GERMAN TRADE FINANCE IN SOUTH AMERICA DURING THE SECOND INDUSTRIAL REVOLUTION. LA BATALLA DE BUENOS AIRES, 1875 – 1913

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Abstract:

This article identifies and analyzes the determinants of the success of German exports to Argentina between 1875 and 1913, the fastest emerging market in South America at that time. New German technology and increasing productivity were complemented by banking and financial support for trade. We find that industrial sectors linked to German foreign banks *(Auslandsbanken)* in Argentina benefited from privileged access to financial support and hence exported more in comparison with other leading industrial countries. Our findings contribute to the literature on Latin American emerging markets and the role of finance in the development of foreign trade.

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I.   INTRODUCTION

By the end of the nineteenth century, the rising economies of the so-called second industrial revolution, particularly Germany and the United States, began to intensively challenge early British dominance in manufacturing productivity and its leadership in international trade markets. Great Britain's historical interest in Latin America as a source of primary commodities and a destination of manufactures was solid established even before the independence of the new Republics. That interest was heightened during the Atlantic transport revolution of the late nineteenth century, as shown by the increase of Latin America's share in total British exports (1860: 7% and 1913: 11%).[1]

Nevertheless, the revived interest by the British in Latin America in the late nineteenth century was accompanied by the emergence of new competitors, especially aggressive in the market for intensive capital manufactures from the second industrial revolution. For the rising industrial power USA, the American continent was its natural, regional trade market, but its expansion focused more on North and Central America rather than on the more distant Southern American markets. Throughout the entire nineteenth and early twentieth centuries, Britain maintained its leadership in the main markets of traditional manufactures in Latin American.[2] Yet, German new technologies and increased productivity were complemented by banking and financial support to trade, and German trade showed the fastest growth. By turn of the century, Germany had won the direct competition with the USA and positioned itself as second most important trading power, behind Great Britain, in Latin America. [3]

[Figure 1 here]

British foreign trade in South America, at that time, focused on the three largest, most economically developed and politically stable republics: Argentina, Brazil and Chile. According to Bulmer-Thomas, in 1860 Argentina and Chile represented around 12% of the whole Latin American British export market (including Central America and Mexico) compared to 31% of Brazil. The rapid growth of Argentina in the late nineteenth century attracted British investment and trade and by 1913 represented more than 40% of the whole Latin American market, leaving Brazil and Chile with a market share of 23 and 11 per cent, respectively. As Figure 1 shows, the British resisted better the new competitors, led by Germany, in Argentina than in Brazil or Chile.

At that time, Argentina was certainly one of the most dynamic markets in the world, in terms of both population and average income growth. In particular, urban centres experienced a massive influx of immigrants – the population of Buenos Aires more than tribbled between 1880 and 1912 -, increasing

1 See text and Table 1 Bulmer-Thomas (1998)
2 We have divided total exports from UK, US and Germany in current dollars to the American Continent from 1880 to 1913 in three geographical destinations a) North b) Central and c) South (see Appendix). The sum of United States and Germany exports to South America were only around 42% of the British in the early 1880´s. By the turn of the century, it was 84% and before the Great War, the sum of Germans and US exports to South America had already overcome by 22% the value of the British.
3 Following note 2 in the early 1880´s, Germany and the US exported 8 and 28 millions of US dollars respectively to South American countries. At the turn of the century, that amount was already 42 and 40 million, and in 1910-13, it was 152 and 129 million respectively.

Argentinas demand for second industrial revolution products such as steel, electrical machinery, tramways and other goods necessary to build infrastcutures.[4] In 1875, the German share of Argentinian imports was four per cent, ranking fifth among the main Argentine trading partners behind the United Kingdom, France, the USA, and Italy. By the turn of the century, Germany had become Argentina's second most important trade partner following Great Britain (see Figure 1 and 3 and Appendix – Sources).

The aim of this article is to identify and analyse the determinants of the success of German exports in comparison with the exports of other leading industrial economies in the most relevant market of Latin America between 1875 and 1913. The major hypothesis is that the relatively higher productivity of the German industrial sector, together with a unique strategy of trade finance were key drivers of German exports to Argentina. We argue that companies that maintained a special network with German banks operating in Argentina benefited from easier access to financial support and privileged information; in other words, a reduction of transaction costs and information asymmetry. Consequently, Germany exported more of those products that were exported by one or more companies connected to the banks after their entry.

We create a unique and novel data set containing disaggregated Argentine imports and the connections between German banks in Argentina and German export companies for the period 1875 - 1913.[5] We first use an augmented gravity model to define the major determinants of exports and the intensive and extensive margins of Argentina's trading partners. Besides looking at the total exports, we additionally differentiate between the exports of what we define as high skill intensity products – mostly second industrial revolution manufactures- and low skill intensity products – mostly textiles – to discuss and compare the market entry strategies of the new and old industrial powers. We then use a difference-in-difference approach to estimate the effect of German bank entry on German exports to Argentina between 1875 and 1913.

Our results show that although Great Britain dominated the Argentine market, and France and Belgium also enjoyed some privileges there, at the turn of the century Germany and the US were particularly successful in intensifying and expanding their (high skill) manufacture exports in that market. The success of the newly emerging industrial countries, especially Germany, is measured by an increased intensification of exports and seems to be explained by a higher degree of productivity and trade-finance connection. This is especially evident in the case of high skill products, as we find a significant and stronger influence of the explaining variables when looking at exports from the high skill sector. Finally, we find a positive and significant effect of the German bank entry on bank-connected product exports.

This paper makes several relevant contributions to literature. First, it enters the ongoing debate on the nexus between trade and finance (Beck, 2004; Bordo and Rosseau, 2012), providing quantitative evidence of the relation between German foreign banking penetration and export developments. Though there are various studies on 19th century German banking and trade development (see e.g. Hoffmann, 1964, Platt, 1968, Fremdling et al, 1978, Neuburger and Stokes, 1979, Pohl, 1987, Briones and Villela, 2006),

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4 See Recchini (1973) and Gutman, and Hardoy (2007).
5 The use of Argentinian import statistics instead of the individual export statistics of each trading country with Argentina has two major advantages. First, it allows to control for effects of demand and possible variations in it. Second, it assures the comparability between countries and products, as the information is homogenous and covers all the Argentinian trading partners.

analysis of the foreign bank-export nexus seems to be missing. To our knowledge, this analysis provides the first empirical confirmation of contemporaneous qualitative studies, which claimed that German trade expansion was facilitated by German foreign banks (Hauser, 1901, Riesser and Jacobson, 1911, Strasser, 1924). We moreover widen the perspective by establishing a connection between German foreign banks and the German export sector. Studies on the connection between banks and firms suggest that companies facing liquidity constraints are more likely to enter a close relationship with banks (Mizruchi and Stearns, 1988) and that companies connected to banks benefit from easier access to capital (Mintz and Schwartz, 1985). On the other hand, studies have shown that a close relation between German banks and industrial firms was crucial in the economic development of industrializing Germany (Lough, 1915, Gerschenkron, 1962, Da rin and Hellmann, 2002). Literature on German foreign banking history suggests that this relation was maintained in foreign markets as well, yet fails to provide evidence (Hauser, 1901, Strasser, 1924). Finally, this work addresses the literature on the determinants of trade developments (e.g. Hummels and Klenow, 2005, Huberman et al, 2015), emphasizing the role of a country's relative productivity and its financial networks in the competition between the leading economies in an emerging market during the first globalization.

The paper is structured as follows. The next section discusses the literature on trade finance, with an emphasis on the history of German foreign banking. Section three presents the data. Sections four and five describe and analyze the performance of German exports to Argentina in comparison to its main competitors and the connection between German banks in Argentina and the German export industry. The specifications and the results of the econometric analysis, the augmented gravity model of trade and the difference in difference model, are presented in sections six and seven. The final section offers some concluding remarks.

II. THE DEBATE ON GERMAN BANKS AND TRADE FINANCE

"German banking does not stand aloof as ours (British) does…The men who direct the German banks are all the time in close touch with the […] industries […]. With them finance, industry and transportation go hand in hand, and are regarded as integral parts of the same problem…The German banker has its finger in everything that is going on. He is presented directly or indirectly on the boards of the manufacturing, trading, shipping, and mining companies."

(Foxwell, 1917).[6]

Literature on German foreign banking suggests that the driving force behind the internationalization of German banks in the 1880s were the German *Grossbanken*[7] (great banks). One of the primary concerns of the latter was to support their important clients in the German industry in their effort to expand in foreign markets. And they did so effectively by establishing the first *Auslandsbanken* that provided financial and informational assistance abroad (Hauser, 1901, Strasser, 1924, Lange, 1926).

A decisive factor in this dynamic was the unique connection between the *Grossbanken* and the German industrial sector. Based on the idea that competitive advantage in international markets is achieved by production on a large scale, the focus of industrializing Germany in the 1870s was on creating big concerns (*Konzerne*) that soon dominated the industrial sector. This process was accompanied by the consolidation of the German banking system and the creation of new large financial institutions able to satisfy the increasing financial needs of the industrial sector; the German *Grossbanken* (Hauser, 1906 1-5, Lough, 1915 44, Ahrens, 1938 53, Hertner, 1991 100ff, Tilly, 1992 90-9). This simultaneous industrial and banking concentration resulted in a unique bank-industry nexus that occurred in three principal forms: (i) the extension of current account privileges to firms, (ii) banks holding securities of firms, and (iii) the assignment of bank officials on the *Aufsichtrat* (directory or supervisory board) of firms; the so-called Interlocking Directorates.[8]

The existence of interlocking directorates (ID) is commonly defined as the most important and powerful nexus between bank and industry, as it, besides inhering voting rights, enabled banks to access internal information about the management and working processes of the firms, and furthermore acted as a mutual commitment mechanism between the organizations (Fohlin, 1995 4-5). Mintz and Schwartz (1985) show that one of the primary motives of bank positioning in companies` boards is to gain valuable information about industry conditions and investment opportunities. The companies, on the other hand, profit from participating in the banks decisions about capital allocation.[9]

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6 In Foxwell, 1917, p. 513, based on a statement of W.R. Lawson

