of goods exported to the whole region declined. That is, Colombia became more integrated with these countries in terms of the number of products exported, but the durability of this trade was subject to an external shock. The expansion in this market was due to the scarcity of some products, which allowed for greater regional integration.

2.4. MARGINS OF EXPORTS

From 1922 onwards, Colombia maintained a relatively constant number of trading partners for its exports and, by 1936, this number had doubled. However, as shown in Figure 2.6, the number of partners was reduced to the levels of the early 1920s during the Great Depression and in the last years of the Second World War. This shows that in terms of the number of products, the effect of the Great Depression was of great significance. In fact, between 1933 and 1937

the number of exported products grew rapidly, followed by a slight fall until 1940, when it grew again to a maximum of 275 product categories in 1942. After this from 1945, there was a new fall in the number of products exported.

A plausible explanation for the behavior of Colombian exports during this period, in terms of the number of products rather than their value¹⁹, is that it had a U-shape. In other words, there was an initial phase of specialization, followed by diversification and then, a new phase of specialization. This confirms that the "boom" in the exports of Colombian products that occurred after 1940 was a result of the closure of the global markets caused by the war, rather than the result of the success of firms in boosting exports.

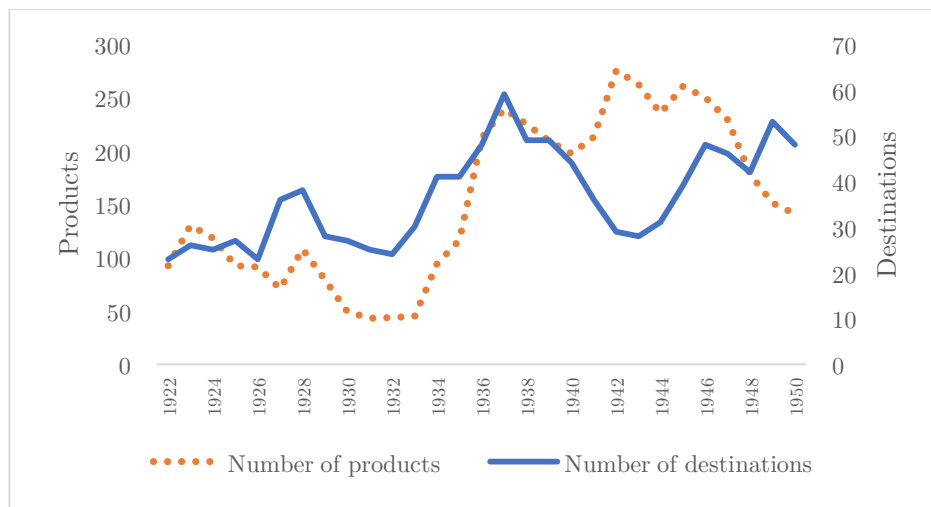


Figure 2.6. Colombian exports by number of products and countries

¹⁹ Obviously in terms of value of exports, Colombia was fairly specialized during this period.

In this section, there is an evaluation of the growth rates of export relations (product-destination pairs), which involves disaggregating the margins of exports in intensive trade (selling more of the same products to traditional trading partners) and extensive trade (new flows of exports in terms of new products and/or new trading partners) in their respective components. The importance of the diversification of exports (as reflected in the extensive margin) is the reduction of risks caused by the volatility of international price fluctuations and external shocks. However, in the case of many developing countries, export relationships often do not survive beyond a few years.

Although there are many ways of defining the extensive margin of exports, export relations in terms of both margins, are defined according to Figure 2.7. As said by Reis & Farole (2012) in this case, the relationships are not only revealed more clearly along the intensive and extensive margins, but also make it possible to see the scale of the decline and disappearance of exports. On the side of the intensive margin of trade not only can the share of the existing flows be seen in the growth of exports, but also the effect of the decline and disappearance of the exported value of the existing products in the traditional markets. In the case of the extensive margin, the most common effect is growth relative to the existing products entering new markets.

	Old market	New market
Old product	Intensive margin	Extensive margin
New product	Extensive margin	Extensive margin

Figure 2.7. Export Relationships (country-product pairs)

In the case of Colombia where the export portfolio was concentrated on coffee, it was expected that an increase in exports could be explained by the growth in the intensive margin. Thus, an attempt was first made to calculate the growth rates for the complete data, that is, including coffee. The results confirm that growth in exports during the period can be explained as 88.6% for the intensive margin and 11.4% for the extensive margin. In view of this, it was decided to repeat the procedure by excluding coffee and then excluding both coffee and oil.

In addition, we thought it would be worth finding out whether the industrial sectors that were contributing most to the growth in industrial exports were of greater or less added value. In Table 2.1, there is a value-added index per worker for each of the subsectors of the First Industrial Census of Colombia of 1945, and this is drawn on to define the skill intensity. On the basis of the defined subsectors, it is possible to concatenate the information about the products of the subsector within the census, with the products of the foreign trade yearbooks.

Table 2.1. Value-added index per worker by subsector

Subsectors	VA/L
Tobacco	64.4
Other Manufacturing	67.9
Clothing	72.5
Wood and wood products	83.0
Leather	83.8
Food	84.6
Paper pulp and paper products	93.6
Textiles	94.4
Metallurgy, manufacturing of machinery, basic metals	110.0

Non-Metallic Minerals	110.3
Chemicals	112.6
Precision instruments and precious metals	130.4
Publishing and printing	141.1
Rubber and plastic products	160.0
Drinks	179.5
Derivatives of mineral fuels	196.3
Total	100.0

Source: First Industrial Census of Colombia (1945) and Jaramillo, Meisel and Ramírez (2016)

In this way, we defined the categories that correspond to more-skilled products, that is, those with a VA/L higher than the median of the industry. Thus, the more-skilled categories were those corresponding to the following: metallurgy, non-metallic minerals, chemicals, precision instruments, publishing and printing, rubber and plastic products, drinks and fuel derivatives.

Obviously, the allocation of VA/L to exported products is subject to selection bias and to the fact that this census is only available for one year, so that it can be assumed that it remained constant during the period. However, it would not be a unfeasible assumption since the growth rate of aggregate labor productivity for the industry between 1930 and 1945 was 4.98% and between 1945 and 1965 was 3.97%²⁰, and thus the change was not very significant.

Figures 2.8 and 2.9 show the results for more-skilled and less-skilled products²¹. Figure 2.8 shows that although coffee was not included, the

²⁰ Figures shown by Echavarría (1999).

²¹ Although coffee is excluded in both cases, the labor productivity of the sector represented only 60% to 100% of what took place in the non-agricultural economy,

growth of exports mainly occurred at the intensive margin (73.9%), 62.9% of which correspond to products with an above average VA/L. However, we question the role of oil exports in the previous result, since much of the volume of Colombian industrial exports during the period had small added value. Figure 2.9 shows the results of the exercise, but leaves out coffee and oil exports.

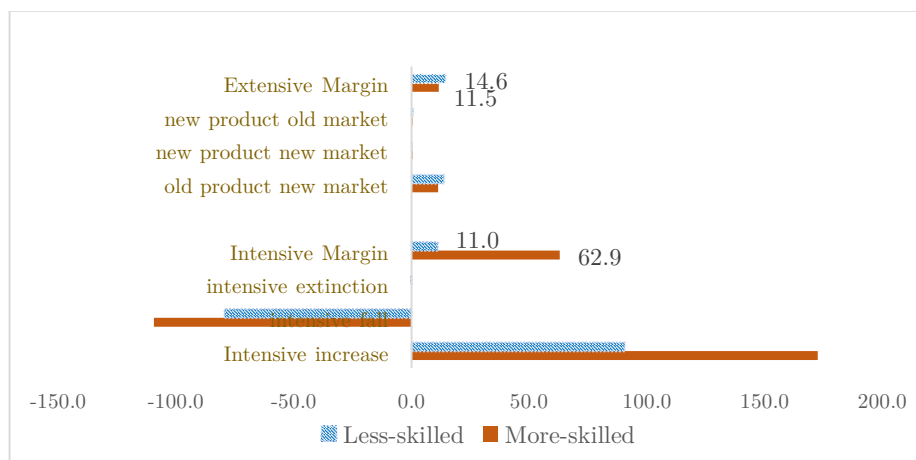


Figure 2.8. Breakdown of export growth without coffee

Two important conclusions can be reached: the first is that the growth of other exports occurred more evenly, although they were greater, at the extensive margin, especially because of the exports of old products to new markets. This meant that new products had a low survival rate in foreign markets. The new products did not feature prominently in either the new markets or the existing markets, where "the rules of the game" were best known. The second conclusion is that low value-added per worker predominated in the export basket. That is, the growth in exports with less skills corresponded to 49.8% in the extensive margin

but according to Echavarría (1999) it was higher than average for agriculture. In the census, the coffee threshers formed a part of the food sector (i.e. less-skilled labor).

and 37.6% in the intensive margin. Thus, the export basket of manufacturing products can be characterized as “low industrial value added”.

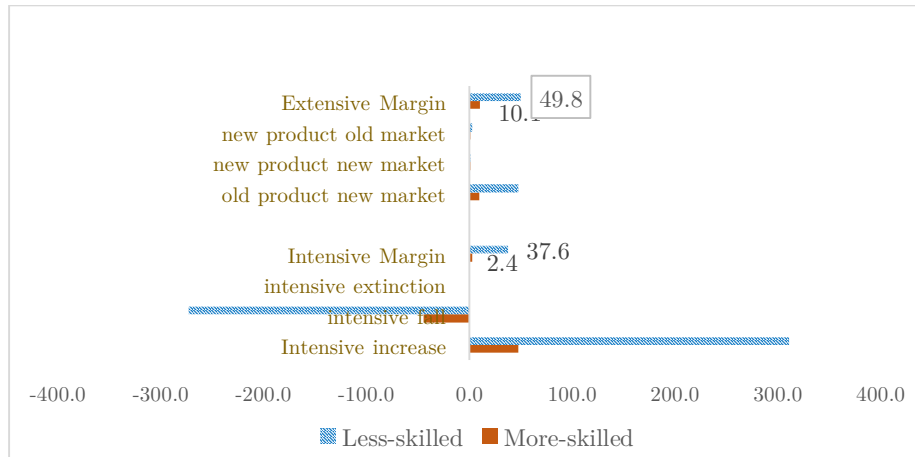


Figure 2.9. Breakdown of export growth without coffee and oil

The new industrial production involved consumer goods and intermediate goods. The trading costs incurred by the opening up of new markets were very high for new non-traditional products. For example, coffee had a more established and well-known commercial network that had political support and was highly valued in world markets, especially because of its range of "soft coffee beans". Thus, instead of planning to cater for foreign markets, most of this new industrial production, sought to meet the growing domestic demand. In this period, it is likely that surpluses were sold in foreign markets, but not on a permanent basis or large scale.

2.5. ESTIMATION

In this section, two panel data models are employed to evaluate the probability of exporting and the intensity of the export relationship, so that the effects of some variables on each margin of exports can be

quantified. Both models take into account the fact that the observed zeros contain valuable information. As Felbermayr and Kohler (2006) argue, the basic assumption is that both margins are governed by the same underlying determinants.

First, we estimate a probit model (Eq.2.1), where the dependent variable X_{jt} is a dummy that takes value of one if Colombia exports to country j in year t . In this case, we assess the conditional probability of a "successful" result, in our case $X_{jt} = 1$.

$$X_{jt} = 1 \left[\alpha_1 + \alpha_2(\text{Ln } GDP_{jt}) + \alpha_3(\text{LnDist}_{Col*j}) + \alpha_4(\text{LnAverTariff}) + \sum \alpha_n (\text{dummies}) + \mu_{jt} \right] \quad (\text{Eq. 2.1})$$

Where $\text{Ln } GDP_{jt}$ is the logarithm for the GDP of the destination country, LnDist_{Col*j} is the logarithm for the distance between the capital cities of Colombia and the destination and, LnAverTariff is the logarithm for the average import tariff of the destination. Additionally, we include dummies for common borders, a common language, trade agreements, fixed exchange rates²², exchange controls²³, the Great Depression, and the Second World War (see Data Appendix).

Following this, we estimate a gravity model (Eq.2.2), where Y_{kjt} is the value of exports of the kind of product k to country j in year t :

²² In terms of the management of the exchange rate in Colombia, the gold standard was in force until the beginning of the 1930s. There were large devaluations after 1932 and controls were introduced between 1930-1932 and between 1938-1950.

²³ The adoption of exchange controls became widespread in both developed and less developed countries after the collapse of the 1930s.

$$Y_{kjt} = \beta_1 + \beta_2(\text{Ln } GDP_{jt}) + \beta_3(\text{LnDist}_{col*j}) + \beta_4(\text{LnAverTariff}) + \sum \beta_n (\text{dummies}) + \mu_{jt} \quad (\text{Eq. 2.2})$$

(Eq.2.2) is estimated with the aid of the Poisson Pseudo Maximum Likelihood (PPML) estimator and importer-time dummies are included²⁴. The results are shown in Tables 2.2 and 2.3. In the first case, we provide the marginal effects as a means of facilitating the interpretation. Furthermore, the reset test is conducted to evaluate if the models are correctly specified and the results are also shown. These results showed that the functional form was correctly specified except in one case. Since the estimation of the probit model without coffee and oil is not robust for the more-skilled products, we have refrained from interpreting these results.

Table 2.2. Probit Model

	Complete data		Without coffee and oil	
	Less-skilled dy/dx	More-skilled dy/dx	Less-skilled dy/dx	More-skilled dy/dx
Dependent variable: dummy if exports=1				
Partner's GDP (log)	.1368*** (.0109)	.1967*** (.0097)	.1757*** (.0101)	.1789*** (.0097)
Distance (log)	-.3950*** (.0224)	-.6022*** (.0149)	-.5031*** (.0183)	-.5610*** (.0153)
Average tariff (log)	-.0807*** (.0208)	-.0863*** (.0196)	-.1317*** (.0209)	-.1166*** (.0198)

²⁴ Since we added the sectors that are shown in terms of skill intensity.

2. Beyond coffee: the extensive and intensive margins of Colombian exports

Common border	-.1450*** (.0532)	-.1602*** (.0523)	-.1477*** (.0555)	-.0688 (.0557)
Common language	-.1231*** (.0400)	-.1057** (.0418)	-.0490 (.0454)	-.0054 (.0431)
Trade agreements	.1337*** (.0455)	.0429 (.0377)	.1264*** (.0444)	.0731* (.0387)
Fixed exchange	.0391 (.0318)	.0698** (.0307)	.0612** (.0334)	.0507 (.0316)
Exchange controls	.0645 (.0464)	.1356*** (.0435)	.0890** (.0459)	.1322*** (.0432)
Great Depression	-.0855** (.0338)	-.1175*** (.0314)	-.1565*** (.0343)	-.1663*** (.0334)
WWII	-.1312*** (.0339)	-.0312 (.0343)	-.1594*** (.0345)	-.0446 (.0329)
<i>Reset Test</i>	2.47	1.21	0.65	9.43
<i>chi2(prob > chi2)</i>	(0.116)	(0.271)	(0.419)	(0.002)
<i>Number of observations</i>	968	968	968	968

Robust standard errors in parentheses. *Significant at 10%; **significant at 5%; ***significant at 1%

Table 2.3. Gravity Model

Dependent variable:	Complete data		Without coffee and oil	
	Less-skilled	More-skilled	Less-skilled	More-skilled
Exports				
Partner's GDP (log)	1.128*** (.0633)	.6175*** (.0657)	.6287*** (.0619)	1.192*** (.1460)
Distance (log)	-2.466*** (.2358)	-2.819*** (.2988)	-1.088*** (.2784)	-2.592*** (.3597)
Average tariff (log)	-.5361*** (.1878)	-.1336 (.4021)	-.4148** (.1924)	.0956 (.2233)

2. Beyond coffee: the extensive and intensive margins of Colombian exports

Common border	-1.189*	-2.894***	-.3660	-.2586
	(.6189)	(.5830)	(.5987)	(.4615)
Common language	-1.499***	- 3.59***	-.8648**	-1.186*
	(.4521)	(.8190)	(.3890)	(.7045)
Trade agreements	.0189	-.0839	-.2314	-.7481***
	(.1630)	(.1924)	(.2463)	(.2218)
Fixed exchange	.3372***	.7116	.5042***	.4920**
	(.1291)	(.4833)	(.1675)	(.2278)
Exchange controls	.4607	1.211***	.3155	.1153
	(.3671)	(.3823)	(.5961)	(.3217)
Great Depression	-.0281	-.1455	.0297	-.7993***
	(.0642)	(.4552)	(.2478)	(.0724)
WWII	-.3374***	.0328	-.3424	.1086
	(.1285)	(.1854)	(.3273)	(.2249)
<i>Reset Test</i>	2.47	0.21	2.16	1.66
<i>chi2(prob > chi2)</i>	(0.183)	(0.644)	(0.142)	(0.197)
<i>Number of observations</i>	719	608	644	568

Robust standard errors in parentheses. *Significant at 10%; **significant at 5%; ***significant at 1%

Tables 2.2 and 2.3 show that the results for GDP and distance are significant at 1% and have the expected signs. In addition, there are significant and negative effects resulting from the average tariffs levied by the importer countries on extensive and intensive exports.

Although a common border and language dummies are expected to have a positive effect on exports, clearly the opposite is true in the case of Colombia. Of the countries which share a border with Colombia, there is a greater expansion, especially in terms of the extensive

margin, of exports to Venezuela, Panama and Ecuador but not to the other countries. In the intensive margin, the effect produced by trade with the United States could explain the negative result of these variables.

On the other hand, trade agreements have a greater importance for extensive exports, especially in the less-skilled categories. In addition, these agreements appear to have had an adverse effect on the intensive exports of the sectors requiring more skills, when we exclude oil and coffee.

In the case of exchange rates, it was found that in most of the estimates, fixed rates had a positive effect on both margins of exports. Those that applied exchange controls benefited Colombian exports, especially the extensive ones. This may be because many countries adopted exchange controls after the 1930s.

Finally, the Great Depression and World War II had a negative impact on extensive exports, with a more pronounced effect on the less-skilled sectors. However, with regard to intensive exports, the Great Depression had a significant effect on the more-skilled sectors (without coffee or oil) and the Second World War on the less-skilled sectors (for all data). In terms of production, according to Echavarría (1999), the War had significant negative effects on textiles, non-metallic minerals, chemicals and petroleum, but not on other sectors.

2.6. CONCLUSION

Between 1922 and 1950, Colombian exports mainly depended on coffee and, to a lesser extent, on oil. Moreover, in this period, particularly in the thirties, there was an industrial “take-off” in the country, which had lagged behind what had been happening in other Latin American countries in the previous decade.

The industrial expansion displayed the usual features of the early stages of import substitution, which is characterized by the production of goods that are labor intensive and without complex technical requirements. Colombia's annual industrial growth rates during the 1930s and 1940s were the highest in the region. Some authors have evaluated supply and demand factors to explain this phenomenon of industrial production.

This study has attempted to connect what was happening in terms of industrial production and the export market. To do this, we sought to isolate the effects of coffee and oil and thus obtain more detailed information on other exports. On the basis of the framework of export margins, it was found that there was a wide variation in the number of exported products and destinations.

The country exported a large number of products to nearby countries and even had a closer relationship with countries of Central America and the Caribbean than with some of its neighbors in the South. However, the duration of some products, especially new industrial products, was low in several markets.

With regard to both oil and coffee, the export growth of Colombia during the period can be mainly explained by the growth in the intensive margin. When coffee is excluded, the trend continues, where the more-skilled category predominates, obviously because of the effect of oil. However, when both products are excluded, the growth rate can be explained as being more even, even slightly higher in the case of the extensive margin, but in less-skilled products. This is in line with what was discussed earlier with regard to the type of industrial production that characterized the country at that time.

Some determinants were studied through two models to explain the margins of exports. The results do not show distinctive patterns between one and the other margin for the same group of variables. However, it appears that trade agreements could have a beneficial impact on the extensive exports of the less-skilled sectors. Finally, we think that a low industrial value added economy may have been a determining factor in the behavioral pattern of manufacturing exports.

Certainly, coffee laid the foundations for an export-driven economy that would diversify in later decades. The inflow of foreign currency allowed the country to begin to be industrialized. Instead of planning to enter foreign markets, most of the new industrial production in this period sought to meet growing domestic demand. It is likely that surpluses were sold in foreign markets, but not on a permanent or large scale.

Although trade in manufactured goods was meager in this period, industrial growth after the 1930s was notable in sectors such as cement, textiles, beer and beverages but also in new sectors in the national industry such as paper and metal products. Overall, with the exception of food, four sectors accounted for the largest proportion of industrial growth during the 30s (82%) and 40s (66%): beverages, tobacco, textiles and non-metallic minerals. In the case of textiles, although the wage-product remained almost constant between 1929 and 1937, labor productivity increased by about 70%. In fact, during the century, this sector made great progress and became one of the main export sectors of the country.

3

REGIONAL INTEGRATION OF COLOMBIA DURING THE FIRST HALF OF THE 20TH CENTURY. DO FACTOR ENDOWMENTS REALLY MATTER FOR INTRA-INDUSTRY TRADE?

3.1. INTRODUCTION

Between the 1920s and 1930s, the average share of exports from Colombia to Argentina, Brazil, Chile, Ecuador, Peru and Venezuela was 0.06%, 0.01%, 0.03%, 0.04%, 0.09% and 4.64%, of the country's total exports respectively. The uniqueness of Colombia in terms of its low trade integration with the region and high dependence on the US market, raises several questions on a wide range of issues including the following: transport costs, consumer preferences, risk aversion of Colombian entrepreneurs, financial links, factor endowments, differences in the quality of products and even coffee export concentration.

Figures 3.1 and 3.2 show data on exports and imports at only the regional level, to determine the weight of each trade flow within Colombia's bilateral trade with each South American country. Clearly, during the twenties Venezuela was almost the only market for

Colombian exports to the region and remained the main destination of goods in the thirties and forties. Although exports to Argentina were very low in the 1920s, for the 1930s and 1940s they were strengthened by oil exports. In the case of the share of exports to Ecuador, the figures were much more modest, with an average of 13.2% during the 1940s.

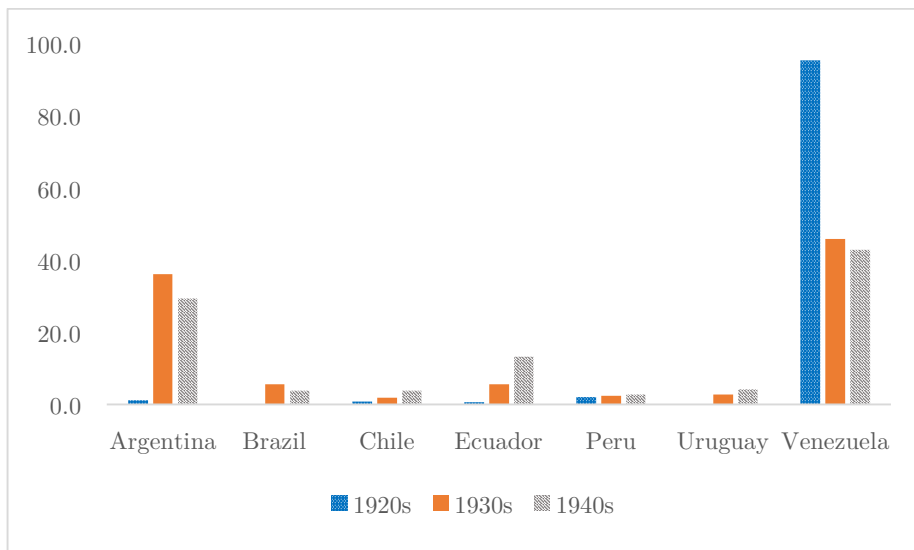


Figure 3.1. Share of Colombian exports by country in total volume of exports to South America.

As shown in Figure 3.2, the import trade from South America was evenly distributed and, it can be seen there were trade deficits with most of these countries. While in the twenties and thirties, Venezuela and Ecuador were Colombia's main regional suppliers, in the forties Argentina, Brazil and Peru played a more prominent role. Although Colombia was an exporter of crude oil, it imported many of its derivatives, especially those required for industry and, during the war, Peru became a major supplier of gasoline. Apart from this, trade with Peru did not have the same dynamics as trade with bordering countries such as Ecuador and Venezuela.

3. Regional integration of Colombia. Do factor endowments really matter for IIT?

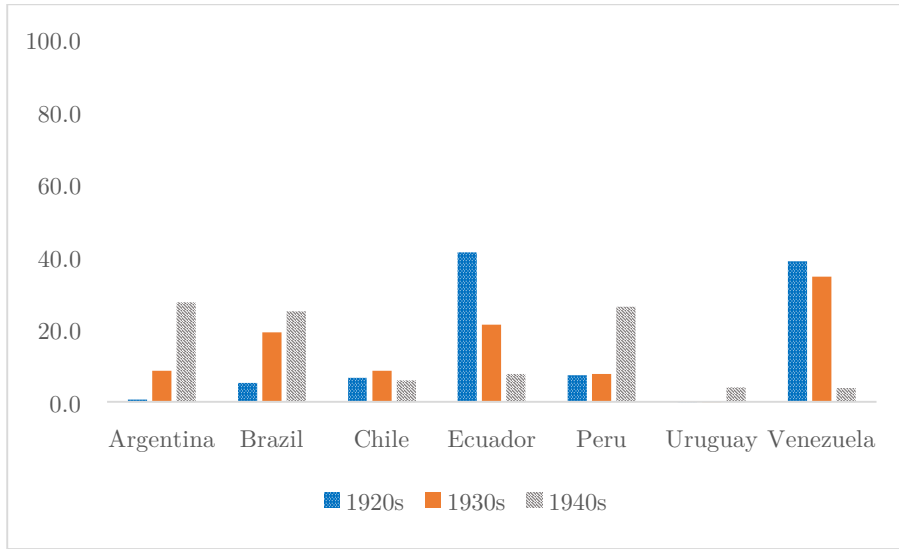


Figure 3.2. Share of Colombian imports by country in total volume of imports from South America.

It might be thought that since the largest volume of Colombian exports consisted of coffee, in a region where the world's largest coffee producer was located, this may have affected the way the country was integrated with it. However, whereas in 1922 12.24% of Colombian coffee exports were destined for countries in South America, in Brazil only 3.17% of its coffee exports were sent to the same market. This trend continued in 1929 when coffee in Colombia recorded a 7.48% rate of exports to South America compared with 4.51% of Brazil. However, the decline in sales of Colombian coffee to Venezuela had a considerable impact on these rates. In 1936 and 1948 Brazil exported 2.17% and 3.34% of its coffee to the region and Colombia fell to 0.02% and 0.08%. The countries of South America with which Brazil traded coffee were Argentina, Chile and Uruguay and in 1948 Bolivia and Paraguay as well. However, there was no sign of a Brazilian influence on the behavior of the Colombian coffee export sector to the region. Obviously, the size of the regional market was small, so that both

Colombia and Brazil had to turn to other markets like the US and Europe.

For this reason, it is essential when examining intra-regional trade to assess, at a disaggregated level, what Colombia was trading with these countries. The Heckscher-Ohlin (H-O) theorem states that a nation will export the commodity which requires the intensive use of its relatively abundant factor for its production, and import the commodity when the production requires the intensive use of its relatively small factor. The volume of trade is then greater if there are significant differences in factor endowments and bilateral trade will be mostly one-way. In contrast with the notion of the H-O theorem, authors such as Linder (1961) and Balassa (1966) have observed that there is an inverse relationship.

Nevertheless, the analysis of the causes of trade between economies with similar factor endowments had not been included in the more conventional models of international trade. Krugman (1980) establishes a framework that includes economies of scale, product differentiation and imperfect competition, which can be used to assess the causes of a larger domestic market and the role it plays in encouraging exports. Helpman and Krugman (1985) suggest that as countries become more similar, their trade will increasingly involve two-way exchanges of goods produced with similar factor proportions. Then, it can be expected that countries with similar factor proportions will engage in Intra-Industrial Trade (IIT), which is defined as the simultaneous exchange of goods (exports and imports) carrying out the same industrial activity.

One of the most common theoretical explanations of the causes of intra-industry trade, is the differentiation of products in the presence of scale economies. However, some authors have shown that intra-

industry trade is quite compatible with models that are based on constant returns to scale (Lloyd and Lee, 2002). Apart from its causes, an obvious implication of intra-industry trade is that it provides greater variety to customers.

Empirical research has revolved around country and industry-level determinants of intra-industry trade. In the first case, Helpman and Krugman (1985) showed that IIT depends on the relative factor endowments and economic size of the trading countries. When there are large differences in both factor endowments and economic size a pattern of specialization of inter-industrial type is expected, provided that the similarity is associated with an intra-industrial one. In the second case, the vertical differentiation of products based on differences in quality, has been seen as the basic reason for the existence of IIT, beyond explanations such as scale economies²⁵ or horizontal product differentiation²⁶ (Clark and Stanley, 1999).

Many of the empirical studies on intra-industry trade have been carried out among industrialized countries. However, some authors have analyzed patterns of intra-industry trade in developing countries. Balassa (1979) analyzed the experience of some Latin American countries with regard to intra-industry trade in manufactured goods and concluded that attempts at regional integration in the postwar period have boosted intra-industry trade between developing countries. Conversely, Baumann (1992) argues that increasing IIT ratios with

²⁵ Scale economies in production limit the degree of variety that can be found in the market, but international trade relaxes this constraint.

²⁶ According to Greenaway, Hine and Milner (1995) when goods are differentiated by attributes (primarily related to style) there is horizontal IIT, while when they are differentiated by quality there are vertical IIT. In the former, products sold at the same price are perfect substitutes and, in the latter a general ranking of consumer preferences can be combined with differences in quality (Lloyd & Lee, 2002).

regional partners and/or non-Latin American countries is likely to have implications on this process.

The South American region includes countries of different sizes, population density and patterns of growth and development. However, it is also found that some of these countries will have similar preference demand. Thus, the analysis below covers information on Colombia's IIT with Ecuador, Venezuela, Brazil, Peru, Argentina, Chile and Uruguay for five different years. In this chapter, our aim is to evaluate the hypothesis that there will be greater intra-industry trade between Colombia and those countries of South America that have similar factor endowments and greater geographical and cultural proximity where there are no clear competitive advantages.

3.2. MEASUREMENT OF INTRA-INDUSTRY TRADE

Grubel and Lloyd (1975) designed the most widely used index for the measurement of intra-industry trade. They defined IIT “as the value of exports of an “industry” which is exactly matched by the imports of the same industry” (Grubel and Lloyd, 1975, p.20). This means that the standard Grubel and Lloyd index calculates the part played by balanced trade in all transactions in a given industry, as expressed in Eq. (3.1).

$$GL_j = \frac{(X_j + M_j) - |X_j - M_j|}{(X_j + M_j)} = 1 - \frac{|X_j - M_j|}{(X_j + M_j)} \quad \text{Eq. (3.1)}$$

Where X are exports, M are imports, and j refers to the j th (SITC) industry. Furthermore, $0 \leq GL_j \leq 1$, and when $GL_j = 0$ there is no intra-industry trade (all trade is inter-industrial), and if $GL_j = 1$ all trade is intra-industrial. In addition, Grubel and Lloyd (1975) provided an index calculated over several industries as a trade-weighted average of the industrial indices, as in Eq. (3.2).

$$GL_j = 1 - \frac{\sum_{i=1}^n |X_j - M_j|}{\sum_{i=1}^n (X_j + M_j)} \quad \text{Eq. (3.2)}$$

As Lloyd and Lee (2002) point out, Helpman (1981) was the first to show how the Grubel and Lloyd index could be strictly employed in a trade model. However, in empirical studies this index might be biased as a result of problems derived from insufficient disaggregation, whether geographical²⁷ or sectoral²⁸ (Fontagné and Freudenberg, 1997).