7 The term *Grossbanken* has been subject to several interpretations. The *Deutsche* and the *Dresdner Bank*, together with the created *Discontogesellschaft* and *Darmstädter Bank* (*für Handel und Industrie*) created in 1851 and 1853 are often referred to as the "*Vier D-Banken*". Commonly, the concept *Grossbanken* describes the nine, in terms of capital and branches, largest German banks of the second half of the nineteenth and early twentieth centuries: *A. Schaafhausen`scher Bankenverein (1848), Discontogesellschaft (1851), Darmstädter Bank (1853), Berliner Handelsgesellschaft (1856), Mitteldeutsche Creditbank (1856), Deutsche Bank (1870), Commerz Bank (1870), Dresdner Bank (1872)*, and the *Nationalbank für Deutschland (1881)* (among others, Riesser, 1911 and Whale, 1930). For a straight forward definition of the term Universal bank see George J. Benston (1994), p. 121

8 A straight forward definition of Interlocking directorates is given by Mizruchi, "An interlocking directorate occurs when a person affiliated with one organization sits on the board of directors of another organization." (Mizruchi, M., 1996, p. 271)

9 For a very good overview and discussion on the evolvment and function of interlocks see Mizruchi, Mark (1996), „What Do Interlocks Do? An Analysis, Critique, and Assessment of Research on Interlocking Directorates", *Annual Rev. Sociol. No.22, pp. 271*

The literature on interlocking directorates in pre-World War I Germany focuses on how the relation between *Grossbanken* and industry influenced the allocation of capital in the process of industrialization. Fohlin and Temin (1998), analyzing the rate of expansion and magnitude of capital mobilized together with the direct involvement of the universal banks in equity ownership of industrial firms, do not find that universal banks were more efficient in accumulating and ultimately channeling capital to growth enhancing industries in comparison to other German banking types or even in comparison to British banks (see also Fohlin 2006). Equally, studying the liquidity sensitivity of investment in Germany between 1903 and 1913 as a measure of financial constraints, Fohlin (1998)[10] does not find that related banking promoted investment or produced large effects on companies' liquidity sensitivity.

However, studies on the finance growth nexus commonly suggest that this bank industry link was crucial in the process of German industrialization, as it gave initiative to the banks to concentrate and channel capital towards the leading German industrial companies.[11] Besides their ability to allocate large amounts of capital, moreover, numerous studies stress the extraordinary perpetuity between German banks and their clients. Analyzing the development of networks between German banks and industrial firms in the nineteenth and twentieth centuries, Hopner et al affirm that German banks accompanied companies "from the cradle to the grave" (Hopner et al, 2004 342). On one hand, this implied the capacity of German banks to finance business ventures in the long-run (Hurley, 1911, Foxwell, 1917, Fohlin, 1998, and Lehman and Neuberger, 2001). On the other hand, in theory, it improved a company's access to external finance by reducing transaction and information costs (i.e. Edwards and Ogilvie, 1996, Agarwal and Elston, 2001, Beck, 2004, and Fear and Kobrak, 2010).

Yet, research that examines the importance of such a link in the development of German foreign banks and trade in the late nineteenth and early twentieth centuries seems absent. Existing studies have addressed various aspects; Karl Erich Born (1977), Manfred Pohl (1982), and Peter Hertner (1991) study the general characteristics of banks and banks abroad, Claudia Buch (1999) and Stefano Battilossi (2006) analyze the dynamic of banking internationalization, George Young (1991) emphasizes the competition German banks faced abroad, and Manfred Pohl (1987) highlights the history of individual German overseas banks. Ross Hoffmann (1969) and Hugh Neuburger and Houston Stokes (1979) investigate the rising trade war between Germany and Great Britain, and Fabian Hungerland (2017) provides an illustration of the structure and dynamics of nineteenth and twentieth centuries German bilateral trade. An empirical analysis of the German foreign bank-trade nexus seems left wanted.

At the same time, recent studies confirm a positive link between export trends and access to credit for export firms. Thomas Chaney (2005), for example, argues that financial constraints do influence a

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10 A condensed form of the here discussed publications of C. Fohlin on the history of German banks, their relation with industrial companies and their role in the economic development of nineteenth century Germany are provided in the form of a book, published in 2007, „*Finance Capitalism and Germany´s Rise to Industrial Power*", Cambridge University Press

11 Pre-World War I Germany is certainly one of the most intensely studied cases of the finance-growth-nexus in economic history (Burhop, 2006 40). See the classical studies of Riesser (1911), Lough (1915), Whale (1930), Gerschenkron (1962), Cameron (1967, 1972), on the history of German banks and their role in German industrialization and the more recent contributions to the discussion of Neuburger and Stokes (1974), Sylla, (1991), Edwards and Oglivie (1996), Benston (1995), Fohlin (1999), Da Rin and Hellmann (2002), and Burhop (2006).

company's decision to export and David Greenway et al (2007) finds a positive correlation between liquidity and export participation. Minetti and Zhu (2011) arrive at a similar conclusion, showing that credit limitations restrain exports considerably and that companies with few and only short-established relationships with creditors especially suffer from those negative effects. Berman and Héricourt affirm a positive relation between credit access, productivity and exports. While productivity increases the amount of exports possible, credit access defines a firm's actual capacity to enter the export market (Bergman and Héricourt, 2012, 206-209). Additionally, cross-country research, evolving from the work of Kalina Manova (2008, 2013) testing the finance-export relation on an industry level to the company level research of Dario Fauceglia (2015), Wang (2015), and Filomena Pietrovito and Franco Pozzolo (2016), generally confirms the existence of negative effects of financial constraints on a company's potential to export.

In the vein of this literature, this article provides first analyses of the German foreign-bank-trade-nexus and its importance in the development of German exports. Following the idea that the link between banks and industry prevailing in nineteenth century Germany equally existed between the *Auslandsbanken* and the German export sector, it examines if industries that maintained a close relation to *Auslandsbanken* exported more, as they especially benefited from the banks´ financial and informational support abroad.

III. THE DATASET

We construct two novel data sets. The sources for both are presented in the Appendix - Sources. The first data set contains Argentine imports (value in pesos de Oro) by product and country for the years 1875, 1885, 1895, 1901, and 1912, and was extracted from the original official trade statistics. It also includes the specific tariff imposed on each product. The number of products and countries per year and their classification presented in the official statistics change over time (see Appendix – Sources). Thus, to ensure the homogeneity and comparability of the classification of products over time we re-classified the imports, using the classification of exported manufactures from the United Kingdom in 1905 as presented in the British Parliamentary Papers (LXXXIV, p. 352-353). This uniformed and standardized classification for manufactured exports defines the principal classes of goods according to their comparative importance in terms of their export value in the year 1905. We expanded the original British classification by adding the following commodity groups: Food, Tobacco, Beverages, Mineral and Stones, Wood, Crystal & Ceramic Manufactures, and Other Articles. My resulting classification consists of 25 main commodity groups with various sub-groups, forming a total number of 217 different products. Each product is assigned a specific commodity group that is consistent over time. We then assign each commodity group a specific value of "skill intensity", distinguishing between; High-Skill products (HS), Mid-Skill products (MS), Low-Skill products (LS), and primary products (PP). The skill intensity of a commodity group is defined by the relative wages in the sector that produces the commodities of the respective group (see Tena-Junguito, 2010)[12.] This

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12   For the estimation of skill intensity and its relative ranking we applied the classification developed by Tena-Junguito (2010, pp. 122-125). He assembled 26 industrial products from 32 countries in 1875 in 16 different industrial sectors and estimated the relative skill intensity of these 16 sectors based on (i) the general structure of USA industrial wages in 1890 and (ii) the information on wage distribution in the textile sector (cotton, wool, hemp, jute and silk) in 1885 in Barcelona(Spain).

classification follows the principal idea of differentiating between the imports of second and first industrial revolution products. The Low-skill class consists of manufactures that typically dominated international trade during the first industrial revolution, such as textiles of all sorts (wool, linen, cotton etc.). The HS-class, on the other hand, represent the products that defined trade during the second industrial revolution, such as machinery, especially electrical machinery, and iron and steel manufactures. The MS-class includes apparel and alkali products. Food, beverages, tobacco, and raw products are grouped in the PP class. Table 8 in Appendix shows the classification of commodity groups, their relative "skill-intensity" and the high, mid and low skill cut off.

The second data set introduces the connection between German banks and export companies. The connection is measured as the number of representatives a bank has on a company´s supervisory board. WE differentiate between two types of connection; (i) The first one we define as direct connection, which is the representation of the *Auslandsbanken* operating in Argentina from 1887 to 1913 in German export companies. (ii) The second one is the representation of the mother institutions of the *Auslandsbanken* in German export companies. We refer to this as indirect connection. The information contains the character (chairman, vice-chairman, and member) and number of representatives from the directorate (*Vorstand)*, including observations on 371 indirect and 117 direct connections. In the case of the *Auslandsbanken*, We differentiate between (i) the total number of their representation (ii) and their representation in exporting companies. Such connection between the *Auslandsbanken* and German companies was possible, as both, the directorate (*Vorstand*) of the banks and the supervisory boards (*Aufsichtsrat*) of the companies were situated in Germany. The data have been obtained from two different sources. (i) The names of the members of the directorate of both banks are taken from the official annual reports of the banks, consolidated in the *Historische Institut der Deutschen Bank*. (ii) The representation of the bank supervisory members in German industries are extracted from the *Adressbuch Deutscher Exportfirmen*, 1897, and the *Handbuch deutscher Aktiengesellschaften*, 1913/14. These two Almanacs provide detailed information on all German joint stock companies, including the members of the supervisory board. This permits one to identify the representation of the members of the directorate of each bank in the supervisory board of German companies. The *Adressbuch deutscher Exportfirmen,* furthermore, gives information on which types of products each company mainly produced and exported. A company hence has been assigned as an exporting company in each class of products in the case it was defined as such in the *Adressbuch*. In the case that the company was founded after 1897, and thus does not appear in the *Addressbuch*, it has been defined as an exporting company if it was one of the one-hundred largest German companies, following the assumption that larger firms are more likely to export. For the assignment and ranking of the companies according to their size, we use the information on the Top 100 largest German companies in 1907, measured in terms of number of employees, provided by *Martin Fiedler and Howard Gospel* (2010). The German export companies with banking representation are than classified by industry according to the Standard Industrial Classification (SIC-1968), and by the type of products they export according to my classification of HS, MS, LS and PP products.

Finally, for the empirical analysis of the effect of German bank entry on German exports, we combine the information on imports and the interlocking data. We classify each of the 217 products

exported by Germany in each year according to whether it was exported by at least one of the export companies that were connected with at least one of the two *Auslandsbanken* operating in Argentina between 1887 and 1913 or not. For ease of reference, we henceforth refer to products exported by connected companies as bank-connected exports. We assume that the bank connection didn't alter over the period of investigation. The data for 1913 is used. This creates a homogenous treatment group over time. A change in the treatment group eventually could bias the effect of the treatment, as changes in exports of the treated group may be the simple result of a change in the number and/or character of the exporting companies linked to banks rather than the effect of the treatment. Yet, the data show that even if the interlocking directorates are subject to change over time, this only marginally influences the composition of products exported by the companies linked to the banks.