Since imbalances (surplus or deficit) in the trade account will tend to bias the GL index, some authors, including Grubel and Lloyd, have recommended making some adjustments (see Fontagné and Freudenberg, 1997). However, there is some consensus about the need to work with unadjusted GL indices (Lloyd and Lee, 2002). Thus, a trade imbalance can be regarded as a part of inter-industry trade.

As a means of distinguishing between horizontally and vertically differentiated products at the most detailed sectoral level, the methodology proposed by Fontagné and Freudenberg (1997) breaks trade down into: two-way trade in similar products, two-way trade in vertically-differentiated products, and one-way trade. They define “two-way” trade as being when the value of the minority flow (either imports or exports) represents at least 10% of the majority flow. If it is below this level, it is considered to be “one-way” trade because there is no significant overlap. Hence, on the basis of this criterion, when there is “two-way” trade, quality is evaluated through unit value (UV) indices.

²⁷ An empirical analysis should be conducted on a strict bilateral basis.

²⁸ “The more products are lumped together into a single “industry”, the more trade becomes of an intra-industry nature” (Fontagné and Freudenberg 1997, p.23)

If the unit values are close, the products are considered to be differentiated horizontally. However, the criterion for defining when products are vertically differentiated is necessarily arbitrary. In view of this, products with unit values outside a range of $\pm 15\%$ are considered to be differentiated vertically²⁹. According to Stiglitz (1987) even with imperfect information, prices tend to reflect the quality of the products.

3.3. HISTORICAL PATTERNS OF INTRA-INDUSTRY REGIONAL TRADE IN COLOMBIA

At the industrial level, 3-digit³⁰ data were used in SITC Rev.4 to measure the IIT. Although there has been a good deal of discussion about whether the results depend to a great extent on the aggregation of data (see Lloyd and Lee, 2002), this is a figure that is generally used in the literature to find greater coincidences. In addition, when there are historical data, with their respective limitations, this figure is quite plausible.

Thus, by following the criteria established by Grubel and Lloyd, we were able to estimate the IIT index. Moreover, when there was trade of this type for these divisions, we added trade flows (exports plus imports) to calculate the share of these flows in the total volume of bilateral trade. As seen in Figure 3.3, the share of IIT flows in the total amount of trade between Colombia and each country is very low in the case of Brazil and Argentina and non-existent in the case of

²⁹ The values usually used in the literature are 15% and 25% because they allow a correction to be made for the differences generated in the prices derived from the cost of insurance and freight (CIF) and the differences arising from the lag in price adjustments.

³⁰ Except in Table 3.3 where it is made to 2 digits.

Uruguay. The degree of concentration of Uruguayan exports in products such as wool, meat and leather, (which compete with Argentine exports) may explain the small amount of trade with that country.

Both in terms of the value of flows (Figure 3.3) and number of categories (Figure 3.4), clearly Ecuador was the country with which Colombia maintained the most sustained level of intra-industry trade. On the other hand, Chile, (with the exception of 1935), had a share of IIT equal to or greater than that of Peru. In the case of Venezuela, there is a modest share of intra-industry trade in terms of the total flows, with the exception of 1942 when the volume of these flows exceeded the inter-industrial levels; however, in terms of the number of categories, along with Ecuador, it is the country with the highest IIT with Colombia. Viewed globally, 1942 was a year in which there was a large volume of IIT, and this coincides with the increase in regional integration that was observed for Colombia in those years. Moreover, this result is likely to have been influenced by the volume of intra-industry trade that occurred with Venezuela and Ecuador.

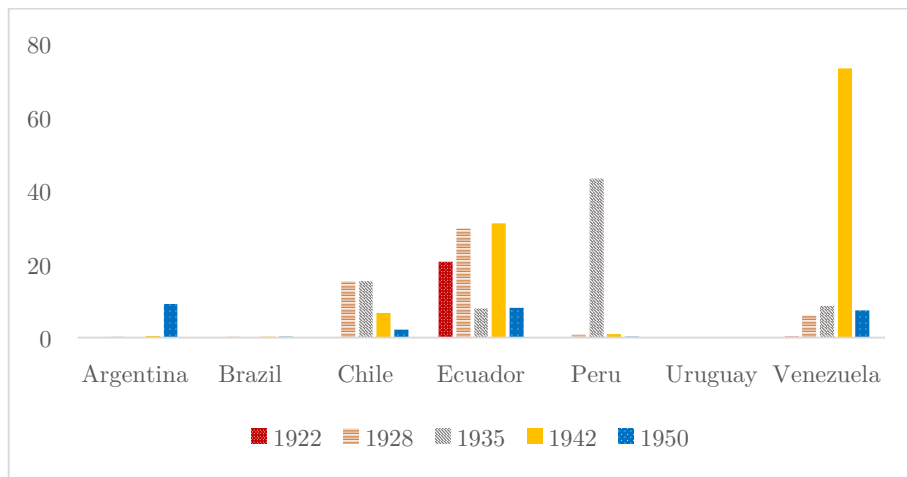


Figure 3.3. Share of IIT flows (value) on total trade with each country based on the GL criteria

As shown in Figure 3.4 it is quite remarkable that intra-industry trade with Peru in 1935 corresponds to a single industrial category (3-digit SITC): printed matter, while in the case of Venezuela in 1942, it corresponded to several categories of which, the first five in order of importance corresponded to: live animals; miscellaneous manufactured goods n.e.s; lime, cement, and fabricated construction materials except glass and clay ; jewellery, goldsmiths' and silversmiths' sales items and other articles such as precious or semiprecious materials; and petroleum oils and oils obtained from bituminous materials (other than crude oil).

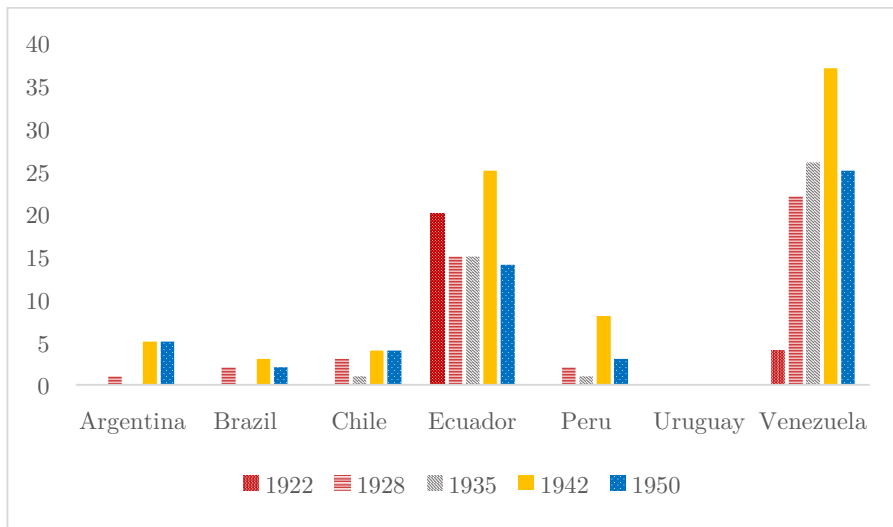


Figure 3.4. Number of categories involved in intra-industry trade per year

A key historical event that occurred prior to this increase in two-way trade, was the agreement on borders and free navigation signed by Colombia and Venezuela on April 5, 1941. Gómez (1941) points out that "the significance of this agreement certainly does not lie in its

territorial aspect, but in the economic exemptions granted by the two republics to promote their trade."³¹

The degree of differentiation for the exchange of products in the same industrial categories, was quantified by employing the methodology of Fontagné and Freudenberg (1997). One of the limitations of this methodology is that it requires highly disaggregated data, which is not the case here, and hence the results below should be analyzed with caution.

As can be seen in Table 3.1, the definition of the degree of trade overlap to define one-way or two-way exchanges, involves classifying most of the trade as being of an inter-industrial type. Note for example that an important proportion of intra-industry trade with Venezuela in 1942 was classified as one-way trade.

However, a rather interesting result arises. Most intra-industry trade occurred in vertically differentiated products, that is, the sector-level explanation of Colombia's intra-industry trade with the region could have been attributed to differences in product quality. In addition, some intra-industry trade with horizontal differentiation is observed with Peru, Ecuador and Venezuela.

This is a valuable finding because the North-South intra-industry trade models reveal that vertical differentiation based on quality is the reason for this type of trade. In this case, the North exports high-quality products to the South in exchange for lower-quality products which are included into the same industrial classification. However, the South-South IIT takes place in the same conditions, although this type of trade appears to be low.

³¹ Free translation by author.

3. Regional integration of Colombia. Do factor endowments really
matter for IIT?

Table 3.1. One-way and two-way trade in differentiated products

	Two-way horizontally differentiated	Two-way vertically differentiated	One-way
<u>Argentina</u>			
1922			
1928			100.0
1935			100.0
1942		0.3	99.7
1950	0.0	0.0	100.0
<u>Brazil</u>			
1922			100
1928		0.2	99.8
1935			100
1942	0.0	0.0	100.0
1950		0.0	100.0
<u>Chile</u>			
1922			100
1928			100
1935			100
1942		2.2	97.8
1950		0.0	100.0
<u>Ecuador</u>			
1922	0.0	10.0	89.9
1928	0.2	13.5	86.4
1935		1.0	99.0
1942	0.3	6.5	93.2
1950		0.2	99.8
<u>Peru</u>			
1922			100
1928	0.6	0.1	99.3
1935		43.2	56.8
1942	0.0	0.1	99.9
1950	0.0	0.0	100.0
<u>Uruguay</u>			
1922			
1928			100
1935			100
1942			100
1950			100

Venezuela			
1922		0.0	100.0
1928	0.3	0.0	99.7
1935		3.8	96.2
1942	0.0	1.7	98.3
1950	0.0	2.4	97.6

However, at this level of disaggregation subsectors with different requirements of inputs are included in the same group, and there are goods that are not close substitutes in either production or consumption. Thus, the analysis of industrial categories by type would allow us to see more precisely how two-way trade is established.

Table 3.2 shows the Grubel and Lloyd indexes of IIT in Colombia's trade with the countries of the South (in this case, 2-digit division). The indicator was calculated on a bilateral basis to avoid causing a geographical bias by adding countries, and then the data were weighted in terms of the participation of each partner (see Fontagné and Freudenberg, 1997). It should be noted that there are some countries in the region with which Colombia had a low or non-existent intra-industrial trade relationship, which gives rise to global indices that are close to zero in many cases.

Table 3.2. Grubel-Lloyd indexes of IIT in Colombia's trade with seven South American countries

Code	Division description	1922	1928	1935	1942	1950
00	Live animals other than animals of division 03	0.28	0.10	0.00	0.12	0.00
01	Meat and meat preparations	0.00	0.00	0.00	0.00	0.00
02	Dairy products and birds' eggs	0.01	0.00	0.01	0.00	0.00

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03	Fish, crustaceans, molluscs and aquatic invertebrates and preparations thereof	0.00	0.00	0.00	0.00	0.00
04	Cereals and cereal preparations	0.04	0.01	0.01	0.00	0.00
05	Vegetables and fruit	0.06	0.03	0.06	0.14	0.01
06	Sugars, sugar preparations and honey	0.10	0.04	0.01	0.00	0.00
07	Coffee, tea, cocoa, spices, and manufactures thereof	0.00	0.00	0.00	0.00	0.00
08	Feeding stuff for animals (not including unmilled cereals)	-	0.00	0.00	0.00	-
09	Miscellaneous edible products and preparations	0.00	0.00	0.00	0.00	0.00
11	Beverages	0.14	0.00	0.00	0.08	0.00
12	Tobacco and tobacco manufactures	0.00	0.00	0.00	0.00	0.00
21	Hides, skins and furskins, raw	-	0.00	0.00	-	-
22	Oil-seeds and oleaginous fruits	0.00	0.00	0.00	0.00	-
23	Crude rubber (including synthetic and reclaimed)	-	0.00	0.00	0.00	0.00
24	Cork and wood	0.00	0.00	0.00	0.00	0.00
25	Pulp and waste paper	-	-	-	0.00	-
26	Textile fibers (other than wool tops and other combed wool) and their wastes (not manufactured into yarn or fabric)	0.00	0.00	0.00	0.00	0.00
27	Crude fertilizers, other than those of division 56, and crude minerals (excluding coal, petroleum and precious stones)	0.00	0.00	0.16	0.00	0.00

3. Regional integration of Colombia. Do factor endowments really
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28	Metalliferous ores and metal scrap	-	0.00	0.00	0.00	0.00
29	Crude animal and vegetable materials, n.e.s.	0.03	0.22	0.01	0.21	0.14
32	Coal, coke and briquettes	-	-	-	0.00	-
33	Petroleum, petroleum products and related materials	0.00	0.00	0.00	0.00	0.00
41	Animal oils and fats	0.79	0.04	0.00	0.00	0.00
42	Fixed vegetable fats and oils, crude, refined or fractionated	0.00	0.00	0.05	0.00	0.00
43	Animal or vegetable fats and oils, processed; waxes of animal or vegetable origin; inedible mixtures or preparations of animal or vegetable fats or oils, n.e.s	-	0.00	0.00	0.00	0.00
51	Organic chemicals	0.00	0.06	0.00	0.00	0.00
52	Inorganic chemicals	0.00	0.00	0.00	0.03	0.00
53	Dyeing, tanning and colouring materials	0.00	0.00	0.00	0.00	0.12
54	Medicinal and pharmaceutical products	0.00	0.00	0.03	0.06	0.08
55	Essential oils and resinoids and perfume materials; toilet, polishing and cleaning preparations	0.03	0.00	0.06	0.00	0.03
56	Fertilizers (other than those of group 272)	-	0.00	0.00	0.00	-
57	Plastics in primary forms	-	0.00	0.00	-	-
58	Plastics in non-primary forms	-	-	0.00	0.00	-
59	Chemical materials and products, n.e.s.	0.00	0.00	0.00	0.02	0.00

3. Regional integration of Colombia. Do factor endowments really
matter for IIT?

	Leather, leather					
61	manufactures, n.e.s., and dressed furskins	0.00	0.04	0.01	0.03	0.00
62	Rubber manufactures, n.e.s	0.00	0.00	0.00	0.00	0.00
63	Cork and wood manufactures (excluding furniture)	0.15	0.00	0.18	0.16	0.00
64	Paper, paperboard and articles of paper pulp, of paper or of paperboard	0.00	0.00	0.00	0.01	0.00
65	Textile yarn, fabrics, made- up articles, n.e.s., and related products	0.00	0.00	0.03	0.00	0.06
66	Non-metallic mineral manufactures, n.e.s.	0.00	0.00	0.23	0.00	0.00
67	Iron and steel	0.00	0.00	0.00	0.00	0.00
68	Non-ferrous metals	-	0.00	0.00	0.00	0.00
69	Manufactures of metals, n.e.s.	0.00	0.00	0.01	0.00	0.02
71	Power-generating machinery and equipment	0.00	0.00	0.01	0.14	0.00
72	Machinery specialized for particular industries	0.00	0.00	0.01	0.03	0.00
73	Metalworking machinery	0.00	-	-	0.00	0.00
74	General industrial machinery and equipment, n.e.s., and machine parts, n.e.s.	0.00	0.00	0.00	0.00	0.00
75	Office machines and automatic data-processing machines	0.00	0.00	0.00	0.00	-
76	Telecommunications and sound-recording and reproducing apparatus and equipment	0.00	0.00	0.00	0.00	0.00

3. Regional integration of Colombia. Do factor endowments really
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	Electrical machinery, apparatus and appliances, n.e.s., and electrical parts					
77	thereof (including nonelectrical counterparts, n.e.s., of electrical household- type equipment)	0.00	0.00	0.00	0.01	0.00
78	Road vehicles (including air- cushion vehicles)	0.00	0.00	0.00	0.07	0.00
79	Other transport equipment	0.00	0.00	0.00	0.00	0.00
	Prefabricated buildings; sanitary plumbing, heating and lighting fixtures and fittings, n.e.s.					
81		0.00	0.00	0.00	0.00	0.00
	Furniture and parts thereof; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings					
82		0.46	0.00	0.00	0.09	0.00
	Travel goods, handbags and similar containers					
83		0.00	0.00	0.00	0.02	0.00
	Articles of apparel and clothing accessories					
84		0.25	0.01	0.01	0.02	0.05
85	Footwear	0.00	0.00	0.00	0.01	0.00
	Professional, scientific and controlling instruments and apparatus, n.e.s.					
87		0.00	0.00	0.00	0.00	0.00
	Photographic apparatus, equipment and supplies and optical goods, n.e.s.; watches and clocks					
88		0.00	0.13	0.00	0.00	0.02
	Miscellaneous manufactured articles, n.e.s.					
89		0.00	0.02	0.13	0.04	0.03

Although there is a wide variation in the results from one year to the next, the categories where there was more consistent intra-industry trade within the sample, were those related to the following: live animals, animal and vegetable products and cork and wood manufactured goods. In addition, there was some kind of intra-industry trade in articles of apparel and clothing accessories, as well as miscellaneous manufactured items. Similar goods were traded for consumption, inputs for industry and in natural and labor-intensive products.