IV. THE EMERGING INDUSTRIAL POWERS IN THE AMERICAS AND THE ARGENTINIAN MARKET

Argentina emerged as one of the most promising markets in the last decades before World War I. In 1861, the victory of centralist forces and the reunification of the country finally ended the series of civil wars and revolts, and once the costly Paraguayan War was over, Argentina's development accelerated. The massive European immigration – mainly Italian and Spanish -, urbanization, colonization of the inner country, rapid progress in agriculture and foreign trade, and partial industrialization all combined to augment the economy and society. The population more than quadrupled between 1870 and 1912 from 1.8 million to some 7.3 million (Bulmer-Thomas, 2003, 412), and the economy followed suit. Between 1870 and 1914, Argentina experienced rapid economic growth, which changed to a real boom in the 1880s. "From 1880 to 1913, Argentina had an average growth rate of 5% p.a. in output, or about half that in terms of per capita. Argentina's income per capita had risen from 67% of developed-country levels in 1870, to 90% in 1900, and 100% in 1913." (Della Paolera, 2003 3). The massive growth of the 1880s was rudely interrupted by the crisis of 1890, when a crash of Argentina's financial system spread panic to the European financial markets. Around the third quarter of the 19th century, most income estimations situate Argentine living standards in a better position than most of the Latin American countries, however, still closer to the European periphery than to the rich European or new settler countries (Australia, New Zealand and the United States). By the early 20th century Argentina had become a member of the exclusive club of the top ten richest countries in the world. [13]

As Figure 3 shows, between 1875 and 1914 on average 77 per cent of Argentine imports came from Europe, with clear dominance of the United Kingdom (around 35 per cent). Yet, German and US products constantly gained in share as their exports grew significantly faster, in particular by the turn of the century.[14]

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13 Based on Maddison revised GDP data according to Bolt, J. and J.L van Zanden (2013)
14 The quantitative discussion on the start and span of British industrial deceleration ("climacteric") on late nineteen century in comparison of its competitors has a long tradition see: Chapter 5 of Lewis A. (1979) and Greasley (1983) or the more recent discussion on comparative industrial productivity in Broadberry (1994) and Broadberry, & Burhop, (2008).

The United States' industrial growth before the First World War was capital intensive and the contribution of foreign investors was crucial. The transition from exporting raw materials and primary products to exporting processed materials and manufactured goods was not before the period from 1895 to 1910, and was mainly based on iron and steel, copper and other capital and natural resource intensive manufactures: "the initial surge of iron and steel exports during the 1890s can be traced to the opening of the Mesabi iron ore range in Minnesota, which cut the domestic price of iron ore in half during that decade." (see Irwin, 2001, p. 2). Europe absorbed part of that export growth in manufactures but its main expansionary market at the end of the nineteenth century was the American continent with a growing share from 10% of 1880 to 30% in 1913. North America was the United States' main destination for its exports and Canada led that expansion, due to its closeness to the US and strong growth of per capita income and population during that period. Exports to Canada represented 75 per cent of the US exports in North America, and Mexico accounted for the remaining 25 per cent. Central America was also a relevant close regional market for the US, but represented only around one third of that of North America. [15]

[Figure 2 here]

Between 1890 and 1914, the annual average growth rate of British, German and US exports was 2, 5, and 6 per cent, respectively. Consequently, while Germany started with a 4 per cent share in 1874, by the beginning of the 20th century it had become the second biggest exporter to Argentina, slightly overtaking the US with a 15 per cent share. More than 60 per cent of Argentine imports were manufactures, almost half of which were products from the HS sector (see Figure 4a). Even though the Baring crisis temporarily diminished the share of the latter, at the same time it presented opportunities for other countries to gain market share and challenge the dominance of Britain.[16] Taking the chance, Germany nearly doubled its share in HS imports from 12 per cent in 1885 to 21 per cent in 1895 (the British share declined from 57.63 to 38.02 per cent) and thereby established its relative importance in the Argentine market (See Figure 4b).

[Figures 3 and 4 here]

To examine the German exports strategy, we test if it exported larger quantities of each product (the intensive margin), or rather a comparative wider set of goods (the extensive margin) than other countries. Following Hummels and Klenow (2005 710ff), we define the extensive margin as:

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15 According to Maddison's revised data in J. and J.L van Zanden (2013): Canadian GDP per capita grew at a similar rate to Argentina between 1880 to 1913, but population by a factor of 3.1 in Argentine and 1.8 in Canada.
16 The high share in the 1890s Belgian imports can be mostly explained by the fact that they included most of the transit trade from Austria-Hungary and Switzerland. It was not until 1902 that the trade of these two landlocked countries was captured separately in the Argentinian trade statistics, leading to a sudden drop of the Belgian share. See Rayes, A. (2017) who mentions a potential overvaluation by transit of imports of European origin recorded from the US. Other potential overvaluation of transit trade is that coming from Uruguay before 1895 see Bonino et al (2015).

$$EMc= \frac{\sum\limits_{i\in I_c} x_{ri}}{\sum\limits_{i\in I} x_{ri}}$$

Where x is the nominal value of imports and I_c is the set of observable categories (products) in which Argentina has positive imports from country c, with $x_{ci} > 0$. Argentina has positive imports from reference country r in all I categories (products). In this model r is defined as all other countries from which Argentina imported but country c. EMc equals the Argentine imports from country r in all I_c relative to the imports from country r in all I categories (products). The extensive margin hence can be understood as a weighted count of the categories (products) from country c relative to the categories from all other countries r. An advantage of this approach is that it prevents that a certain category (product) appears to be important just because country c and no other country exports a lot of this category (product) to Argentina. The corresponding intensive margin is defined as:

$$IMc= \frac{\sum\limits_{i\in I_c} x_{ci}}{\sum\limits_{i\in I_c} x_{ri}}$$

With *IMc* equaling the nominal Argentine imports from country c relative to the nominal imports from all other countries r in those categories in which Argentina imports from country c (*Ic*).

Figure 5 shows the extensive (5a) and intensive (5b) margins of imports from Argentina´s main trading partners. The respective margins of HS and LS products are depicted in Figures 4 and 5. Figure 3a shows a slight but constant increase in the degree of diversification of imports from all six countries, with the exception of Italy. Yet, the changes are rather small. The extensive margin of Germany increased only slightly from 0.87 in 1875 to 0.93 in 1912. Similar, British margins increased from 0.84 to 0.92 respectively. The same dynamics exist in the imports of HS and LS products (6a and 7a). Eventually, the competition between the leading exporters took place in the intensification of exports, in particular of HS goods. Figure 3b illustrates that Great Britain always exported more than any other country, but from the Baring crisis in the 1890s its intensive margins constantly decreased, while German and US margins show the opposite trend. It appears that the financial distress caused a constant decrease in the intensive margins of HS products in general and of British margins in particular (5b). While the British seemed to substitute their loss with an intensification of LS exports (7b), Germany caught up in the HS sector (6b). In 1875, the intensive margins of British HS imports exceeded those of Germany by an impressive 104 times. In 1912, the advantage had shrunk to British margins being only 1.2 times higher than German margins.

[Figures 5, 6, and 7 here]

V. GERMAN BANKS AND THE EXPORT SECTOR

The first bank in Argentina with German participation was founded in 1872, when the *Disconto – Gesellschaft* together with banking institutions from Belgium founded the *La Plata Bank*. The bank was partially taken over by the Deutsche Bank in 1874. This first endeavor, however, was not particularly successful and the life span of the bank was rather short. The bank had invested a large part of its capital in Uruguayan government bonds and when in 1874 a revolution changed political powers in Uruguay, the new government refused to pay its debts. The situation further worsened with a massive depreciation of silver in the late 1870s, diminishing the invested capital. Since then, the bank never really recovered, and after continuous complications and losses in the following years the Deutsche Bank finally managed to liquidate it in 1884/5 (Riesser and Jacobs, 1911 423 433 443, Jones, 1991 103, Young, 1991 89, and Gall et al, 1995 59). The first German foreign bank in Argentina founded exclusively by German institutions was the Banco Aleman Transatlántico (*Deutsche Überseeische Bank*), established in Buenos Aires in 1887. The *Deutsche Überseeische* (DÜB) was the most important German financial institution in Argentina and continued to be the only one until 1906, when the *Deutsche Südamerikanische Bank* (SÜD) was established. In comparative perspective, Germany was late. At the time of German entry in Latin America, British banks had already been present for more than twenty years. The British were the first to enter, driven by the primary motive to participate in the growing trade business between Latin America and Europe (Triner, 2006). In 1862 the *London and River Plate bank* was founded, followed one year later by the *British Bank of South America*. Until the second half of the nineteenth century, British trade and its financing was managed by the merchant houses, maintaining offices in England and in Latin America. With British trade and investment in Latin America accelerating intensively since the 1860s, Banks became indispensable to manage the increasing amount of financial transactions.[17] Besides the British and the German banks, the French-Italian *Banco Francés e Italiano para la America del Sud*, and the *Swiss Banco Suizo-Sud Americano* were operating in Argentina between 1875 and 1913. Yet, the largest financial institutions were the *Deutsche Überseeische Bank* and the *London and River Plate Bank* (Hurley, 1914 25).

[Table 1 here]

The DÜB and the SÜD were founded by some of the largest and leading *Grossbanken;* the *Deutsche Bank,* the *Dresdner Bank,* the *Schaffhausen´scher Bankverein*, and the *Nationalbank für Deutschland*. These banks maintained a close link to German industrial companies. This link – an indirect connection – is illustrated in Table 2. In 1913, together the four banks were represented by 441 seats in 371 different firms. This bank-industry nexus was maintained in the foreign markets via the *Auslandsbanken*. The establishment of the direct connection between the DÜB and SÜD and German industrial companies was possible because (i) the

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17 Besides being better suited to managing the increasing capital movements, banks also released the merchant houses from the necessity of maintaining expensive representation abroad, and thus, enabled smaller firms to enter into foreign trade business (Young, 1991, 82-85). In addition, some studies suggest that the British were attracted by the high interest rates prevailing in deposit and current account transactions in Latin America at this time (Young, 1991, 82-85).

headquarters with the supervisory boards of the DÜB and SÜD were located in Germany, Berlin, (ii) and moreover due to the simple fact that the members of the management *(Aufsichtsrat or Vorstand)* of the mother institutions in many cases were the same people that formed the members of the supervisory boards of the *Auslandsbanken*. In 1887, for example, all members of the supervisory board of the *Deutsche Überseeische* bank in Argentina were also members of the supervisory board of the *Deutsche Bank*, with Georg Siemens being the chairman of both boards. In 1913, 6 out of 19 and 2 out of 11 members of the supervisory board of the DÜB and the SÜD were still represented in the management of their mother institutions. The direct connection is presented in Table 3. Together, the DÜB and the SÜD were represented by 141 seats in a total number of 117 companies, of which 31 were (identified as) exporting companies. One fourth of the representatives took a leading position in the management of the export companies, inhering either the seat of the chair or vice-chairman of the company's board. It seems that the banks did not exclusively focus on the largest companies, even though they were represented in 14 of the top 100 and in three of the top ten largest firms.[18]

[Tables 2 and 3 here]

The sectorial composition of the export firms connected to the DÜB and the SÜD is rather diversified. The goods exported by the companies range from coal and petroleum products, to textile manufactures, paper, and metal manufacturing goods (see also App Table 1 Appendix). However, there is a certain tendency of concentration towards the HS sector. Figure 8 illustrates the sectorial distribution of the companies that were connected to the DÜB and SÜD*,* and the structure of their exports. It shows (8a) the number of companies and the respective number of seats in the supervisory board by the different skill classes (HS, MS, LS, PP). More than 68 per cent of the companies came from the HS sector, accounting for more than 57 per cent of the banks' overall seats in supervisor boards. Moreover, the figure illustrates (8b) the distribution of the total exported products of bank-connected companies and the share of the number of products exported by bank-connected companies on the total number of products imported by Argentina by skill class. Of all the goods exported by bank-connected companies, 45 per cent were HS products, covering 36 per cent of the variety of total Argentine HS imports. The companies that exported HS products were from the metal manufacturing industry such as the *Mannesmannröhren Werke,* the *Phönix AG für Bergbau und Hüttenbetrieb* -that mainly exported iron ore, metal tubes, steel- and the large electrical enterprises such as the *Allgemeine Elektrizitäts-Gesellschaft (AEG)* or *Siemens & Halske* - exporting electrical wires, electrical motors and dynamos, amongst other products.

[Figure 8 here]

A first review of the quantitative evidence seems to confirm that the performance of bank-connected exports benefited, although with a time lag, from the bank´s entry into the market. Table 4

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18 Measured in terms of employees, see Fiedler et al (2010)

compares the share and growth of bank-connected exports with the rest of German exports. In the years 1875 and 1885, the bank-connected exports accounted for one fourth of total German exports. The situation did not change in the first year of observation after bank entry, 1895. However, in the following years the bank-connected exports increased significantly more than the rest of German exports, doubling between 1895 and 1901, and reaching a share of 56 per cent of total exports in 1913. This increase of bank-connected exports after 1895 may to some extent have been driven by a general increase in the Argentine demand of these products at that time, given the high share of HS products in German bank-connected exports. The financial constraints that Argentina faced as result of the sovereign-debt crisis in 1890 (Baring crisis) caused a sudden drop in the import of capital-intensive products, followed by a recovery and increasing imports in the second half of the 1890s. However, as discussed and illustrated previously, whereas Argentina's increasing demand did not lead to an equal increase in the exports of HS goods of all countries, Germany's exports and market share increased. The idea that the increase of German bank-connected exports is not exclusively the result of demand effects is additionally strengthened by the following test. If one looks at the British exports, assuming a hypothetical differentiation between bank-connected and the rest of exports based on the exact same classification as in case of the German exports, one can observe that bank-connected exports only grew by 2.8 per cent and their share of total exports only marginally varied from 1895 to 1901 (See App Table 3 Appendix). This clearly highlights the dynamics of German bank-connected exports.

[Table 4 here]

VI. FIRST STAGE. THE DETERMINANTS OF EXPORTS AND THEIR MARGINS

Using an augmented gravity model, based on the theoretical assumptions of Head and Mayer (2013), this section empirically identifies and analyzes the determinants of the exports of the major trading partners of Argentina between 1875 and 1912.

We distinguish between two types of models. The "Standard Models", examining the factors that shaped the development of total imports (1) and High-Skill (2) and Low-Skill (3) imports, and the "Advanced Models" that analyse the extensive and intensive margin of the total imports (4), (5), and the different skill classes (6), (7), (8), (9). Seen from the supply side, we test for the influence of the relative productivity and the size of the economy of the exporting countries – measured as relative wages and real GDP[19] respectively. Relative productivity, however, is the productivity of each country in comparison to other countries, and not the productivity of different export sectors, with the intention to capture their competition among countries in a common market. The possible effects of demand on exports are considered by the use of data on Argentine imports instead of the individual exports statistics of each trading partner. In addition, we account for the possible influence of transport costs, proxied by geographical

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19 Alternatively, population has been used as a measure of the size of an economy, which did not change the results of the estimation significantly, showing the same patterns as GDP.

distance in the absence of freight costs, and tariff frictions – measured as product specific tariffs. The number of banks of each country operating in Argentina in each year are used as an indicator of the presumable influence of finance. The models include observations from fourteen countries[20] for the years 1875, 1885, 1895, 1901 and 1912. The number of trading partners was determined by the availability of data on respective GDP and real wages. Together, these countries account on average for more than 89 per cent of total imports, which we believe is a representative share. Expressed in the form of an equation, the "Standard Model" for total imports is designed as followed:

$$X_{ct} = \beta_0 + \beta_1 lnY_{ct} + \beta_2 lnW_{ct} + \beta_3 lnD_c + \beta_4 AdvW_{ct} + \beta_5 B_{ct} + \beta_t + \varepsilon_{ij} \quad (1)$$

Where X_{ct} is the nominal value of imports of Argentina from country c in year t, β_0 is a constant, Y_{ct} the nominal national income of each country (GDP) in each year, and W_{ct} are the real wages of c in year t (100 = Great Britain real wages in 1905). D_c is the great circle distance between the capital cities of c and Argentina in kilometres. The variable $AdvW_{ct}$ represents the ad valorem equivalent of the tariff of Argentina weighted by the imports (by product) from country c to Argentina in t (weighted ad valorem tariff).[21] B_{ct} is a numeric variable, representing the number of banks of country c present in Argentina at time t. The estimated model also includes time fixed effects (β_t) and ε_{ij} is an error term, representing the myriad other influences on exports. The "Standard Models" for the HS and LS imports are correspondingly specified as:

$$HSX_{ct} = \beta_0 + \beta_1 lnY_{ct} + \beta_2 lnW_{ct} + \beta_3 lnD_c + \beta_4 AdvWHS_{ct} + \beta_5 B_{ct} + \beta_t + \varepsilon_{ij} \quad (2)$$

and

$$LSX_{ct} = \beta_0 + \beta_1 lnY_{ct} + \beta_1 lnW_{ct} + \beta_2 lnD_c + \beta_3 AdvWLS_{ct} + \beta_4 B_{ct} + \beta_t + \varepsilon_{ij} \quad (3)$$

Where HSX_{ct} and LSX_{ct} is the nominal value of imports of High-Skill and Low-Skill products from country c in year t, respectively. $AdvWHS$ and $AdvWLS$ represent the weighted ad valorem tariff of HS and LS imports. The "Advanced Models" with the extensive and intensive margins of total imports are defined as:

$$EM_{ct} = \beta_0 + \beta_1 lnY_{ct} + \beta_2 lnW_{ct} + \beta_3 lnD_c + \beta_4 AdvW_{ct} + \beta_5 B_{ct} + \beta_t + \varepsilon_{ij} \quad (4)$$

$$IM_{ct} = \beta_0 + \beta_1 lnY_{ct} + \beta_2 lnW_{ct} + \beta_3 lnD_c + \beta_4 AdvW_{ct} + \beta_5 B_{ct} + \beta_t + \varepsilon_{ij} \quad (5)$$

The "Advanced Models" with the extensive and intensive margins of HS and LS imports are accordingly specified as:

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[20]   The countries are; Great Britain, Belgium, Germany, France, Spain, Austria-Hungary, Denmark, Italy, the Netherlands, Portugal, Sweden-Norway, Brazil, the United States of America, and Canada.

[21]   With $AdvWct = \frac{\sum adv_{pt}*imp_{pct}}{imp_{ct}}$, where adv_{pt} is the tariff of product p in year t, imp_{pct} is the value of imports of product p from country c in t, and imp_{ct} the value of imports of country c in t. See also Appendix - Sources.

$$EMHS_{ct} = \beta_0 + \beta_1 lnY_{ct} + \beta_2 lnW_{ct} + \beta_3 lnD_c + \beta_4 AdvWHS_{ct} + \beta_5 B_{ct} + \beta_t + \varepsilon_{ij} \quad (6)$$

$$IMHS_{ct} = \beta_0 + \beta_1 lnY_{ct} + \beta_2 lnW_{ct} + \beta_3 lnD_c + \beta_4 AdvWHS_{ct} + \beta_5 B_{ct} + \beta_t + \varepsilon_{ij} \quad (7)$$

$$EMLS_{ct} = \beta_0 + \beta_1 lnY_{ct} + \beta_2 lnW_{ct} + \beta_3 lnD_c + \beta_4 AdvWLS_{ct} + \beta_5 B_{ct} + \beta_t + \varepsilon_{ij} \quad (8)$$

$$IMLS_{ct} = \beta_0 + \beta_1 lnY_{ct} + \beta_2 lnW_{ct} + \beta_3 lnD_c + \beta_4 AdvWLS_{ct} + \beta_5 B_{ct} + \beta_t + \varepsilon_{ij} \quad (9)$$

EM_{ct} and IM_{ct} represent the extensive and intensive margin of Argentine imports from country c in t, and $EMHS_{ct}$, $IMHS_{ct}$, $EMLS_{ct}$, and $IMLS_{ct}$ are accordingly the extensive and intensive margin of Argentine imports of High-Skill and Low-Skill products from country c in t. Technically, panel data is used to estimate equation (1) to (9) with Poisson-maximum likelihood (PPML). The use of PPML allows for including zero observations in the dependent variable, which must be excluded or treated improperly under log-linear OLS estimates (Lampe, 2009, Huberman et al, 2015) Additionally, Santos Silva and Tenreyro (2006) have shown that Least Square estimates of log-linear models are inefficient, biased, and/or even inconsistent and propose the PPML with robust standard errors as a superior alternative.