Notwithstanding the above, Colombia imposed a number of restrictions on imports and exports during the period, although the effects were not beneficial to certain countries (except the United States and Canada). For this reason, no particular effect on the geographical distribution of trade in the region is expected, despite retaliation against countries that impose restrictions against Colombian exports (see Table 3.3). A broad range of Colombian tariffs on imported goods were levied during this period to ensure that newly developed sectors received additional protection. As Echavarría (1999) points out, there is likely to be more resistance to protectionist pressures in export sectors, especially since industrial exports were very low in that period, but also because of the fear of reprisals.

Table 3.3 Colombia. Main measures taken to control imports and exports.

Year	Action
1926	▪ Tariffs for certain foodstuffs are reduced.
1927	▪ Export tax on coffee.
1930	▪ Tariffs on beer, matches, cards and gasoline and tariffs on foods that had been reduced in 1926 were raised.

3. Regional integration of Colombia. Do factor endowments really matter for IIT?

- 1931
 - Due to the Great Depression, Law 99 of 1931 authorized the President of the Republic to ban the export of gold from the country.
 - Compilation of customs list of "prohibited imports" regulations.
 - Attempts were made to reduce imports through a widespread extension of tariffs to halt the decline in the country's gold reserves.
 - Authorities are authorized to set higher tariffs (by 25%) for goods from countries that discriminate against Colombian exports. The measure is applied to Thailand in July 1936.
 - Tax levied on banana exports.
- 1932
 - Subsidy of 10% for coffee exports.
 - Most-Favored-Nation Treaty with Brazil
- 1933
 - New penalties for those who traded clandestinely in gold or foreign currencies.
- 1936
 - A Trade Treaty is signed with the United States. A preferential clause was added for this country and for others that apply the most-favored nation status to Colombia.
- 1938
 - Quotas are adopted for wool and cotton textiles.
 - A customs union is created with Peru.
- 1939
 - Imports of cotton, wool, flour, cocoa, rice, sugar, animal fat, vegetable oils and fresh fruits are controlled.
- 1940
 - Four import categories are distinguished. The foreign currencies are preferably assigned to the importation of goods in the first category: raw materials, industrial machinery and food, government imports and most of the imports from the United States and Canada.
 - Exports of manufactured goods are prohibited if they include imported raw materials.

- Agreement of reciprocal concessions with Chile.
- Agreement is ratified with Venezuela. Import quotas are set for live cattle and salt but entry is duty-free.
- 1941 ▪ It is prohibited to re-export materials considered to be "strategic".
- 1944 ▪ Import categories are suspended for a short time. However, the multiple exchange rate is no longer used.
- Textile exports are controlled.
- 1945 ▪ Cement is imported free of customs duty, because there is a shortage of the product inside the country.
- 1946 ▪ Food exports are prohibited.
- 1950 ▪ Maximum tariffs are applied to imports from countries that discriminate against Colombian exports.

Sources: Ospina (1979) and Echavarría (1985)

According to information provided by ECLAC (1949), on average, the manufacture of foodstuffs and textile goods represented the most important areas of industry in Latin American countries at the end of the 1940s. At that time, the metallurgical and metal industries, including the manufacture of machinery, had a much less important place in the industrial economy of Latin America. This suggests that during the war and the postwar period, more attention was paid to the non-durable consumer goods sector than durable consumer goods and manufactured goods, especially metals and metal goods.

One of the factors that may have influenced the volume of intra-industry trade in the region, is that a high percentage of the raw materials used for non-durable consumer goods were of national origin, and in many cases protected by import quota systems. There was therefore some degree of self-sufficiency with regard to the raw materials used in industry, such as food-production. For example, in

the case of cotton, imports accounted for between 20% and 30% of Colombian demand during the 1920s and the first part of the 1930s. However, in the 1940s, the country imported more than 80% of its cotton, especially from Brazil and Peru. In the case of cocoa, on average during the period, between 20% and 30% of the national demand was imported while imports of tobacco leaf were practically nil.

But there were also constraints imposed by transport costs, to and from several countries in the region, which included products such as heavy construction equipment. Many of the South American countries traded with their regional partners by sea. However, most of these countries relied almost entirely on foreign vessels for their foreign trade in the absence of merchant fleets of their own. In 1945, Colombia, Venezuela and Ecuador created the Grancolombiana Merchant Fleet, whose capital came from the National Federation of Coffee Growers of Colombia (45%), the Agriculture and Livestock Bank of Venezuela (45%) and the remaining 10% was lent to Ecuador by the National Federation of Coffee Growers of Colombia. In 1947, the fleet already had three lines that operated between its ports and with New York. However, in 1952 Venezuela withdrew from the Fleet.

Another peculiar feature of the region, and to the time, is that despite their attempts to industrialize, many countries concentrated their exports on a few agricultural or mineral products: Colombia on coffee, Venezuela on oil and Chile on copper and saltpeter, to name a few. These products had a greater market demand at an international than a regional level. Even during the war, exports to the United States partially offset the significant fall in exports of these products to Europe. However, the loss of European markets, whether as customers or suppliers, forced the countries of the region to seek new markets for their products and new sources of supply. Unquestionably the countries

of South America were the most accessible. This is why there was an increase in regional trade in this period, which is not necessarily linked to the main products exported by these countries.

3.4. ESTIMATION

According to the new trade theory, trade patterns have a clear bilateral dimension. Here we will evaluate whether country-specific factors can explain the relative importance of IIT between Colombia and its South American partners. One of the most widely documented features at a country-level is that the share of IIT in bilateral trade can be increased by similarities in GDP, or per capita GDP and the market size (Lloyd and Lee, 2002).

However, as Bergstrand and Egger (2006) point out, a large number of empirical models that are employed for evaluating intra-industry trade, do so in a context of zero trade costs although the costs matter. The gravitational model makes clear that there is a negative relationship between distance, as a proxy for transport costs, and trade volume, but “there is not yet a well-accepted rationale for why distance should have a strong negative empirical correlation with the *share* of intra-industry trade, especially after accounting for countries’ common land borders” (Bergstrand and Egger, 2006, p.434).

Most of the econometric models for IIT are based on the GL index as a dependent variable, but this is only observed for a limited range and is censored at zero. This is why the coefficients obtained from conventional regression models such as the OLS will be inconsistent and biased. For this reason, a Tobit specification is employed which reflects the censoring of the dependent variable and also produces consistent estimates, to estimate Equation 3.3:

$$IIT_{ij} = \beta_0 + \beta_1 \left| \frac{GDP_i}{L_i} - \frac{GDP_j}{L_j} \right| + \beta_k V_j + \varepsilon_j \quad \text{Eq. (3.3)}$$

Where GDP/L is the GDP per capita, V_j is a vector of control variables and IIT_{ij} is the dependent variable that reflects the IIT through the unadjusted Grubel and Lloyd index. Intra-industry trade between countries is expected to be intense if barriers to trade are low and the market size is large. Geographic proximity is sometimes related to similar patterns of preferences and habits, and can thus facilitate intra-industry trade. In light of this, a variable is included that measures the proportion of each country's trade flows (exports + imports) to/from South America to control the level of regional integration of each country.

In addition, the distances between the capital cities, the GDP of the trading partners and a common border dummy are included. As data on bilateral tariffs by sectoral division were not available, several estimates were made to assess the differential in the average tariff between the countries of the South and Colombia and between the countries of the South and the main partners of Colombia in Europe and North America. The limitations of attempting to assess the impact of tariffs through the average tariff differential by country is well known; however, this allows differences in tariff protection levels to be controlled. When the differences between Colombia and each South American partner were taken into account, the variable was not significant. This was also the case when the differentials between the countries of South America and the main European partners of Colombia were used. Thus, the variable that was maintained in the estimates was the differential in the average tariff between the

countries of the South and North America, which are Colombia's main trading partners.

Furthermore, the absolute difference between the GDP per capita is included, as a measure of factor endowments. Similar countries are expected to have similar factor endowments and this means that the products exchanged between them belong to the same commercial categories. Some authors interpret differences in per capita income as differences in the capital-labor endowment ratio due to the availability or reliability of the current data (Helpman, 1981; Helpman and Krugman, 1985; Clark and Stanley, 1999). “Note that this has the flavor of the Linder hypothesis, but it is restricted to intra-industry trade and it stems from supply considerations, while the Linder hypothesis concerns total volumes of trade, and it is based on the assumption that relative demands change with income per capita” (Helpman, 1981, p.337).

The sources of information used and the construction of data are outlined in detail in the Appendix. The results of the estimates are shown in Table 3.4. A link test is applied as a “robustness” test and this is based on the idea that if the regression is properly specified, no additional independent variables should be included (Pregibon, 1980). According to the results of this test, all models are robust except for the years 1922 and 1935, and for this reason, we have refrained from interpreting the data for those years.

Table 3.4. Tobit Model

Dependent variable:	GL	1922	1928	1935	1942	1950
index						

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matter for IIT?

Partner's GDP (log)	-1.21 (.0066)	.1191*** (.0032)	2.92 (.0051)	1.07*** (.0024)	.713*** (.0026)
Distance (log)	1.413 (.0075)	-1.61*** (.0040)	8.69 (.0065)	-2.01*** (.0031)	-.821*** (.0035)
Factor endowments	.0007*** (.0001)	-.0010*** (.000)	-.0096*** (.0000)	-.0012*** (.0000)	-.0000*** (.0000)
Average tariff differential with North America	.0259 *** (.0020)	-.261*** (.0016)	-2.37*** (.0016)	.0034*** (.0009)	.0646** (.0015)
Share of trade to South A.	-.243*** (.0047)	-.265*** (.0025)	-4.82*** (.0016)	-.0291*** (.0007)	.0643*** (.0014)
Common border	2.536*** (.0506)	-1.14*** (.0267)	-4.41 (.0430)	-2.65 (.0190)	.0216 (.0223)
<i>Link test</i> ($P > t $)	-0.176 (-)	.000 (0.91)	.113 (-)	.221 (.92)	.241 (.84)

Robust standard errors in parenthesis. *** Significant at 0.01 level, ** Significant at 0.05 and *Significant at 0.1.

The GDP of the trading partner and the distance have the expected signs, which means that the greater the size of the market and the more the proximity of the countries, intra-industry trade increases. The differences in relative factor endowments have the expected negative sign and the coefficient estimates are statistically significant. That is to say, greater differences in relative factor endowments reduce intra-industry trade. However, the magnitude of this variable tends to be low. In fact, although the differences in factor endowments measured with per capita GDP differentials were increasing between Colombia and Venezuela, there was always some level of intra-industry trade between them.

The proportion of the total volume of trade of each country with South America, only had a positive effect in 1950. In other words, there was no increased intra-industry trade in 1928 and 1942 with the countries that were more regionally integrated in terms of the total volume of trade. This corroborates the results of Chapter 1, which shows that Ecuador and Venezuela were not regionally integrated to a great extent, even though they turned out to be the countries with which Colombia had the most intra-industry trade.

On the other hand, in the case of tariff differences between the countries of South and North America, it was found that the greater the differences, the less intra-industry trade there was between Colombia and the regional partners in 1928. Conversely, in 1942 and 1950 the relationship becomes positive, so that greater differences in global tariffs increased intra-industry trade. However, this measure does not tell us much about what was happening with regard to levels of protection at the sectoral level.

The common border variable was only significant in 1928, but also had a negative sign. Of the four countries in South America with which Colombia shares a border, increased trade was only observed with Venezuela and Ecuador. In the case of Peru and Brazil, not only were the global levels of trade low, but also the intra-industry trade levels. The territorial fragmentation produced by the Amazon jungle may have affected the way these countries were able to communicate, because trade by sea was conditioned by the lack of merchant fleets, which was a typical feature of many of these countries.

What happened in the first half of the 20th Century in terms of Colombia's global trade with the countries of the South, is summarized in Figure 3.5. Venezuela was undoubtedly Colombia's largest trading partner on the continent. During the 1920s, the main products

exported to that country were coffee and hides, while in the following decades they included some plant products, meat, rubber articles, cotton and livestock. On the other hand, the main imports from Venezuela were cocoa, cattle and salt. In the case of Ecuador, Colombia's second largest trading partner in the region, the main exports in terms of number and range of products, were hats, livestock, coffee, straw and timber, while the main imports were raw cotton, cocoa, vegetable products, cotton and wool yarn.

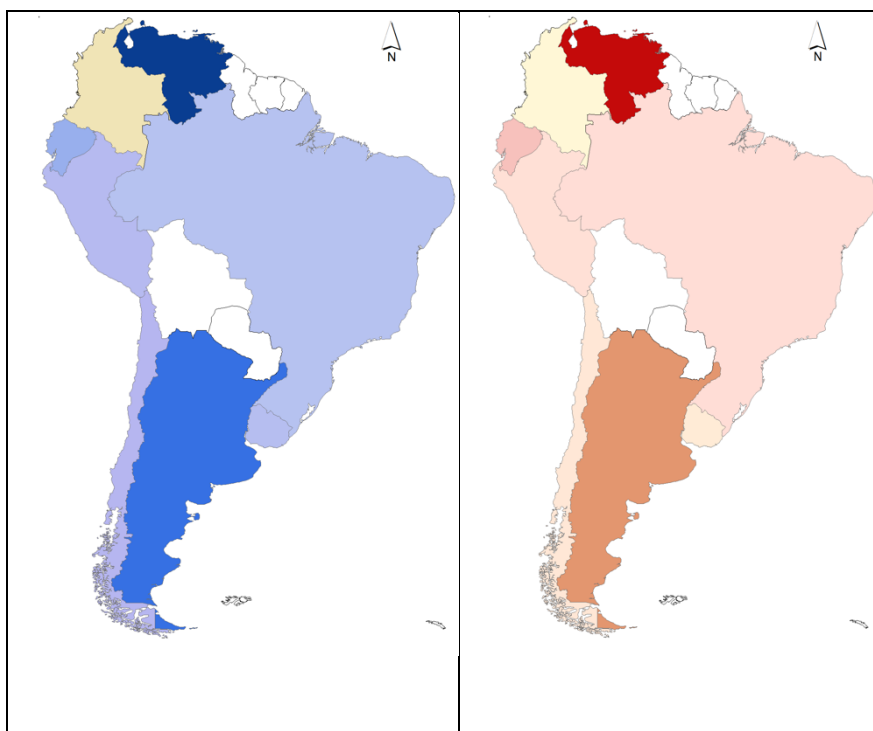


Figure 3.5. Maps showing Colombia's regional trade: Exports (left) and Imports (right). Average values between 1922 and 1950.

Between 1941 and 1943 trade increased, particularly with Brazil, Argentina, Uruguay and Chile, while the importance of Ecuador and Venezuela remained. Trade increased in products that were scarce during the war and which were important for consumption and the

domestic industry. From Brazil, there was a rise in the imports of cocoa beans, cotton on branches, yarns and textiles and tires. Imports from Argentina included unprocessed wheat bran, barley, wool and woolen yarns, wool fabrics, tanned hides, foodstuffs and chemical products, among other items. From Peru, Colombia imported gasoline, sugar and raw cotton; from Chile fruits and wines.