The results are presented in Table 5 and 6. They confirm the classical assumptions of a gravity model of trade, with a positive impact of economic size and a negative influence of distance on the trade between two countries. The variable GDP is always positive and, with the small exception of the intensive margins of total imports (5), statistically significant, and the variable distance, although not statistically significant in all cases, always shows negative values. The positive and significant effect of GDP on total imports (1) is 0.135, implying that the level of exports increases by 14.45 per cent[22] if GDP increases by one per cent. The same increase in wages would lead to 1.57 times more exports. Especially in the HS (2) sector wages contribute significantly to the total value of exports, with a one per cent increase yielding a 7.75 times increase in exports. Moreover, it appears that productivity played a more important role in the intensification of exports of existing HS products (7), rather than exporting a wider set of goods (6). This may lead to the conclusion that the previously described advantage of Germany in the export of HS products, in particular in its intensive margins, derives from the higher productivity of the German economy in comparison to its competitors. The results for the weighted ad valorem tariffs are somehow puzzling, not showing any robust pattern that confirms an influence on Argentine imports. They seem to have a positive and significant impact on total imports (1), but show no effect on their extensive and intensive margins (4), (5). For LS imports we detect no effect at all, and in the case of HS imports, we observe a positive effect on the extensive (6) margins and a negative effect on the intensive (7) margins. One interpretation is that an increase in tariffs led to a reduction in the total values of imports but did not affect the variety of goods imported. Finally, we find a positive and significant impact of the presence of banks on the level of exports, confirming the assumption of a positive correlation between the existence of financial networks of the exporting country in the market of the importing country and the value of exports. The effect of banks on total exports is 0.512, implying that the level of exports increases by 67 per cent (since 1-e 0.402 = 0.668) with each additional number of bank. This effect is more pronounced in the case of LS exports (3), which is mainly

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22 Since 1-e 0.135 = 0.1445. See Wooldridge, Jeffrey (2002), "Introductory Econometrics: A Modern Approach", Itps Thomson Learning; 2nd Revised edition

driven by the correlation between British banks and British LS exports. When looking at the margins of imports, it seems that banks fostered the intensification of exports (5), (7), (9).

[Tables 5 and 6 here]

VII. SECOND STAGE. THE EFFECT OF THE BANK-TRADE-NEXUS ON EXPORTS

We use a difference-in-difference model to measure the effect of German bank entry into Argentina (treatment) on the bank-connected exports (treated group) in comparison to the rest of German exports (control group) to Argentina between 1880 and 1913. The model covers German exports by product – based on our product classification presented in section 3.3 – for the years 1875, 1885, 1895, 1901, and 1912. We differentiate between two specifications of the model. The first one considers a product to be treated (bank-connected) if it has been exported by at least one of the export companies that was connected to the DÜB in 1913. The DÜB was the first German bank in Argentina that was exclusively founded by German institutions, as well as the largest, and for the major part of the period of investigation (from 1887 until 1906) the only German bank operating in Argentina. The second specification includes the SÜD, and consequently defines a product to be treated if it was exported by at least one of the export companies connected with the DÜB and / or the SÜD. We furthermore test for the possible influence of demand effects (Argentine imports by product) and trade frictions (product specific tariffs) on German exports to Argentina. In the form of an equation, the models are expressed as followed:[23]

$$X_{pt} = \alpha PRODUCT_p + \mu YEAR_t + \gamma CON1B_{pt} + \delta INTERV_{pt} + \lambda lnARGIMP_{pt} + \theta lnADV_{pt} + \varepsilon_{pt} \quad (10)$$

$$X_{pt} = \alpha PRODUCT_p + \mu YEAR_t + \gamma CON2B_{pt} + \delta INTERV_{pt} + \lambda lnARGIMP_{pt} + \theta lnADV_{pt} + \varepsilon_{pt} \quad (11)$$

The outcome of interest is X_{pt}, the nominal value of German exports of product p to Argentina in year t. The variable $PRODUCT_p$ is a fixed effect that controls for unobserved time-invariant characteristics of a product p. $YEAR_t$ is a year fixed effect that controls for common shocks influencing all products equally in year t. The variable $CON1B_{pt}$ included in the first specification of my model (Equation 10) is a dummy which takes the value one if a product p is exported in year t by at least one company connected to the DÜB, and the value zero in the opposite case. It identifies the treated group and captures differences between the treated and control group prior to the bank entry. We assume a time-invariant connection between bank and companies. The data for 1913 is used. This creates a homogenous treatment group over time. A change in the treatment group eventually could bias the effect of the treatment, as changes in exports of the treated group may be the simple result of a change in the number and/or character of the exporting companies linked to banks rather than the effect of the treatment. The variable $CON2B_{pt}$ included in the second

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23 Imbens and Wooldridge (2007) give a comprehensive explanation and overview of the existing designs of difference-in-difference estimations. My model is based on their assumptions of a difference-in-difference analysis with multiple time periods (page 4).

specification (11) is identical to $CON1B_{pt}$ but also considers the connection of export companies with the SÜD. $INTERV_{pt}$ is the intervention dummy that is equal to one for the treated group after the event of bank entry ($t > 1885$). $lnARGIMP_{pt}$ is the natural logarithm of the nominal value of Argentine imports of product p in year t, capturing the possible influence of variations in the demand of a product p on the German exports of that product p in the year t. The variable Adv_{pt} represents the ad valorem equivalent of the tariff of each product imported from Argentina in each year. ε_{ij} is an error term, representing the myriad other influences on exports. Technically, panel data is used to estimate equation (10) and (11) with Poisson-maximum likelihood (PPML) to account for zero value observations in the dependent variable.

The results are presented in Table 7. They indicate a positive and significant correlation between the Argentine demand for products and the respective German exports. Tariffs on the other hand seems to have a significant negative influence on the development of exports. The coefficient of interest is $\delta=[(\alpha+\mu+\gamma+\delta) - (\alpha+\mu+\gamma)]$, which is the difference-in-difference estimate, with $(\alpha+\mu+\gamma+\delta)$ being the expected outcome of the treated group with bank intervention, and $(\alpha+\mu+\gamma)$ the expected outcome of the treated group without the event of German bank entry. δ is positively significant in every specification of the model, confirming the principal assumption of this study that German bank entry had a positive impact on bank-connected exports.

[Table 7 here]

To assure the validity of our results, we perform two robustness checks. First, (i) we expand the control group by the exports of the main trading partners of Argentina; Great Britain, the USA, France, and Belgium. The assumption is that the export industries of these countries were not connected with German foreign banks in Argentina, and hence their exports were not affected by the German bank entry. The specifications of the model are identical to equations (10) and (11), with the exception that dependent variable X_{cpt} is the nominal value of German, British, US, French, and Belgian exports of product p to Argentina in year t. Moreover, we test for the influence of the geographical distance of each country to Argentina and include country fixed effects. The results are presented in App Table 4 Appendix. They confirm the findings of a positive impact of bank entry with the difference-in-difference estimator δ being positive and significant. Second, (ii) we perform a pre-treatment test. One principal issue may be that Germany in general exported high quantities of the treated products, even before the bank entry, and the results of the model hence reflect a time-invariant dynamic that is independent from German banking presence. Or, in other words, the difference-in-difference analysis assumes a parallel trend between the treated and control group before the treatment. To test for this assumption, we use a difference-in-difference model that is identical to the model described in equations (10) and (11), with the exception that it covers only the imports for the pre-treatment period (1875, 1885) and assumes that German banks were established already during that period. The results show no statistical significance of the difference-in-difference estimator, δ, confirming no difference between the trend in the export of treated and non-treated products before the actual bank entry in 1888. The results of this second robustness check are presented in

App Table 5 Appendix. We are aware that our difference-in-difference approach nevertheless has its limitations. It would, for example, benefit from expanding the time frame of the study to pinpoint more precisely the effect of bank entry and to study in more detail the behavior of the treated and control group before and after treatment. We furthermore cannot exclude the possibility that companies not connected to the *Auslandsbanken* did receive any financial and information support from these banks too. This, however, also applies to the bank-connected companies, as they equally had access to all sources of finance. The objective of this study, thus, is not to show any effect of German trade finance, but the effect of creating privileged access to financial and information support in the target market. This includes privileged access in comparison to those companies that did not, as well as to those that did possess the same and alternative sources of finance.

VIII.   CONCLUDING REMARKS

We have highlighted the appearance of Germany as a new competitor in the emerging trade markets of South American in the late nineteenth and early twentieth centuries, not only challenging British hegemony, but also eventually winning the intensive competition with other leading industrial economies - such as France, Italy, and the USA – in gaining market shares. The objective of this article has been to identify and analyze the determinants of the success of German exports to Argentina, one of the most successful emerging markets at that time. In particular, this article asks whether the establishment of the first German banks in Argentina, in their capability to provide financial and informational assistance, had a positive impact on German exports to this market. More precisely, we test if the increase product exported were connected to the banks established in Argentina (bank-connected exports), to prove that they benefited from privileged access to the banks' support.

Our results offer a novel perspective on the understanding of the competition of the leading economies in the emerging trade market during the first globalization, emphasizing the link effects of trade-finance and relative advantages in productivity. Germany's export success is mainly explained by a comparatively higher degree of productivity, allowing an increase in the intensive margins of its exports. This dynamic is especially pronounced in the exports of what we define High-Skill products, that are mainly products of the second industrial revolution. We do not find a significant role of the variety of products as dimension of competition in a developing market as Argentina. However, interestingly, the results confirm our initial hypothesis about the positive and significant impact of German bank presence on exports of the products exported to Argentina by bank-connected sectors.

Our findings contribute to the literature on Latin America emerging markets, the role of finance in the development of foreign trade in general, and the role of German banks in the advancement of German trade in the late nineteenth century in particular. We lend empirical support to the idea of a positive relation between the existences of financial networks and export developments in the nineteenth century international trade markets. We moreover provide first, empirical evidence on the nexus between German foreign banks and export sector and its importance in the development of German exports. This confirms

somewhat the wide literature and qualitative studies on the history of German foreign banking that affirm a central role of the *Auslandsbanken* in the fostering of trade by providing credit in the international markets, especially to German companies. Certainly, our analysis is limited mostly to the "battle of Buenos Aires" and future research might benefit from including more markets to strengthen, or reject, the principal finding of this study on a more global scale. Yet, we believe it is a novel step for a better understanding of nineteenth century trade dynamics.

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TABLES AND FIGURES

Figure 1: Industrial power shares in total imports in Argentine, Brazil and Chile 1880-1913.

| a) Argentina | b) Brazil | c) Chile |
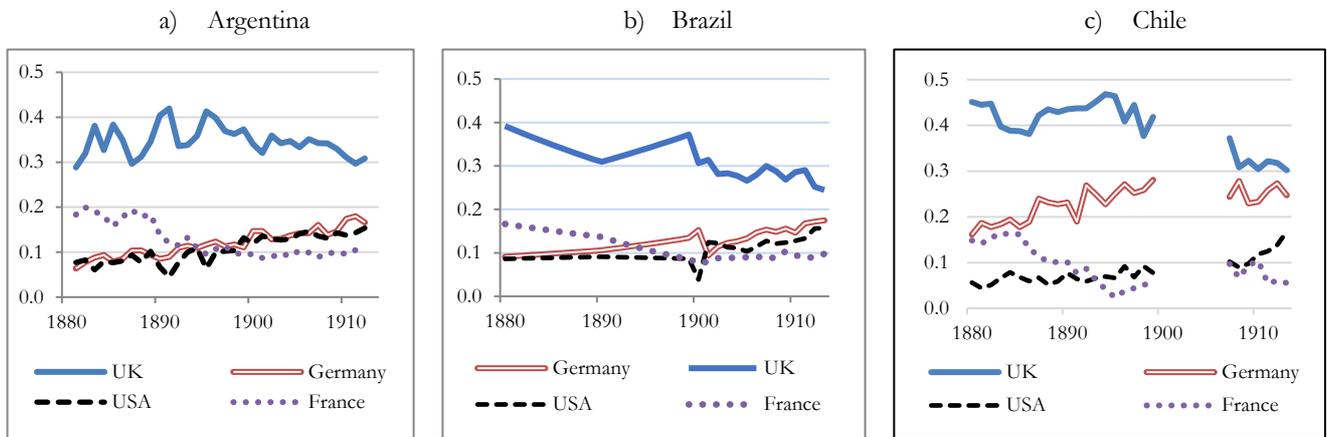
Sources: Argentine from Rayes (2018), Brazil and Chile from Tena and Restrepo-Estrada (2016)

Figure 2: German and USA export to the Americas 1881, 1900 and 1913 (million US $)

| a) South America | b) Central America | c) North America |
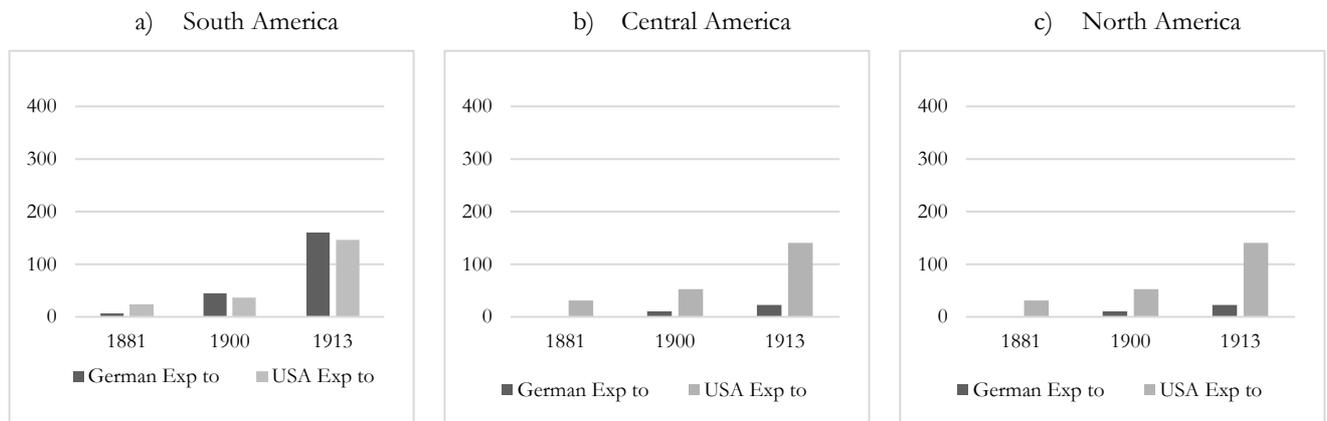
Sources: For Germany: See Appendix – Sources, For the USA: Statistical Abstract of the United States, 1881 and 1913.

Figure 3: Argentine imports by country – Share of each country on total imports (%) 1875-1914
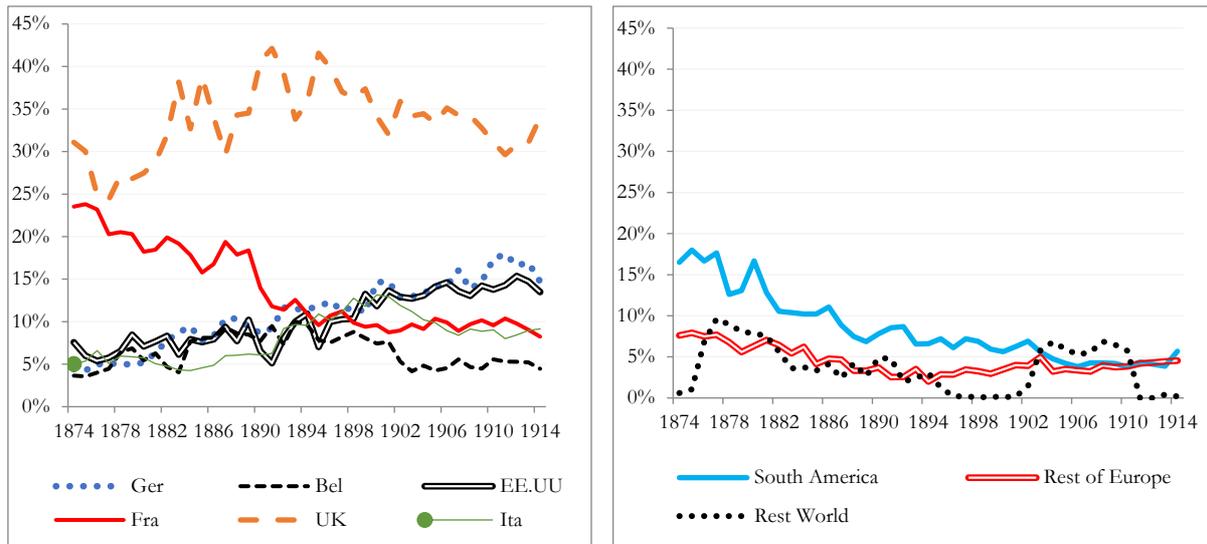
Sources: See Appendix - Sources

Figure 4: Argentine imports by skill class - Share of each class on total imports (%) - and HS imports of main trade partners – Share per country (%) on total HS imports – 1875, 1885, 1895, 1901, and 1912
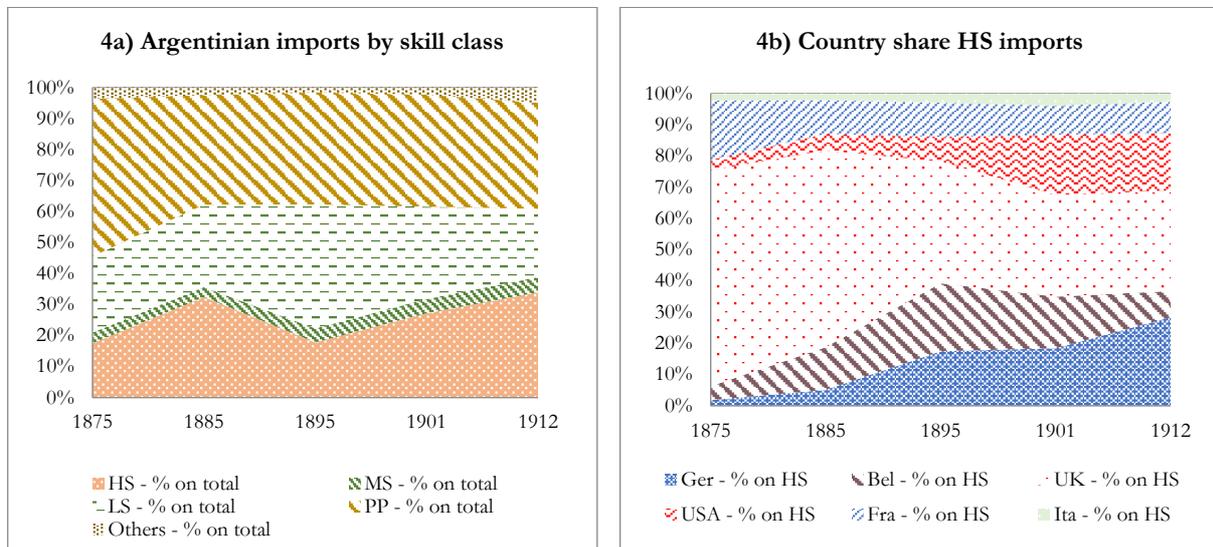
Sources: See Appendix - Sources

Figure 5: Imports Top 6 trade partners – Extensive and intensive margin – 1875, 1885, 1895, 1901, and 1912
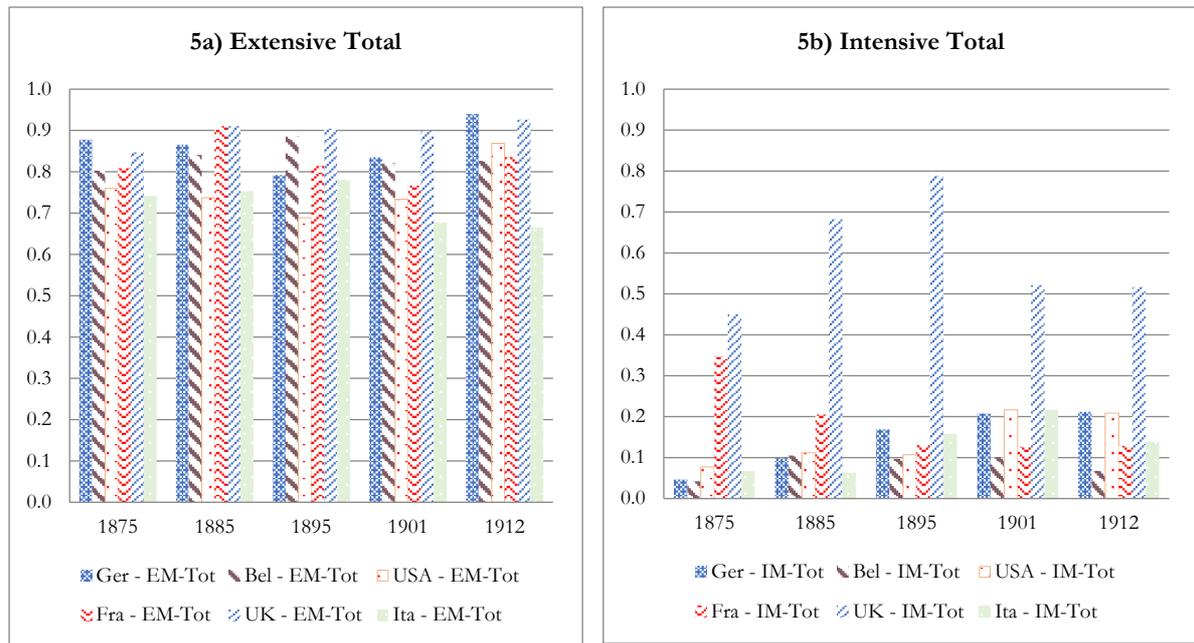
Sources: See Appendix - Sources