During this period, textiles and footwear were exported to Venezuela and Ecuador, among other items. Sugar and tobacco were exported to Uruguay, and crude oil and some mineral coal were sent to Brazil. Coffee and oil were exported to Argentina. In this case, the large volumes exported for some years, particularly of crude oil, show an average rate of exports that is higher than that of most countries in the continent (Fig. 3.5). Finally, in the case of Peru there were extremely high exports of tobacco, wood and “balata”.

3.5. CONCLUSION

Evidence of a two-way trade relationship between developed countries made it necessary to formulate a new theory to explain the phenomenon of intra-industry trade. Subsequently, a large amount of empirical analysis was carried out to evaluate the features that could explain this phenomenon at both a country-level and industry-level. One of the most important elements at the theoretical level (and that has been widely supported at the empirical level too) is that this type of trade belongs to countries with similar levels of factorial endowments, which are assessed on the basis of differences in per capita income.

In this article, there has been an evaluation of the role of intra-industrial trade in the trade integration of Colombia with the countries of South America, starting from the hypothesis that similar countries

tend to trade more in two-way items. However, there are certain singular features that characterize the region and the time. Despite the attempts made by the countries of South America to industrialize, in some cases (even before the Great Depression), many of them had concentrated their exports on a few agricultural or mining products. The regional market for these products was certainly limited but when the European market closed in the Second World War, US demand partly offset the external shock that these products had suffered.

Clearly intra-industry trade began to appear, (albeit modestly), as a form of regional integration, especially in the 1940s. In the case of Colombia, it emerged somewhat more clearly with Ecuador and Venezuela, and to a lesser extent with Chile. However, the differences in terms of factor endowments, distances and cultural proximity, had a great impact on the levels of intra-industrial integration with the countries of the region. The difficult regional geographical conditions and high dependence on European and United States vessels undoubtedly affected the levels of intra-regional trade. In this case, it is clear that distance had a strongly adverse empirical correlation with the *share* of intra-industry trade.

As has been seen, trade in similar goods took place in products for consumption, inputs for industry and in natural and labor-intensive products. Although the results clearly depend on the level of data disaggregation, we were able to make a plausible and coherent characterization based on the disaggregation carried out in other intra-industry trade studies, despite the fact that we relied on historical data.

In general, Colombia's trade with the continent was limited to imports, as exports to the region were rather modest, with the exception of Venezuela, Ecuador and in some years, with important flows of crude

oil to Argentina. During the Second World War, the fall of the European market had a vitalizing effect on the markets of South America. Between 1941 and 1943, the flow of trade increased with Brazil, Chile, Argentina and Uruguay, and the previous trend with Ecuador and Venezuela continued. Trade increased in products that were scarce in the war period and which were important for consumption and the domestic industry. On the whole, an analysis of the economy at a product level, shows an inter-industrial exchange with most countries. However, it is also possible to observe an increasing trend of intra-industry trade, that decades later would gain more impetus as a result of regional trade agreements.

CONCLUSIONS AND RECOMMENDATIONS

A. RESEARCH OUTCOMES

The large geographical size of the American continent and the low economic activity inside the region, did not provide the ideal conditions for the improvement of the regional trade networks. Land trade was very difficult for some countries in South America and recurrent dependence on merchant fleets in North America and Europe had counterproductive effects on regional trade levels.

At the end of the 19th Century, the reduction of shipping costs increased the demand for commodities and minerals produced in the Americas. Many countries in South America were highly specialized and their exports were in many cases concentrated in a few natural products. These goods had a greater demand at an international than a regional level, which evidently was another factor that conditioned the levels of intra-continental integration. Moreover, although many of these countries began to industrialize in the first decades of the 20th Century, they remained largely dependent on the export of these products.

In the case of Colombia there was little commercial integration at the end of the 19th Century either with South America or in general. The country had problems in becoming integrated with the world markets until the first years of the 20th Century. Its exports per capita in 1913 were comparable to those of Guatemala and only surpassed Haiti in all Latin America. It was thanks to coffee that the country managed to make a successful entry into the external markets.

Colombia began to carry out a greater commercial exchange with some neighboring countries not only geographically but also culturally. The importance of Venezuela is evident as the main trading partner and destination of most Colombian exports to the continent. In addition, Ecuador and to some degree Chile, (and since the 1930s Argentina) were important in the country's trade at the regional level. Trade with other countries was low before the forties and took temporary boost as a way to offset the decline in European demand. Colombian trade at the regional level focused on products for consumption, inputs for industry and natural and labor-intensive products.

Below, the research outcomes in relation to the specific research objectives are reported.

1. *To examine how the patterns of S-S and N-N trade and revealed trade preference groups, can explain the conventional view that there is a historical handicap in South America with regard to regional trade.*

The results of this PhD research have confirmed that there was a historical 'handicap' with regard to regional trade in the Americas, especially during the commodity boom of the period of Atlantic globalization. North America and South America were close in terms of the share of intraregional exports before 1880 and it seems that they showed a similar trend until the late 19th Century. From then until the mid-thirties, there was a widening gap between the two regions, which was characterized by growth in the North and stagnation in the South. Furthermore, in the context of the rapid Atlantic globalization of the American continent, the US increased bilateral trade with its closest

neighbors, ranging from 8% before 1890 to almost 20% in 1913. Thus, it is reasonable to postulate that there was a “United States effect” driving greater regional trade in the North. This “US effect” is crucial to understanding the SS-NN differences in regional integration. It is possible that, to a great extent, the result of intraregional trade depended on the existence of commercial hubs, like the US in North America. However, this was not apparent in the case of the South. Although Argentina was the largest country in terms of trade flows to the region, it was not a commercial hub and its trade was mainly concentrated in the Southern Cone.

Although the gap between North and South America remained, between the thirties and forties, there was an intra-regional trade boom in both regions. In the case of South America, this regional trade was only possible because of the exogenous shock caused by the Second World War. This means that, on the basis of the assumptions of the gravity model, Regional N-N and S-S trade grew less than it should have done.

On the other hand, cultural proximity did not contribute meaningfully to overcome the problem of other negative variables discussed in the literature such as potential geographical difficulties in common borders, high regional shipping costs, and weak financial and trade networks. In addition, the analysis carried out supports the hypothesis that the demand structure is one of the key explanatory variables in the waves of trade regionalization in South and North America. Then, more regional trade occurred when countries had a convergent regional demand structure, which is reflected by income differentials.

It was found that there were five different groups in terms of the volume of exports to the region, with Argentina and Brazil at the top and Colombia, Ecuador and Venezuela at the bottom, and two types

of sub-regions in terms of revealed intra-regional trade leadership. In this case, Argentina, Brazil and Uruguay played a destination marketing role while Chile, Peru, Colombia, Ecuador and Venezuela were mainly origin markets.

2. To evaluate how variables of competitiveness and trade costs might be determinants of the size but also of the opening/exiting of markets of Colombian exports, in the industrial take-off period of the country.

This PhD research demonstrates that the low industrial value added per worker appears to be a determining factor in the behavioral pattern of the Colombian manufacturing exports. With regard to both oil and coffee, the export growth of Colombia during the period can be mainly explained by the growth at the intensive margin. The growth of other exports occurred more evenly, although they were greater, at the extensive margin, especially because of the exports of old products to new markets. This meant that new products had a low survival rate in foreign markets. The new products did not feature prominently in either the new markets or the existing markets, where “the rules of the game” were best known.

Until the 1920s, in South America (and even throughout Latin America), exports largely consisted of natural resources. However, the nature of the exports varied between countries. In the case of Colombia, coffee exports not only supported the economy for much of the 20th Century, but also played a key role in improving the transport system. In fact, it became a means of national integration, which was necessary owing to the diverse geographical features of the country.

With regard to the relationship between coffee and other exports, it is worth asking whether during this period the Colombian economy may have suffered from the effects of Dutch disease. However, in those years the manufacturing and handicraft industries increased their share of GDP, while the share of the "other" category, where non-tradable sectors were located, remained virtually constant. In view of this, it is plausible to argue that in this period, there were "Dutch benefits".

The revaluation of the real exchange rate, may have encouraged investment in production of tradable goods by reducing the relative cost of imports of capital goods, especially when they were trade substitutes for imports. This positive effect on industry, however, was the opposite of what could have happened in the agricultural sector. Actually, in terms of production, there was little industrial activity before the 1930s, but it grew rapidly from that time.

In 1945, industrial production was led by consumer goods (80.7%), followed by intermediate goods (16%) and a very low share of capital goods (3.3%). In fact, a more detailed examination reveals the great weight attached to industries of low added value and limited technological progress within the large sectors. Instead of planning to enter foreign markets, most of the new industrial production in this period sought to meet growing domestic demand.

As we have seen, America is the region to which the country exported the widest range of its products. However, the number of products exported to the region remained relatively stable until 1935. In 1936, the number of items exported to South America almost tripled, and from 1939 onwards, trade also grew with Central America and the Caribbean. During the war, there were variations that intensified trade within the countries of South America, in contrast with the European market. Of the countries which share a border with Colombia, there is

a greater expansion, especially in terms of the extensive margin, of exports to Venezuela, Panama and Ecuador but not to the other countries. In 1946, Colombian exports went up to Europe and went down to South America.

3. *To determine if there were more intra-industry trade between Colombia and those countries of South America with similar factor endowments and greater geographic and cultural proximity.*

In this PhD thesis, it is found that there was greater regional integration with those countries with similar factor endowments in terms of intra-industry trade, captured by income differentials. Furthermore, of the four countries in South America with which Colombia shares a border, increased trade was only observed with Venezuela and Ecuador. In the case of Peru and Brazil, not only the intra-industry trade levels were low, but also the global trade levels. Besides to the similarities in factor endowments, the distances and cultural proximity, had a great impact on the intra-industrial integration. For our sample, it is clear that distance had a strongly adverse empirical correlation with the *share* of intra-industry trade.

Clearly, during the twenties Venezuela was almost the only market for Colombian exports to the region and remained the main destination of goods in the thirties and forties. Although exports to Argentina were very low in the 1920s, for the 1930s and 1940s they were strengthened by oil exports. In the case of the share of exports to Ecuador, the figures were much more modest, with an average of 13.2% during the 1940s. While in the twenties and thirties, Venezuela and Ecuador were Colombia's main regional suppliers, in the forties Argentina, Brazil and Peru played a more prominent role.

Intra-industry trade began to appear, (albeit modestly), as a form of regional integration, especially in the 1940s. Most intra-industry trade occurred in vertically differentiated products, that is, the sector-level explanation of Colombia's intra-industry trade with the region could have been attributed to differences in product quality. In addition, some intra-industry trade with horizontal differentiation is observed with Peru, Ecuador and Venezuela.

Although there was a wide variation in the results from one year to the next, the categories where there was more consistent intra-industry trade within the sample, were those related to the following: live animals, animal and vegetable products and cork and wood manufactured goods. In addition, there was some kind of intra-industry trade in articles of apparel and clothing accessories, as well as miscellaneous manufactured items. Similar goods were traded for consumption, inputs for industry and in natural and labor-intensive products.

One of the factors that may have influenced the volume of intra-industry trade in the region, is that a high percentage of the raw materials used for non-durable consumer goods were of national origin, which were in many cases protected by import quota systems. There was therefore some degree of self-sufficiency with regard to the raw materials used in industry, such as food-production. But there were also constraints imposed by transport costs.

Finally, another peculiar feature of the region, and to the time, is that despite their attempts to industrialize, many countries concentrated their exports on a few agricultural or mineral products: Colombia on coffee, Venezuela on oil and Chile on copper and saltpeter, to name a few. These products had a greater market demand at an international than a regional level. Even during the war, exports to the United States

partially offset the significant fall in exports of these products to Europe.

B. LIMITATIONS AND RECOMMENDATIONS

This work has certain limitations which should be mentioned. They lead to formulation of some recommendations for future work.

One of the main limitations when examining products at the sectoral level consists of the inability to obtain a higher level of disaggregation in the classification. This is especially true in the analysis of intra-industry trade, where products with different input requirements, which may have different uses, can be grouped into the same category. In future, it might be worth comparing the records of both trading partners in an attempt to determine whether a higher level of disaggregation can be obtained. In addition, it would be worthwhile to carry out a comparative analysis of international markets as well as an analysis by the departments of Colombia.

Another limitation that emerged from the analysis of the sectoral data was the impossibility of having tariffs on imports per product and having to resort to average tariffs. Although in some years, there was information on the tariff per product for Colombia, it was also necessary to have the tariff by trade partner. As well as this, the level of aggregation of industrial categories discussed above, implies that there are tariff differentials within each industrial sector, which makes it more difficult to process and interpret the data. In view of this, the average tariff, or its differentials, did not allow us to obtain more precise conclusions about what was going on at the sectoral level. However, it served as a control variable for the levels, or differential protection. In the future, for a specific number of years, an exercise could be carried out to ensure that information per product is available

for both trading partners, to quantify the effects of the level of tariff protection.

Another limitation that arose from the analysis of the industrial information, was the availability of a single industrial census for the whole period. Although this impeded us from seeing the industrial evolutionary pattern, we believe that the levels of value added per worker did not vary much during the period. In the future, it would be of value to analyze the information from the records of some particular industries, such as textiles. In general, the Colombian companies at that time were highly concentrated and were configured as oligopolies, which might in some way assist in the evaluation of the information.

In light of the objectives and scope of Chapter 2, it was not possible to analyze the possible process of "de-agriculturization" that could have been caused by the industrialization and trade of coffee. This could have exerted greater pressure on the imports of agricultural products from some neighboring countries. Despite this, there is a relatively stable trend in the import of this type of products from the continent, where Ecuador is configured as an important supplier for the country. However, this is a valuable topic for future investigation.

Finally, we are aware of the limitations of some of the data and the need to resort to a series of assumptions throughout this thesis. We hope we have been able to outline them in a clear and opportune manner.

REFERENCES

- Absell, C. D. Tena-Junguito A. (2015): “Brazilian export growth and divergence in the tropics during the nineteenth century” UC3M *Working Papers in Economic History* WP 15-03.
- Anderson, J.A. (1979). A Theoretical Foundation for the Gravity Equation. *The American Economic Review*, 69(1), 106-116.
- Anderson J.A. & van Wincoop E. (2003). Gravity with Gravitas: A solution to the Border Puzzle, *American Economic Review*, 93, 170-192.
- Anderson, K. & Norheim, H. (1993). History, geography and regional economic integration. In Anderson, K. & Blackhurst, R. (Eds.), *Regional Integration and the Global Trading System* (pp. 19-51). Geneva: Harvester Wheatsheaf.
- Arango, M. (1983). La industria en Colombia, 1945-1953. *Lecturas de Economía*, (12).
- Badia-Miró, M., Carreras-Marín, A. & Meissner, C.M. (2014). Geography, Policy or Productivity? Regional trade in five South American countries, 1910-1950. National Bureau of Economic Research Working Paper 20790, NBER.
- Baier, S.L. & Bergstrand, J.H. (2009). Bonus vetus OLS: A simple method for approximating international trade-cost effects using the gravity equation. *Journal of International Economics*, 77, 77-85.
- Balassa, B. (1966). Tariff Reductions and Trade in Manufacturers among the Industrial Countries. *The American Economic Review*, 56(3).
- Balassa, B. (1979). Intra-industry trade and the integration of developing countries in the world economy. The World Bank, Washington.