Figure 6: HS imports Top 6 trade partners – Extensive and intensive Margin– 1875, 1885, 1895, 1901, and 1912
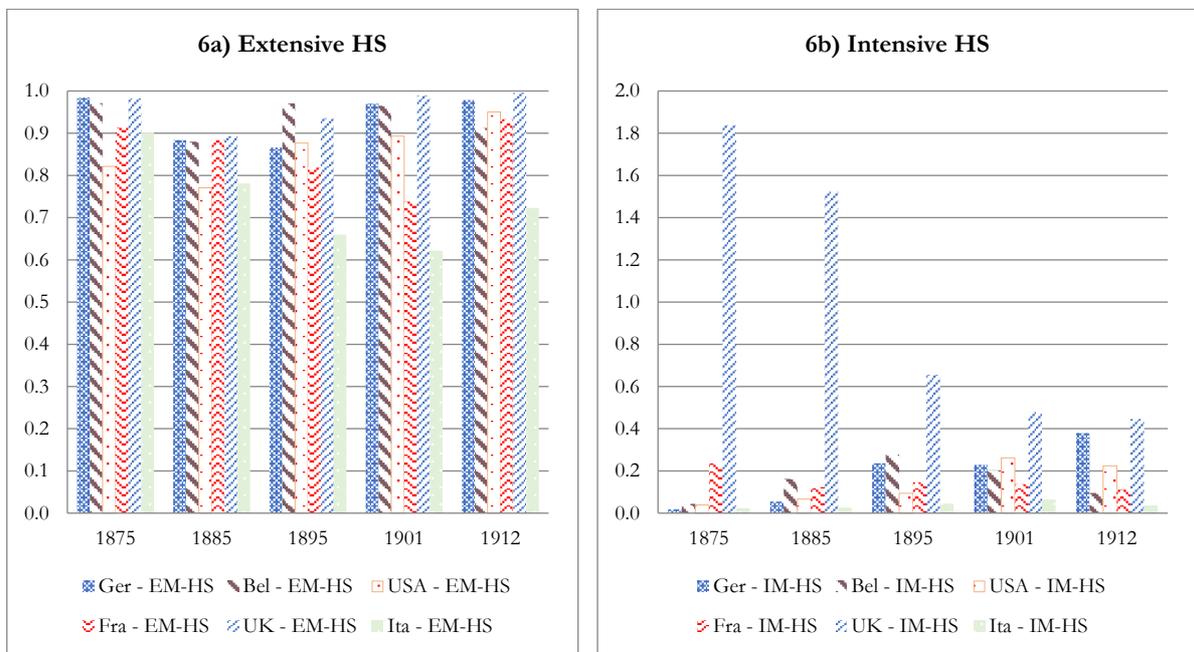
Sources: See Appendix - Sources

Figure 7: LS imports Top 6 trade partners – Extensive and intensive Margin – 1875, 1885, 1895, 1901, and 1912
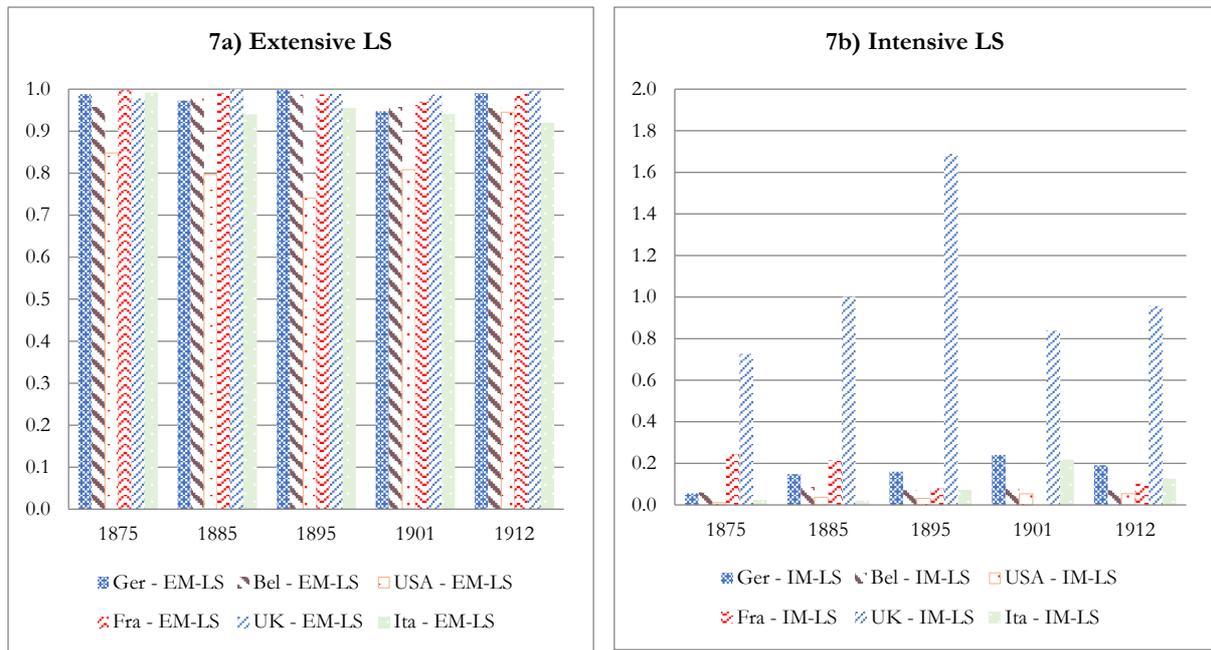
Sources: See Appendix - Sources

Figure 8: The DÜB and SÜD and the German export companies in 1913
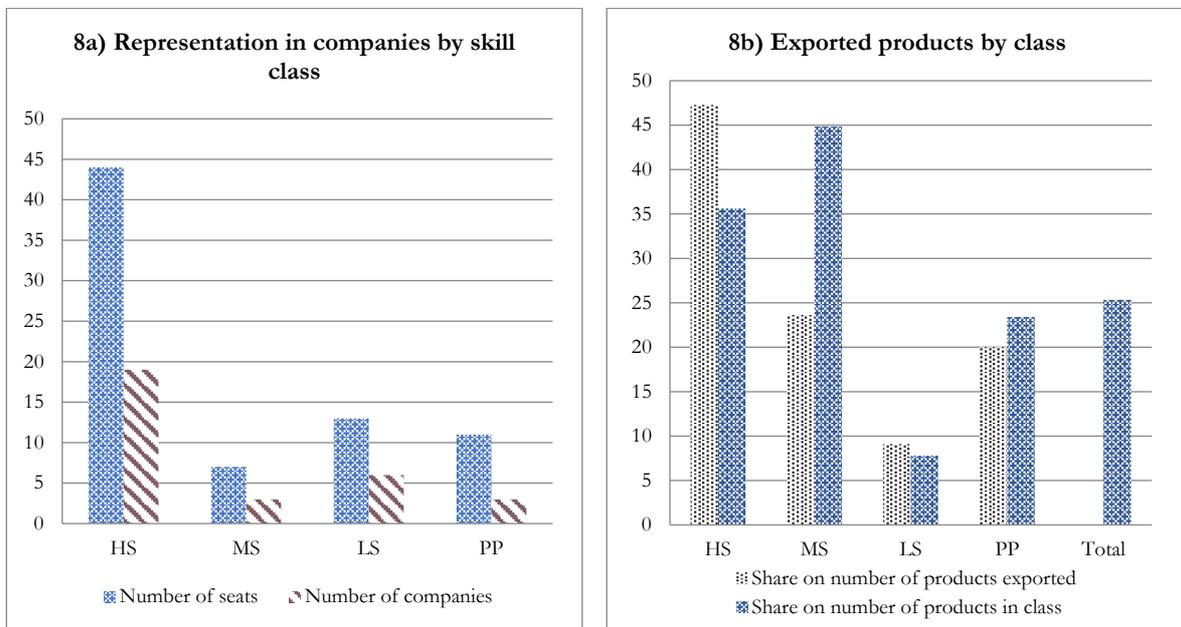
Sources: See Appendix - Sources

Note: The share of number of products exported is the per cent share of the number of products exported by the companies in each class of the total number of products exported by the companies. The share of number of products in class is the per cent share of the number of products exported by the companies in the total number of products that exists in each class.