-
- Baldwin, R. & Venables, A. (1995). *Chapter 31 Regional economic integration, Handbook of International Economics*, Volume 3, Pages 1597-1644, ISSN 1573-4404, [http://dx.doi.org/10.1016/S1573-4404\(05\)80011-5](http://dx.doi.org/10.1016/S1573-4404(05)80011-5).
- Baldwin, R. and Taglioni, D. (2006). Gravity for dummies and dummies for gravity equations, National Bureau of Economic Research Working Paper 12516, NBER.
- Baltagi, B., Egger, P., and Pfaffermayr, M. (2003). A generalized design for bilateral trade flow models. *Economics Letters*, 80(3), 391-397
- Barbieri, K., Keshk, O. & Pollins, B. (2009). TRADING DATA: Evaluating our Assumptions and Coding Rules. *Conflict Management and Peace Science*, 26(5), 471–491.
- Barbieri, K. & Keshk, O. (2012). Correlates of War Project Trade Data Set Codebook, Version 3.0. Online: <http://correlatesofwar.org>.
- Baumann, R. (1992). An appraisal of recent intra-industry trade for Latin America. *Cepal Review*, (48)
- Bell, P. (1921). Colombia, A Commercial and Industrial Handbook. Department of Commerce – Bureau of Foreign and Domestic Commerce, *Special Agents Series*, 26.
- Bergstrand, J. & Egger, P. (2006). Trade Costs and Intra-Industry Trade. *Review of World Economics*, 142(3).
- Bértola, L. & Ocampo, J.A. (2012) *The Economic Development of Latin America since Independence*. Oxford University Press. 352 pages.
- Besedeš, T. & Prusa, T. (2011). The role of extensive and intensive margins and export growth. *Journal of Development Economics*, 96.

- Bethell, L. (ed.) (1991). *The Cambridge History of Latin America*. Vol. VIII. New York: Cambridge University Press.
- Bethell, L. (ed.) (1994). *The Cambridge History of Latin America. 1930 to the Present*. Volume VI, Part 1. Cambridge University Press.
- Bonino, N., Tena-Junguito, A. & Willebald, W. (2015). Uruguay and the First Globalization: on the accuracy of export performance, 1870-1913. *Journal of Iberian and Latin America Economic History*, 33(2), pp. 287-320.
- Bulmer-Thomas, V. (2003). *The Economic History of Latin America since Independence*. Second Edition. New York: Cambridge University Press.
- Bulmer-Thomas, V. (2012). *The Economic History of the Caribbean since the Napoleonic Wars*, Cambridge University Press.
- Carreras-Marín, A., Badia-Miró, M. & Peres Cajías, J. (2013). Intraregional Trade in South America, 1912–1950: The Cases of Argentina, Bolivia, Brazil, Chile and Peru. *Economic History of Developing Regions*, 28 (2).
- Chaney, T. (2008). Distorted Gravity: The Intensive and Extensive Margins of International Trade. *American Economic Review*, 98(4).
- Clark, D. & Stanley, D. (1999). Determinants of intra-industry trade between developing countries and the United States. *Journal of Economic Development*, 24(2).
- Clemens, M. & Williamson, J. (2002). Why did the tariff-growth correlation reverse after 1950? *NBER Working Paper 9181*.

- Coatsworth, J. & Williamson, J. (2004). Always Protectionist? Latin American Tariffs from Independence to Great Depression. *Journal of Latin American Studies*, 36(2), 205-32.
- Contraloría General de la República – República de Colombia. *Comercio Exterior de Colombia*, Años: 1930–1938.
- Contraloría General de la República – República de Colombia. *Anuario de Comercio Exterior Colombia*, Años: 1939–1950.
- Departamento de Contraloría – República de Colombia. *Anuario Estadístico Comercio Exterior*, Años: 1922–1929.
- Drake, P. (1989). *The Money Doctor in the Andes: The Kemmerer Missions, 1923–1933*. Duke University Press.
- Echavarría, J. (1985). La protección arancelaria y para-arancelarias entre 1900 y 1950. Fedesarrollo.
- Echavarría, J. (1999). *Crisis e Industrialización: Las Lecciones de los Treintas*. Santafé de Bogotá: Tercer Mundo Editores.
- Echavarría, J. & Villamizar, M. (2006). El Proceso Colombiano de Desindustrialización. *Borradores de Economía*, 361, 62p.
- ECLAC (1949). *Estudio económico de América Latina, 1948*. Nueva York.
- ECLAC (1956). *La política tributaria y el desarrollo económico en Centroamérica*.
- ECLAC (1991). *A collection of documents on economic relations between the United States and Central America, 1906-1956*. United Nations Publications.

- Edwards, S. (1994). Trade and Industrial Policy Reform in Latin America. NBER Working Paper 4772. National Bureau of Economic Research, Cambridge, Mass.
- Egger, P. & Url, T. (2006). Public Export Credit Guarantees and Foreign Trade Structure: Evidence from Austria, *The World Economy*. 29(4), 399–418.
- Egger, P. & Pfaffermayr, M. (2013). The pure effects of European integration on intra-EU trade. *The World Economy* 36(6), 701-712.
- Eichengreen, B. & Frankel, J. (1995). Economic Regionalism: Evidence from Two 20th Century Episodes. *North American Journal of Economics & Finance*, 6(2), 89-106.
- Eichengreen, B. (1996). *Golden Fetters: The Gold Standard and the Great Depression, 1919-1939*. Oxford University Press.
- Eichengreen, B. & Irwin, D. (1998). The Role of History in Bilateral Trade Flows. In Frankel, J. (Ed.), *The Regionalization of the World Economy* (pp. 33-64). Chicago, London: The University of Chicago Press.
- Evenett, S. & Venables, A. (2002). Export Growth in Developing Countries: Market Entry and Bilateral Trade Flows, *University of Bern Working Paper*, mimeo.
- Federico, G. & Tena-Junguito, A. (2016a). World trade, 1800-1938: a new data-set. *EHES Working paper n.93*. Include excel data set: [Click here for the dataset](#)
- Federico, G & Tena Junguito, A. 2016(b). A tale of two globalizations: gains from trade and openness 1800-2010. London, Centre for Economic Policy Research. (CPER WP.11128).

- Feenstra, R. (2002). Border effects and the gravity equation: consistent methods for estimation. *Scottish Journal of Political Economy*, 49(5), 491-506.
- Felbermayr, G. & Kohler, W. (2006). Exploring the Intensive and Extensive Margins of World Trade. *Review of World Economics / Weltwirtschaftliches Archiv*, 142(4).
- Felbermayr, G. & Toubal, F. (2010). Cultural proximity and trade. *European Economic Review*, 54(2), 279-293.
- Fontagné, L. & Freudenberg, M. (1997). Intra-industry Trade: Methodological Issues Reconsidered. *CEPII Working Paper*, (97-01).
- Frankel, J., Stein, E. & Wei, S. (1995). Trading blocs and the Americas: The natural, the unnatural, and the super-natural. *Journal of Development Economics*, 47, 61-95.
- Gallo, A & Newland, C. (2004). Globalización y convergencia de precios en el Imperio español 1660-1810. *Revista de Historia Económica Año XXII*, 3, 573-596.
- Gao, T. (2003). Ethnic Chinese networks and international investment: evidence from inward FDI in China. *Journal of Asian Economics*, 14(4), 611-629.
- Gómez, A. (1941). *El tratado colombo-venezolano: sus antecedentes históricos*. Quito: El Comercio.
- Gómez-Herrera, E. (2013). Comparing alternative methods to estimate gravity models of bilateral trade. *Empirical Economics*, 44(3), 1087-1111.
- Greco (2002). *El crecimiento económico colombiano en el siglo XX*. Bogotá: Banco de la República/Fondo de Cultura Económica.

- Greenaway, D.; Hine, R. & Milner, C. (1995). Vertical and Horizontal Intra-Industry Trade: A Cross Industry Analysis for the United Kingdom. *The Economic Journal*, 105(433).
- Grossman, G. & Helpman, E. (2015). Globalization and Growth. *American Economic Review: Papers & Proceedings*, 105(5).
- Grubel, H. & Lloyd, P. (1975). *Intra Industry Trade*. London: Macmillan.
- Hallak, J.C (2010). A Product-Quality View of the Linder Hypothesis. *The Review of Economics and Statistics*, 92(3), 453-466.
- Helpman, E. (1981). International trade in the presence of product differentiation, economies of scale and monopolistic competition: a Chamberlin-Heckscher-Ohlin approach. *Journal of International Economics*, 11(3).
- Helpman, E. & Krugman, P. (1985). *Market Structure and Foreign Trade. Increasing Returns, Imperfect Competition, and the International Economy*. Cambridge, MA: MIT Press.
- Helpman, E. (1987). Imperfect Competition and International Trade: Evidence from Fourteen Industrial Countries. *Journal of the Japanese and International Economies*, 1, 62-81.
- Helpman, E.; Melitz, M. & Rubinstein, Y. (2008). Estimating trade flows: trading partners and trading volumes. *Quarterly Journal of Economics*, CXXIII(2).
- Hodrick, Robert J. & E.C. Prescott (1997). Postwar U.S. Business Cycles: an Empirical Investigation. *Journal of Money, Credit and Banking*, 29(1), pp-1-16.
- Hummels, D. & Klenow, P. (2005). The Variety and Quality of a Nation's Exports. *The American Economic Review*, 95(3).

- Iapadre, L. (2006). Regional Integration Agreements and the Geography of World Trade: Statistical Indicators and Empirical Evidence, in P. De Lombaerde (ed.) *Assessment and Measurement of Regional Integration*, 65-85, London: Routledge.
- Iapadre, P. L. & Plummer, M. (2011). Statistical measures of regional trade integration. In Lombaerde, P., Flôres, R., Iapadre, P. L & Schulz, M. (Eds.), *The Regional Integration Manual: Quantitative and Qualitative Methods* (98-123). New York: Routledge.
- Iapadre, P & Tajoli, L. (2014). Emerging countries and trade regionalization. A network analysis. *Journal of Policy Modeling*, 36S, S89-S110.
- Irigoin, A. (2009). Gresham on horseback: the monetary roots of Spanish American political fragmentation in the nineteenth century. *The Economic History Review*, 62(3), 551–575.
- Irigoin, A. & Grafe, R. (2012). A stakeholder empire: the political economy of Spanish imperial rule in America. *The Economic History Review*, 65 (2), 609-651.
- Jaramillo, J; Meisel, A. & Ramírez, M. (2016). La Gran Depresión en Colombia: un estímulo a la industrialización, 1930-1953. *Cuadernos de Historia Económica y Empresarial*, (39).
- Kalmanovitz, S. (2015). Capacidad estatal, fiscalidad y subyugación: Panamá entre 1903-1945. *Tiempo y Economía*, 2(1).
- Krugman, P. (1980). Scale Economies, Product Differentiation, and the Pattern of Trade. *The American Economic Review*, 70(5).
- League of Nations (1942). *The World Trade Network*. Princeton, NJ: Princeton University Press.

- Limão, N. & Venables, A.J. (2001), Infrastructure, Geographical Disadvantage, Transport Costs and Trade. *World Bank Economic Review*, 15, 451-479.
- Linder, S. (1961). *An Essay on Trade and Transformation*. New York: John Wiley & Sons.
- Lloyd, P. & Lee, H. (Eds.). (2002). *Frontiers of Research in Intra-Industry Trade*. Palgrave Macmillan Ltd.
- Martínez-Zarzoso, I. (2013). The log of gravity revisited. *Applied Economics*, 45(3), 311-327.
- Martínez-Zarzoso, I., Nowak-Lenmann, F., Parra, M.D. & Klasen, S. (2014). Does Aid Promote Donor Exports? Commercial Interest versus Instrumental Philantropy. *KYKLOS*, 67(4), 559-587.
- McQueen, C. (1926). Colombian Public Finance. Department of Commerce – Bureau of Foreign and Domestic Commerce, *Trade Promotion Series*, 43.
- Meisel, A. (1954 - [et al.] (1990). El Banco de la República: antecedentes, evolución y estructura. Bogotá: Banco de la República. Departamento editorial
- Meisel, A. (2010). Enfermedad Holandesa y exportaciones de banano en el Caribe Colombiano, 1910-1950. *Cuadernos de Historia Económica y Empresarial*, (26), 58p.
- Melitz, M. (2003). The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity. *Econometrica*, 71.
- Mitchell, B.R. (1982). *International Historical Statistics Africa and Asia*. London and Basingstoke: The Macmillan Press Ltd.

- Mitchell, B.R. (1983). *International Historical Statistics the Americas and Australasia*. London and Basingstoke: The Macmillan Press Ltd.
- Mitchell, B.R. (1992). *International Historical Statistics Europe 1750-1988*. Third Edition. London and Basingstoke: The Macmillan Press Ltd.
- Mitchell, B.R. (2007). *International Historical Statistics. The Americas 1750-2005*. New York: Palgrave Macmillan.
- Mundlak, Y. (1978). On the Pooling of Time Series Data and Cross-section Data. *Econometrica*, 46, 69-85.
- Ocampo, J. (2013). *Colombia y la economía mundial*. -2^a Ed.- Bogotá: Ediciones Uniandes.
- O'Rourke, K. & Williamson, J. (1999). *Globalization and History*. Massachusetts: The MIT Press.
- Ortega, A. (1932). *Ferrocarriles colombianos: la última experiencia ferroviaria del país: 1920-1930*. Bogotá: Imprenta Nacional.
- Ospina, L. (1979). *Industria y Protección en Colombia 1810-1930*. FAES.
- Palacios, M. (2009). *El café en Colombia, 1850-1970: una historia económica, social y política*. México, D.F.: El Colegio de México, Centro de Estudios Históricos.
- Pan American Union (1952). *The Foreign Trade of Latin America since 1913*. Washington D.C.
- Pregibon, D. (1980). Goodness of link tests for generalized linear models. *Applied Statistics*, 29.
- Petri, P. A. (1993). The East Asian Trading Bloc: An Analytical History. In Frankel, J. and Khaler, M. ed. *Regionalism and Rivalry: Japan and*

- the United States in Pacific Asia*. The University of Chicago Press. Chicago, 21-52.
- Redding, S. & Venables, A. (2004). Geography and Export Performance: External Market Access and Internal Supply Capacity. In Baldwin, R. & Winters, A. (Eds.), *Challenges to Globalization: Analyzing the Economics* (pp. 95-130). University of Chicago Press.
- Reinhart, C & Rogoff, K. (20024). The Modern History of Exchange Rate Arrangements: A Reinterpretation. *Quarterly Journal of Economics*, 119(1), 1-48.
- Reis, J. & Farole, T. (2012). *Trade Competitiveness Diagnostic Toolkit*. The World Bank. ISBN: 978-0-8213-8937-9.
- Silva, J. M. C. S. & Tenreyro, S. (2006). The log of gravity. *Review of Economics and Statistics*, 88, 641–58.
- Stiglitz, J. (1987). The causes and consequences of the dependence of quality on price. *Journal of Economic Literature*, 25.
- Tena-Junguito, A., Lampe, M & Tamega, F. (2012). How much trade Liberalization was there in the World before and after Cobden-Chevalier. *Journal of Economic History*, 72(3), 708-740.
- Tena-Junguito, A. & Willebald, H. (2013). On the accuracy of export growth in Argentina, 1870-1913. *Economic History of Developing Regions, Taylor & Francis Journals*, 28(1), 28-68.
- Thorp, R. & Bertram, G. (1985). *Perú: 1890- 1977 Crecimiento y Políticas en una Economía Abierta*. Lima: Universidad del Pacífico.
- Thorp, R. (1992). A Reappraisal of the Origins of Import-Substituting Industrialisation 1930–1950. *Journal of Latin American Studies*, 24, 181-195. doi:10.1017/S0022216X0002383X.

- Tinbergen, J. (1962). *Shaping the World Economy; Suggestions for an International Economic Policy*. New York: Twentieth Century Fund.
- United Nations Statistics Division –UNSD– (1964). *International Trade Statistics 1900-1960*.
- Wooldridge, J. M. (1995). Selection corrections for panel data models under conditional mean independence assumptions. *Journal of Econometrics*, 68, 115–32.
- Wunder, S. (1992). La enfermedad holandesa y el caso colombiano. *Coyuntura Económica*, XXII(1), pp. 167-190.

APPENDIX: DATA SOURCES AND CALCULATIONS

A. AGGREGATE TRADE DATA

The data are mainly obtained from the foreign trade statistics of a sample of countries. Owing to inaccuracies that may arise from the use of these sources, this information is compared with data from trading partners, when available. In addition, information from the records of trade partners and secondary sources was used if primary source information was not available. Growth rates were calculated from these sources with the aim of imputing data derived from an earlier data point of the original series of one or a few years. Although it is impossible to obtain a dataset without some missing values, the bilateral trade information used in Chapter 1 represents a high percentage of the total trade of the countries in the Americas. The list of trading partners included in the analysis is outlined below.

- **Argentina:** Brazil, Canada, Chile, Colombia, Denmark, Ecuador, France, Germany, Italy, Japan, Mexico, Netherlands, Norway, Peru, Portugal, Spain, Sweden, UK, Uruguay, US, Venezuela.
 - Bilateral exports from Brazil, Argentina and Uruguay between 1870 and 1939 were re-evaluated, i.e., adjusted by a coefficient which reflects the difference between the estimated and official exports. Official data were taken from: IPEA for Brazil, Ferreres (2005) for Argentina and Statistical Yearbook of the Republic of Uruguay. The estimated are obtained from: Absell-Tena (2015) for

Brazil, Tena & Willebald (2013) for Argentina and Bonino-Willebald-Tena (2015) for Uruguay.

- **Brazil:** Argentina, Canada, Chile, Colombia, Denmark, Ecuador, Finland, France, Germany, Italy, Mexico, Netherlands, Norway, Peru Portugal, South Africa, Spain, Sweden, UK, Uruguay, US, Venezuela.
- **Canada:** Argentina, Australia, Brazil, Chile, China, Colombia, Ecuador, France, Germany, Greece, Italy, Japan, Mexico, Netherlands, New Zealand, Norway, Peru, South Africa, Spain, UK, Uruguay, US, Venezuela.
- **Chile:** Argentina, Australia, Brazil, Canada, Colombia, Ecuador, France, Germany, Italy, Japan, Mexico, Netherlands, Peru, Spain, UK, Uruguay, US, Venezuela.
- **Colombia:** Argentina, Brazil, Canada, Chile, Ecuador, France, Germany, Italy, Mexico, Netherlands, Peru, Spain, UK, Uruguay, US, Venezuela.
- **Ecuador:** Argentina, Brazil, Canada, Chile, Colombia, France, Germany, Italy, Mexico, Netherlands, Peru, Spain, UK, Uruguay, US, Venezuela.
- **Mexico:** Argentina, Brazil, Canada, Chile, Colombia, Ecuador, France, Germany, Italy, Netherlands, Peru, Spain, UK, Uruguay, US, Venezuela.
- **Peru:** Argentina, Australia, Brazil, Canada, Chile, China, Colombia, Ecuador, France, Germany, Italy, Japan, Mexico, Netherlands, Spain, UK, Uruguay, US, Venezuela.
- **United States:** Argentina, Australia, Brazil, Canada, Chile, China, Colombia, Denmark, Ecuador, Finland, France, Germany, Greece, Italy, Japan, Mexico, Netherlands, New Zealand, Norway, Peru, Portugal, South Africa, Spain, Sweden, Thailand, UK, Uruguay, Venezuela.

- **Uruguay:** Argentina, Brazil, Canada, Chile, Colombia, Ecuador, France, Germany, Italy, Mexico, Peru, Portugal, Spain, UK, US, Venezuela.
- **Venezuela:** Argentina, Brazil, Canada, Chile, Colombia, Ecuador, France, Germany, Italy, Mexico, Netherlands, Peru, Spain, UK, Uruguay, US.

A. 1. America foreign trade records

Argentina

- República Argentina. Dirección General de Estadística de la Nación. *Anuarios del Comercio Exterior de la República Argentina*. (Several years).
- *Resumen General del Comercio Especial Exterior por Procedencias y Destinos* (1885).
- *Estadística del Comercio y de la Navegación de la República Argentina* (1890-1913).

Brazil

- Brazil, Tesouro Nacional. *Estatística do commercio maritimo do Brazil do exercicio de 1870-1871*. Rio de Janeiro, 1877.
- Brazil, Alfandega do Rio de Janeiro. *Estatística da importação directa do estrangeiro em 1898*.
- Brazil, Directoria de Estatística Commercial. *Importação-Exportação Geral da Republica dos Estados Unidos do Brazil de Janeiro a Dezembro de 1901*.
- Brazil, Directoria Geral de Estatística. *Anuario Estatístico do Brazil*, Anno I (1908-1912); Vol. II- Economia e Finanças, Rio de Janeiro, 1917.
- Brazil, Directoria Geral de Estatística. *Comércio Exterior do Brasil*. (Several years).

- Brazil, Instituto Brasileiro de Geografia e Estatística. *Anuário Estatístico do Brasil* 1939-1940.
- Brazil, Tesouro Nacional. Serviço de Estatística Economica e Financiera. *Comércio Exterior do Brasil*. Resumo por mercadorias. 1944
- Brazil, Serviço de Estatística Economica e Financiera. *Comércio Exterior do Brasil*. Por mercadorias, segundo os países. (Several years)

Canada

- *Annuaire du Canada 1934-1935*, Bureau Federal de la Statistique, Section de la Statistique Generale.
- *Statistical Abstract for the several colonial and other possessions of the United Kingdom in each year from 1870 to 1884*. Twenty-second number, London, 1885. House of Commons Parliamentary Papers Online.
- *Statistical Abstract for the several British self-governing dominions, colonies, possessions, and protectorates in each year from 1900 to 1914*. Fifty-second number, London, 1916. House of Commons Parliamentary Papers Online.
- Statistics Canada, *Trade of Canada, Volume I, Summary and Analytical Tables*, 1966-1968, (Catalogue 65-201), Table 5.
- Historical Statistics of Canada.
<http://www.statcan.ca/english/freepub/11-516-XIE/sectiona/toc.htm>

Chile

- Chile, Oficina de Estadística Comercial. *Estadística comercial de la República de Chile*. (Several years).
- Chile, Oficina Central de Estadística. *Anuario Estadístico de la República de Chile, volumen de comercio exterior*. (Several years)

- República de Chile, Dirección General de Estadística, *Estadística Anual. (Several years)*.
- Chile, Oficina Central de Estadística. *Sinopsis estadística y geográfica de la República de Chile en 1887*.

Colombia

- Colombia, Hacienda Nacional, *Estadística del Comercio Exterior y de Cabotaje 1872-1873*.
- Colombia, Oficina de Estadística Nacional. *Anuario Estadístico de Colombia, 1875*.
- Colombia, Ministerio de Gobierno. *Estadística General de la República de Colombia, 1905*.
- Colombia, Dirección General de Estadística. *Comercio exterior de la República de Colombia. (Several years)*
- Colombia, Departamento de Contraloría. *Anuario Estadístico Comercio Exterior. (Several years)*.
- Colombia, Departamento de Contraloría. *Comercio Exterior de Colombia. (Several years)*.
- Colombia, Dirección Nacional de Estadística. *Anuario de Comercio Exterior. (Several years)*

Ecuador

- Ecuador, Dirección de Estadística Comercial, *Comercio exterior de la República del Ecuador, 1891*.
- Ecuador, Sección de Estadística. *Boletín estadístico del movimiento comercial. (Several years)*.
- Ecuador, Ministerio de Hacienda. *Resumen estadístico del comercio exterior de la República del Ecuador en el curso de la década 1911-1920*.
- Ecuador, Ministerio de Previsión Social y Trabajo. *Comercio Exterior de la República del Ecuador en la década 1916-1925*,

adaptado a la Nomenclatura de Bruselas. Talleres Tipográficos Nacionales. Quito, 1927.

Mexico

- INEGI (2009). *Estadísticas Históricas de México*. Colección Memoria.
- Mexico, Dirección General de Estadística. *Anuario Estadístico de los Estados Unidos Mexicanos*. (Several years).
- Kuntz Sandra (Database: Mexico's bilateral trade, personal communication with the author).

Peru

- Perú, Superintendencia General de Aduanas. *Estadística del Comercio Especial del Perú*. (Several years)
- Perú, Dirección Nacional de Estadística. *Extracto Estadístico del Perú*. (Several years)
- Perú, Departamento de Estadística General de Aduana. *Anuario del Comercio Exterior del Perú*. (Several years)

Uruguay

- Uruguay, Dirección General de Estadística. *Anuario Estadístico de la República Oriental del Uruguay*. (Several years).
- Suplemento Estadístico de la Revista de Economía del Banco de la República Oriental del Uruguay, 1944-1950.
- Uruguay, Dirección General de Estadísticas. *Apuntes Estadísticos (Población, Comercio, Hacienda) para la Exposición Universal de París. 1878*, Impresión a Vapor Tribuna. Años 1870 y 1871.

United States

- United States, Department of Commerce. *Statistical Abstract of the United States*. (Several years).
https://www.census.gov/library/publications/time-series/statistical_abstracts.html

- United States, Department of Commerce. *Historical Statistics of the United States, Colonial times to 1957*. Washington, D.C: US Government Printing Office-United States of the Census.

Venezuela

- Venezuela, Dirección General de Estadística y Censos Nacionales. *Memoria de la Dirección General de Estadística al Presidente de los Estados Unidos de Venezuela en 1873*.
- Venezuela, Dirección General de Estadística. *Estadística mercantil y marítima de Venezuela, 1875*.
- Venezuela, Dirección General de Estadística. *Boletín de Estadística de los Estados Unidos de Venezuela, 1905*.
- Venezuela, Dirección General de Estadística e Inmigración. *Anuario Estadístico de Venezuela*. (Several years)

A.1.1. Trading partners: trade records

Australia

- Australia, Commonwealth Bureau of Census and Statistics. *Official Year Book of the Commonwealth of Australia*. (Several years)
- UK *Statistical abstract for the several Colonial and other Possessions of the United Kingdom, in each year for 1870 to 1884* (edt.1885). *in each year for 1877 to 1891*(edt.1892); *in each year for 1890 to 1904* (edt1905); George E. Eyre and William Spottiswoode, London. Later, *Statistical Abstract for British Self-governing Dominions, Colonies, Possessions, and Protectorates in each year from 1909 to 1923* (edt 1926). Wyman and Sons, Limited, Fetter Lane, E.C., London. Later *Statistical Abstract for the several colonial (Mandated territories), 1923-1927* (edt. 1928) and *Statistical Abstract for*

the British Empire. for each of the years 1913 and 1924 to 1929 (edt.1931) and *for each of the years 1927 to 1936* (edt. 1937). London His Majesty Stationery Office.

Belgium

- Belgium, *Annuaire Statistique de la Belgique* 1870-83, 1907, 1910-32 by the Ministère de l'intérieur; 1884-1906, by the Ministère de l'intérieur et de l'instruction publique; 1908-09, by the Ministère de l'intérieur et de l'agriculture; 1933- by the Institut national de statistique (called 1927/28-1932 Statistique générale, 1933- Institut central de statistique).

China

- China. The maritime Customs. I Statistical Series: n° 3 and 4. *Returns of Trade and Trade Reports*, 1870-1913. Abstract of Statistics and Report on Foreign Trade of China. Shangay 1914.
- China. The Maritime Customs. *Foreign Trade of China 1931-39*. Part 1: Report and Abstract of Statistics. Shangay.

Denmark

- Denmark, Udgivet af Statens Statistiske Bureau. Danmarks Statistik. *Statistik Aarboog 1895-1950*. Annuaire Statistique.
- Hans, J. (1985). *Danish historical statistics 1814-1980*. Copenhagen: Gyldendal

Finland

- Finland, Bureau Central de Statistique de Finland, *Annuaire Statistique de Finlande, 1876-1913*.
- Finland, Finlands Officiella Statistik, *Commerce Extérieur de la Finlande, 1945-1948*.

France

- France. *Tableau général du commerce de la France avec ses colonies et les puissances étrangères*". [1825-1895]; later, *Tableau général du commerce et de la navigation*. 1er volume,

Commerce de la France avec ses colonies et les puissances étrangères". [1896-1927]; later, *Tableau général du commerce extérieur: commerce de la France avec ses colonies et les puissances étrangères*". [1928-1938]. Administration des douanes.

- France. Ministère de l'agriculture et du commerce. *Annuaire Statistique de la France*. (Several years)

Germany

- Germany. *Statistisches Jahrbuch für das Deutsche Reich*. Statistischen Reichsamts. (Several years) Available on line <http://www.digizeitschriften.de/dms/toc/?PPN=PPN514401303>

Greece

- Greece. Le Bureau de Statistique. *Statistique du Commerce Spécial de la Grèce avec les pays étrangers*. (several years).

Italy

- Italy, Ministero delle Finanze, *Movimento commerciale del Regno d'Italia*, 1863-1939.
- Federico G.; Natoli, S.; Tattara, G. & Vasta, M. (2011): *Il commercio estero italiano 1862-1950*. Bari: Laterza. (And personal communication).

Japan

- Abstract of Reports of Trade of Various Countries and Places for the year 1870. Board of Trade. Through the Foreign Office Foreign from her Majesty's minister and consul; later, Statistical Tables Relating Foreign Countries (several years): Compiled chiefly from the official returns of the respective countries. British Parliamentary Papers. London; later Statistical Abstract for the Principal and other Foreign Countries in each year from 1907 to 1918. Statistical

Department, Board of Trade (UK): Eyre and Spottiswoode, Ltd., East Harding Street, E.C., London. (several years).

Netherlands

- Netherlands. Centraal Bureau voor de Statistiek. *Jaarcijfers voor Nederland. [Statistical yearbook]* 1850/51-1965/66. Netherlands.
- Annuaire Statistique du Royaume des Pays-Bays (Royaume en Europe). (several years)

New Zealand

- UK *Statistical abstract for the several Colonial and other Possessions of the United Kingdom, in each year for 1870 to 1884* (edt.1885). *in each year for 1877 to 1891*(edt.1892); *in each year for 1890 to 1904* (edt1905); George E. Eyre and William Spottiswoode, London. Later, *Statistical Abstract for British Self-governing Dominions,*

Norway

- Norway, Statistisk Aarbog, Udgivet af det Statistiske Cetralbureau. *Annuaire Statistique de la Norvège.* (Several years).

South Africa

- UK *Statistical abstract for the several Colonial and other Possessions of the United Kingdom, in each year for 1870 to 1884* (edt.1885). *in each year for 1877 to 1891*(edt.1892); *in each year for 1890 to 1904* (edt1905); George E. Eyre and William Spottiswoode, London. Later, *Statistical Abstract for British Self-governing Dominions,*

Spain

- España, Dirección General de Aduanas. *Estadística general del comercio exterior de España* con sus posesiones de ultramar y potencias extranjeras. (Several years)

- España, Dirección General de Aduanas. *Estadística general del comercio exterior de España*, Fondo documental del Instituto Nacional de Estadística. (Several years)

Sweden

- Sweden, Sveriges Officiella Statistik. *Kommerskollegii. Underdaniga Berattelse*. (Several years)
- Sweden. *Historisk statistik för Sverige Del 3. Utrikeshandel 1732-1970*. Lund: Berlingska Boktryckeriet

Thailand

- Thailand, *Annual Statement of the Foreign Trade and Navigation of the Kingdom of Siam*.

United Kingdom

- United Kingdom. *Annual statement of the trade and navigation of the United Kingdom with foreign countries and British possessions in the year ...* (later) *Annual statement of the trade of the United Kingdom with foreign countries and British possessions in the year*. Board of trade, Statistical Department. London: His Majesty Stationery Office.

A.1.2. Secondary sources

The following comparative international sources are omitted from the list below: Board of Trade (several years) *Statistical Tables Relating Foreign Countries*. Compiled chiefly from the official returns of the respective countries. British Parliamentary Papers, London and Pan American Union (1952). Another source used was Barbieri and Keshk (2012).

- Braun-Llona, J.; Braun-Llona, M.; Briones, I.; Díaz, J.; Lüders, R. & Wagner, G. (1998). *Economía Chilena 1810-1995. Estadísticas Históricas*. Documento de Trabajo IE-PUC, (18).
- El Colegio de México (1960). *Estadísticas Económicas del Porfiriato y Comercio Exterior de México. 1877-1911*. México.
- Federico G.; Natoli, S.; Tattara, G. & Vasta, M. (2011): *Il commercio estero italiano 1862-1950*. Bari: Laterza.
- GRECO (2002). *El crecimiento económico colombiano en el siglo XX*. Bogotá: Banco de la República / Fondo de Cultura Económica.
- Kuntz, S. (2002). Nuevas Series del Comercio Exterior de México, 1870-1929. *Revista de Historia Económica*, Año XX, 2, 213-270.
- Moll, B. & Barreto, E. (1942). El sistema monetario de Perú (segunda parte). *Revista de Economía y Estadística*, Primera Época, 4(3), pp. 283-325.
- Morse, H. (1910): *The international relations of the Chinese empire*. London: Longmans, Green, and Co.
- Nahum, J. (coordinador) (2009). *Estadísticas históricas del Uruguay 1900-1950*. Uruguay: Universidad de la República.
- Ocampo, J. A. (2013). *Colombia y la Economía Mundial 1830-1910*, 2^a ed. Bogotá: Ediciones Uniandes.
- Vaillant, A (1873). *La República Oriental del Uruguay en la Exposición de Viena*. Montevideo: La Tribuna

B. DISAGGREGATED TRADE DATA: EXPORTS AND IMPORTS OF COLOMBIA

The detailed information at a product level since 1922, is taken from the Yearbooks of Foreign Trade of Colombia. Since this country depends to a great extent on its foreign trade, these yearbooks were very important in compiling its national statistics. Thus, these years can be regarded as a reliable indicator of the data, while we are aware of their limitations. Although the merchandise in transit was not recorded for exports or imports, exports of foreign goods were included in some cases, especially in the area of machinery, because of the delivery of material required for the oil companies. Nevertheless, as outlined in the Yearbook of 1950, the total number of foreign goods exported did not reach 0.004% of the total volume of exports for that year.

Further, some changes were made to the trade statistics yearbooks during the period. In 1935, a change was made in the statistical classification of the yearbooks, so that, in a general way, it complied with the nomenclature adopted by The International Convention on Economic Statistics (held in Geneva in 1928). This change largely applied to the way the products were classified by economic and industrial groups which, for the purposes of the analysis conducted in this work at product levels, does not cause problems in the handling of the data. In fact, one of the main advantages that led to the change, is that it allows the partial figures to be controlled. This is because, in addition to detailed information on trade, summaries have been included in chapters. Another important change during the period concerned the way the value of imports was recorded, as will be discussed below.

All the prices in the yearbooks are given in Colombian pesos. The trade valuation for the exports is calculated F.O.B, in port of shipment. In the case of the imports, until 1936 the values were calculated F.O.B in

foreign port and from 1937, the C.I.F values were recorded in the Colombian ports of entry (according to the value declared in the consular invoices). In the analysis of intra-industry trade, this can represent a significant difference between the two flows. In converting the import figures of 1942 and 1950 from C.I.F to F.O.B per product, a 12% decrease in the value of imports was set for those years. Although this figure is arbitrary, it corresponds to the same percentage used in official statistics to compare the total values of imports between these years (but in this case, they went from F.O.B to C.I.F). In Chapter 3, this was carried out to make the flows comparable (F.O.B - F.O.B) for compiling the Grubel-Lloyd index, which is the variable of interest.

SITC Rev.4 was used (4-digit level) to classify the export and import data. A higher level of disaggregation was not possible because of the way in which the data were recorded in the yearbooks. In some cases, we had to base the classification on a set of assumptions. In some years, generic records appear such as the item "pharmaceuticals" and it was decided to classify this as Code 5419, in the knowledge that it could belong to any subgroup of category 541. However, it was considered to be a satisfactory classification since, in general, the products are specified very clearly in terms of their characteristics and types of material. An additional search also had to be carried out to understand the type of product in question, which was not necessarily simple ("chinchorros", "curarina", "dividivi", to name a few).

B.1. EXPORTS

All the information on exports is taken from the Colombian Yearbooks of Foreign Trade. Exports are classified by country of sale because it was difficult to accurately determine the country of destination. The merchandise comprises silver in all its forms, but excludes gold in bars

and coins, issued bank notes and other denominations in circulation. In terms of destination, from the beginning the Canal Zone and “other” category were excluded. For the calculation of the intensive and extensive margins to the growth of exports, the remaining destinations were maintained (82) provided that at least one product had been exported there during the last 29 years. In the case of the models where the determinants of each export margin were evaluated, the sample had to be reduced owing to the lack of availability of some data, and only included the countries in Table A.1, which represent more than 98% of exports in both margins.

Table A.1. Countries included in the models of margins of exports

Destination country	Number of exported categories (whole period)	Average exported categories	Average exported value in million USD	Share of exported value (whole period)
Argentina	239	8.2	0.4	0.31
Austria	27	0.9	0.0	0.00
Belgium	185	6.4	0.9	0.74
Bolivia	74	2.6	0.0	0.00
Brazil	157	5.4	0.1	0.06
Canada	172	5.9	5.7	4.93
Chile	229	7.9	0.1	0.05
Costa Rica	404	13.9	0.0	0.04
Cuba	342	11.8	0.2	0.17
Czech Republic	39	1.3	0.0	0.04
Denmark	58	2.0	0.1	0.05
Dominican Republic	71	2.4	0.0	0.00
Ecuador	1047	36.1	0.2	0.18
El Salvador	72	2.5	0.0	0.01
Finland	19	0.7	0.3	0.28
France	375	12.9	1.7	1.47

Germany	536	18.5	3.5	3.03
Guatemala	121	4.2	0.0	0.00
Haiti	24	0.8	0.0	0.00
Honduras	71	2.4	0.0	0.01
Italy	211	7.3	0.5	0.39
Jamaica	54	1.9	0.0	0.00
Japan	86	3.0	0.0	0.04
Mexico	256	8.8	0.2	0.17
Netherlands	288	9.9	1.9	1.62
Netherlands Antilles	1303	44.9	4.2	3.65
Nicaragua	122	4.2	0.0	0.01
Norway	33	1.1	0.1	0.05
Panama	1625	56.0	0.3	0.23
Paraguay	10	0.3	0.0	0.00
Peru	386	13.3	0.1	0.04
Poland	16	0.6	0.0	0.02
Portugal	19	0.7	0.1	0.08
Puerto Rico	98	3.4	0.0	0.00
South Africa	10	0.3	0.0	0.01
Spain	217	7.5	0.2	0.17
Sweden	88	3.0	0.7	0.61
Switzerland	107	3.7	0.2	0.19
Syria	22	0.8	0.0	0.00
UK	503	17.3	2.0	1.74
Uruguay	72	2.5	0.1	0.05
US	1869	64.4	89.9	77.78
USSR	18	0.6	0.1	0.11
Venezuela	2091	72.1	1.9	1.66

B.1.1. Exports and the Industrial Census of Colombia

The information about exports was linked to the information obtained from the First Industrial Census of Colombia (1945). The idea was to combine each item of exports with a subcategory of the industrial census (listed in Table 2.1). Within the census, each subcategory is

disaggregated by the type of products that formed it, and which served as a reference-point for joining the series. Clearly the agricultural products were left without data with regard to the census information. However, to provide a dummy of products requiring higher or lower skills, we used the coffee threshing machines as a benchmark. This was because, as Echavarría (1999) states, labor intensity for coffee would be higher than the average for agriculture.

B.2. IMPORTS

All the information on imports is taken from the Yearbooks of Foreign Trade of Colombia. It includes the general imports of goods that are subject to customs control, which are for domestic consumption, since nationalized products to be exported are included in the “re-export” chapter. Temporary entries, such as samples with no commercial value and luggage with personal effects are excluded. The conversion of foreign currencies into Colombian pesos is carried out according to the average exchange rate in the month of import. The import statistics are disaggregated by countries of origin and purchase. Although in most cases, especially for the countries examined in Chapter 3, the country of origin and purchase coincide, information was always included if it corresponded to country of origin.

C. GDP DATA

Due to the fact that the gravity model is an expenditure function, it is inappropriate to use the real GDP (Baldwin & Taglioni, 2006). In view of this, Maddison’s GDP was taken and converted to current prices using the GDP deflator of the United States. Note that in 1990, one Geary-Khamis dollar is equal to one US dollar. We are aware that there are other methods to obtain GDP in current dollars and, perhaps,

the best of these involves using data based on the exchange rate and nominal GDP in the national currency but other sources of cross-country data do not provide data on GDP before 1950.

As inadequate deflation can lead to bias, two types of controls are taken into account: first, a contrast of validity is performed with the nominal series obtained from Federico-Tena (2016b) while, dummies for country-time effects are included. Additionally, as there is no complete GDP series for some countries, growth rates of per capita exports were used to obtain this series. This should not, in principle, affect the results as it only applies to a few small countries whose GDP cycles have to be correlated with export cycles. However, it also allows us to retain valuable information within the models, especially in Chapter 2, such as exports to Panama and the Dutch Antilles. In this case, the Caribbean export data are taken from Bulmer-Thomas (2012).

D. EXCHANGE RATES DATA

All data are expressed in millions of current dollars. The dataset for exchange rates came from Federico-Tena (2016a) and some adjustment have been made on the basis of information from GRECO (2002) for Colombia, Nahum (2009) for Uruguay, Braun-Llona *et al.* (1998) for Chile, Moll and Barreto (1942) and Thorp & Bertram (1985) for Peru, and Cortés Conde *et al.* (1985) for Argentina, and Global Financial Data and MOXLAD as a last resource.

D.1. Exchange rate regimes

The sources used for classification of exchange rate regimes were Eichengreen (1996), Reinhart & Rogoff (2004), Meisel, A. (1954 - [et al.] (1990), Bethell, L. -Ed-(1994).

E. OTHER DATA

E.1. Average tariffs

The average tariff data were taken from Clemens and Williamson (2002). Furthermore, the tariffs for the remaining data were calculated, as far as possible, by establishing the relation between tariff income and the value of imports. Clearly, we do not have complete data for this series because of a lack of information about some destinations or some years. The sources used to obtain the information that allowed us to calculate the average tariff, were as follows: Mitchell (1982, 1983, 1992), Drake (1989), ECLAC (1956, 1991), Kalmanovitz (2015) and Moxlad.

E.2. Trade agreements

Below are the official sources consulted for information on Colombia's trade agreements listed in Table A.2.

- *Colombia. Diario Oficial.* Año LXIV. N. 20919. 15, octubre, 1928. Pág. 3
- *Colombia. Diario Oficial.* Año LXVI. N. 21557. 2, diciembre, 1930. Pág. 1.
- *Colombia. Diario Oficial.* Año LXXII. N. 23186. 19, mayo, 1936. Pág. 3.
- *Colombia. Diario Oficial.* Año LXXVI. N. 24548. 27, diciembre, 1940. Pág. 2.
- *Colombia. Diario Oficial.* Año LVI. N. 17440. 1, diciembre, 1920. Pág. 1.
- *Colombia. Diario Oficial.* Año LXXV. N. 24251. 26, diciembre, 1939. Pág. 5.

- *Colombia. Diario Oficial.* Año LXXV. N. 24253. 28, diciembre, 1939. Pág. 1.
- *Colombia. Diario Oficial.* Año LXXVII. N. 24794. 22, octubre, 1941. Pág. 1.
- *Colombia. Diario Oficial.* Año LXXVII. N. 24832. 9, diciembre, 1941. Pág. 2.
- *Colombia. Diario Oficial.* Año LXXX. N. 25759. 6, febrero, 1945. Pág. 8.

Table A.2. Colombia's trade agreements

Year	Treaty
1908	<ul style="list-style-type: none"> ▪ Treaty of Amity and Commerce between the Republic of Colombia and the Federal Council of the Swiss Confederation. ▪ Trade and Navigation Treaty between the Republic of Colombia and the United States of Brazil.
1912	<ul style="list-style-type: none"> ▪ Treaty of Amity between Colombia and Bolivia.
1928	<ul style="list-style-type: none"> ▪ Treaty for the Development of Trade Relations between Colombia and Sweden.
1930	<ul style="list-style-type: none"> ▪ Trade and Navigation Treaty between Colombia and Denmark.
1936	<ul style="list-style-type: none"> ▪ Most Favored Nation Clause Convention between Colombia and Belgium. ▪ Commercial Agreement between Colombia and the United States of America. ▪ Extension of the most-favored-nation clause, by virtue of the Treaty of 1 May 1829, to the Grand Duchy of Luxembourg.

	<ul style="list-style-type: none"> ▪ Agreement on Trade and Navigation between Colombia and Chile.
1938	<ul style="list-style-type: none"> ▪ Trade Agreement between Colombia and Italy. ▪ Customs Cooperation Agreement between the Republic of Colombia and the Peruvian Republic.
1939	<ul style="list-style-type: none"> ▪ Trade Agreement with Italy on most-favored-nation treatment. ▪ Agreement to regulate Commerce between Colombia and Hungary.
1940	<ul style="list-style-type: none"> ▪ Treaty of Commerce and Navigation between the Republic of Colombia and Argentina.
1941	<ul style="list-style-type: none"> ▪ Reform of the Trade Agreement signed between Colombia and Chile.
1942	<ul style="list-style-type: none"> ▪ Treaty of Commerce between the Republic of Colombia and the Republic of Ecuador.
1945	<ul style="list-style-type: none"> ▪ Trade Agreement between the Republic of Colombia and the United States of Venezuela.

E.3. Distance

The most obvious candidate for explaining the differential intensity of bilateral trade linkages is transportation costs. It would naturally not be surprising to find there are differences in shipping costs between goods traded with Europe or North America and those traded regionally. The level of international transactions costs is determined by past investments in physical infrastructure, information, financial and trade networks and trade economies of scale. Unfortunately, for the period under analysis there only exists very limited information on regional shipping costs in South America, which means that it is inappropriate for use in an econometric model.

Thus, the traditional distance proxy is used. In Chapter 1, this was measured in nautical miles between the main ports, by taking into account the distance before and after the opening of the Panama Canal in 1914 and the information was taken from: <http://www.portworld.com/>. In Chapters 2 and 3 the great circle distance between capital cities is taken from Jon Haveman's international trade data. Available at: <https://www.maclester.edu/research/economics/PAGE/HAVEMAN/Trade.Resources/TradeData.html#Gravity>

F. OTHER FIGURES AND TABLES

Table A.3. Main shipping companies in Colombian ports.

Country	Company name	Connections
US	Colombian Line	Puerto Colombia and Cartagena with New York and the Panama Canal.
US	Gulf Pacific Line	San Francisco, Los Angeles, San Diego, Houston, New Orleans, Tampa, Panama Canal, Puerto Colombia, Cartagena, Caribbean Ports and Mexico. Port of Buenaventura (Pacific) and United States.
US	Mac Cornick Steamship	San Francisco, Cartagena, Puerto Colombia and the Panama Canal.
US	Panama Mail Steamship	Puerto Colombia, Cartagena, the Panama Canal, Los Angeles and San Francisco.
US	United Fruit Company	Puerto Colombia, Santa Marta, Cartagena, ports of Venezuela, New

		York, New Orleans and some Caribbean ports.
Italy	Compañía Marítima Società Anónima Comerciale Italo-chilena	Ports of the Atlantic with Europeans.
Italy	Navigazione Generale Italiana	Ports of the Atlantic with Europeans.
France	Compagnie Générale Transatlantique	Ports of the Atlantic with Europeans.
Spain	Compañía Transatlántica de Barcelona	Ports of the Atlantic with Europeans.
Germany	Hamburg America Linie	Ports of the Atlantic with Europeans. Port of Buenaventura (Pacific) and United States.
Germany	Horn Linie	Ports of the Atlantic with Europeans.
Germany	Royal Notherlands Steamship	Ports of the Atlantic with Europeans. Port of Buenaventura (Pacific) and United States.
UK	Harrison Leyland Linie	Ports of the Atlantic with Europeans.
UK	Pacific Steam & Navigation Company	Ports of the Atlantic with Europeans. Port of Buenaventura (Pacific) and United States.
UK	Royal Mail Steam Packet	Ports of the Atlantic with Europeans.
Sweden	Jonson Line	Ports of the Atlantic with Europeans.
US	Grace Line	Port of Buenaventura (Pacific) and United States.

Source: Ortega, A. (1932).