Table 1: Expansion of British and German banks in Argentina

	1881	*1900*	*1913*
Nº British Bank Branches in South America	29	60	84
Nº German Bank Branches in South America	2	14	47
Nº British Bank Branches in Argentina	5	12	26
Nº German Bank Branches in Argentina	1	2	9

Sources: See Appendix - Sources

Table 2: Indirect connection - Representation of mother institutions in companies by number and character – 1913

	Seats total	of which Chairman	of which Vice-Chairman	No. of Companies
Deutsche Bank	*134*	*25*	*22*	*116*
Dresdner Bank	*102*	*19*	*13*	*87*
Nationalbank	*95*	*3*	*3*	*95*
Schaafhausenscher	*110*	*26*	*16*	*92*
Total	***441***	***73***	***54***	***371***

Sources: See Appendix - Sources

Table 3: Direct connection – Total representation and representation of DÜB and SÜD in export companies by number and character – 1913

	Seats total	of which Chairman	of which Vice-Chairman	No. of Companies	**Seats Exporting Companies**	of which Chairman	of which Vice-Chairman	No. of Companies
Deutsche Überseeische Bank	83	24	6	74	27	9	1	16
Deutsche Südam. Bank	58	5	4	49	17	0	1	15
Total	***141***	*29*	*10*	*117*	***44***	*9*	*2*	*31*

Sources: See Appendix - Sources

Table 4: German bank-connected and not bank-connected exports – Share of total exports (%) and growth respective to the previous year (%)

Year	Share – Bank-connected	Share - Not connected	Growth – Bank-connected	Growth - Not connected
1875	21,9	78,1		
1885	25,8	74,2	73,9	67,6
1895	24,4	75,6	32,6	37,5
1901	33,0	67,0	50,8	25,0
1912	56,1	43,9	84,6	60,0

Sources: See Appendix - Sources

Table 5: The Standard Models - Determinants of Argentinian imports by "Skill Class" - 1875-1912

	(1) Total	(2) HS	(3) LS
ln(wages)	0.943**	2.169***	0.761**
	(0.382)	(0.815)	(0.344)
ln(gdp)	0.135***	0.201***	0.183***
	(0.028)	(0.057)	(0.037)
ln(distance)	-0.0840	-0.382	-0.474**
	(0.184)	(0.264)	(0.225)
ln(AdvW)	4.775**		
	(0.232)		
ln(AdvW- HS)		4.254	
		(0.391)	
ln(AdvW- LS)			3.387
			(0.262)
Number of Banks	0.512***	0.394***	0.603***
	(0.086)	(0.117)	(0.084)
Time fe (βt)	YES	YES	YES
No. Obs.	56	56	56
Method of est,	PPML	PPML	PPML

*** p<0.01, ** p<0.05, * p<0.1

Note: Dependent variable in column (1) is the total value of Argentine imports from country c, in column (2) and (3) the total value of HS- and LS-Skill imports, respectively. For the classification of imports according to different skill classes see Table 32 Appendix. Sample includes 1875, 1885, 1895, 1901, and 1912. The number of observations is reduced to 56 from original 70 (5 years*14 countries = 70 observations) as in the case of non-existing imports from country c in year t, it is not possible to determine the weighted ad valorem tariff of this country. For the definition of weighted ad valorem tariff see Appendix - Sources. Robust standard errors are clustered by country and product and are indicated in brackets. Sources: See Appendix - Sources

Table 6: The Advanced Models - Determinants of extensive and extensive margin of Argentinian imports by "Skill Class" - 1875-1912

	(4) Total-EM	(5) Total-IM	(6) HS-EM	(7) HS-IM	(8) LS-EM	(9) LS-IM
ln(wages)	0.500**	0.431	0.902***	14.68***	9.661*	11.69***
	(0.232)	(0.431)	(0.267)	(2.984)	(0.443)	(2.067)
ln(gdp)	0.069***	0.033	0.092***	0.903***	0.386*	0.625***
	(0.015)	(0.052)	(0.015)	(0.311)	(0.228)	(0.192)
ln(distance)	-0.190	-0.0575	-0.189	-5.958***	-3.142***	-5.030***
	(0.123)	(0.203)	(0.165)	(0.751)	(0.885)	(0.655)
ln(AdvW)	2.410	-0.853				
	(0.163)	(0.240)				
ln(AdvW- HS)			4.310***	-29.12***		
			(1.525)	(9.376)		
ln(AdvW- LS)					6.644	-5.126
					(1.552)	(4.755)
Number of Banks	0.078	0.455***	0.075	1.314**	1.584*	2.318***
	(0.058)	(0.087)	(0.080)	(0.594)	(0.890)	(0.306)
Time fe (β$_t$)	YES	YES	YES	YES	YES	YES
No. Obs.	56	56	56	56	56	56
Method of est.	PPML	PPML	PPML	PPML	PPML	PPML

*** p<0.01, ** p<0.05, * p<0.1

Note: Dependent variable in column (4) and (5) is the extensive and intensive margin of the total Argentine imports from country c, in column (6), (7), (8), and (9) the extensive and intensive margin of HS-Skill and LS-Skill imports, respectively. The extensive and intensive margin are defined according to Hummels and Klenow. For the definition and the classification of imports according to different skill classes see Table 32 Appendix. Sample includes 1875, 1885, 1895, 1901, and 1912. The number of observations is reduced to 56 from original 70 (5 years*14 countries = 70 observations) as in case of non-existing imports from country c in year t, it is not possible to determine the weighted ad valorem of this country. For the definition of weighted ad valorem see Appendix - Sources. Robust standard errors are clustered by country and product and are indicated in brackets. *Sources:* See Appendix - Sources.

Table 7: Difference in Difference estimation for German exports to Argentina - 1875-1912

	(10) DÜB	(11) DÜB/SÜD
CON1B (γ)	9.042	
	(65.60)	
CON2B (γ)		9.071
		(55.42)
INTERV (δ)	0.668***	0.523**
	(0.219)	(0.232)
lnARGIMP (λ)	0.791***	0.799***
	(0.0843)	(0.0858)
lnADV (θ)	-1.534**	-1.506**
	(0.625)	(0.618)
PRODUCT (α)	YES	YES
YEAR (μ)	YES	YES
Number of observations	930	930
Method of estimation	PPML	PPML

*** p<0.01, ** p<0.05, * p<0.1

Note: Dependent variable in each column is the total value of German exports by product to Argentina. The sample includes the years 1875, 1885, 1895, 1901, 1912 and a total number of 217 products in each year. For the classification of products see Table 32 Appendix. The number of observations is reduced as for some products ad valorem year observations are missing. Robust standard errors are clustered by product and year and are indicated in brackets. *Sources:* See Appendix - Sources

APPENDIX

SOURCES

If not otherwise indicated, the general data for German and British trade were obtained from the official German and British statistics on foreign trade. For Germany: *Statistik des Deutsche Reiches - Auswärtiger Handel des deutschen Zollgebietes nach Herkunfts- und Bestimmungsländern in den Jahren 1880 bis 1896 - Kaiserliches Statistisches Amt; Statistisches Jahrbuch für das Deutsche Reich – Spezialhandel nach Erdteilen und nach Ländern – Kaiserliches Statistisches Amt, Jahrgang 1906, 1908, 1913, 1916.; and for Great Britian: David Jacks – Taken from the Statistical Abstract for the United Kingdom, London, various years.*

The information for (the geographical distribution, including the number of banks per country in Argentina) bank data was extracted from the *Almanac Directory, Year Book and Diary. A Parliamentary Directory and Complete Banking Directory published by Sir Inglis Palgrave in London, various years.* In some cases it was possible to locate the original banking reports (*Geschäftsberichte*) of the *Auslandsbanken,* such as the *Deutsche Überseeische Bank.* Furthermore, the data from the Almanac has been verified and, if necessary, supplemented with the information provided by the quantitative works of *Hauser, R. Die deutschen Banken im Ausland (1906), Riesser and Jacobs Die deutschen Grossbanken und ihre Konzentration (1914), Strasser, K. Die deutschen Banken im Ausland (1924), Lough, W. Banking Opportunities in South America (1930)*, and *Whale, B. Joint Stock Banking in Germany (1930).*

The data for our data base on Argentine imports has been taken from the original trade statistics; *Cuadro General del Comercio Exterior Durante el Año de 1875, Buenos Aires, Anuario de la Dirección General de Estadisticas Correspondient al Año 1885, 1895, 1901, y 1912 - Resumen General del Comercio Especial Exterior por Procedencias y Destinos; Buenos Aires 1886, 1896, 1902, y 1913*. In 1875, Argentina imported a total of 167 different products from 17 different countries. In 1885, 346 products from 18 countries, in 1895 464 products from 15 countries, in 1901 691 products from 15 countries and in 1912 1145 products from 32 countries respectively. In 1875 products are organized and presented in alphabetical order. In the years 1885, 1895, 1901 and 1912 products are organized by commodity groups. However, the number and character of commodity groups change from each year. Also, in some cases, specific products are assigned to different commodity groups in different years. For the years 1885, 1895, 1901, and 1902 official statistics also includes the specific tariff imposed on each product. For the year 1875, they do not provide information about tariffs but only differentiate between products being or not being subject of import tariffs. The tariffs (ad valorem) for the year 1875 are from Tena-Junguito, A. & Lampe, M. and Tamega, F. (2012) "How much trade Liberalization was there in the World before and after Cobden-Chevalier" *Journal of Economic History Vol. 72, issue 3, September 2012, pp. 708-740*, with special thanks to the authors for providing the data. The official Argentinian trade statistics indicate the tariff (*Derechos de importación*) applied on each product in per cent. In some cases, however, the tariffs are indicated as the value (in pesos fuertes) charged on each unit of a product. In this case, we calculate the ad valorem as a function of:

$$Adv_{pt} = \frac{VT_{pt} * Q_{pt}}{imp_{pt}}$$

Where VT_{pt} is the tariff value charged on each unit of product p in year t, Q_{pt} the quantity of product p imported in t, and imp_{ppt} is the value of imports of product p in t.

The ad valorem equivalent of the tariff of Argentina weighted by the imports (by product) from country c to Argentina in t (weighted ad valorem tariff) is calculated as follows:

$$AdvW_{ct} = \frac{\sum adv_{pt} * imp_{pct}}{imp_{ct}}$$

Where adv_{pt} is the ad valorem tariff of product p in year t, imp_{pct} is the value of imports of product p from country c in t, and impct the value of imports of country c in t.

The source for our classification of products of the Argentinian imports is *British Parliamentary Papers LXXXIV (1905), "The Comparative Incidence of Foreign and Colonial Import Tariffs on the principal Classses of Manufactures Exported from the United Kingdom", In continuation of Memorandum No. XVI. In Cd. 1761 of 1903*

For the Augmented Gravity Model as well as the Difference in Difference, the data for imports are from the presented panel data set on Argentine imports by country and by product for the years 1875, 1885, 1895, 1901, and 1912. The number of trading partners included in the gravity model was determined by the availability of data on respective GDP and real wages. The countries are; Great Britain, Belgium, Germany, France, Spain, Austria-Hungary, Denmark, Italy, the Netherlands, Portugal, Sweden-Norway, Brazil, the United States of America, and Canada.

Real GDP Data was obtained from Bolt, J. and J.L. van Zanden (2013) *The first update if the Maddison Project; Re-Estimating Growth Before 1820*, Maddison Project Paper 4. The real GDP for Austria-Hungary is estimated as the weighted sum of GDP of Austria and Hungary. The same method is applied for the data of Norway and Sweden, as the official Argentine import statistics combine the imports of the two countries.

The wages are international real wages relative to the real wages from Great Britain in 1905 (1905=100) as provided by Williamson (1995), "The Evolution of Global Labor Markets since 1830: Background Evidence and Hypotheses" *Explorations in Economic History 32, p. 178*.

The calculations of great circle distance in kilometers are based on the data on the geographic coordinates of the countries capitals (longitude and latitude) provided by the internet source *http://www.fallingrain.com/world/index.html.*

TABLES AND FIGURES

App Figure 1: Argentine imports (value in pesos de oro) – 1874-1914
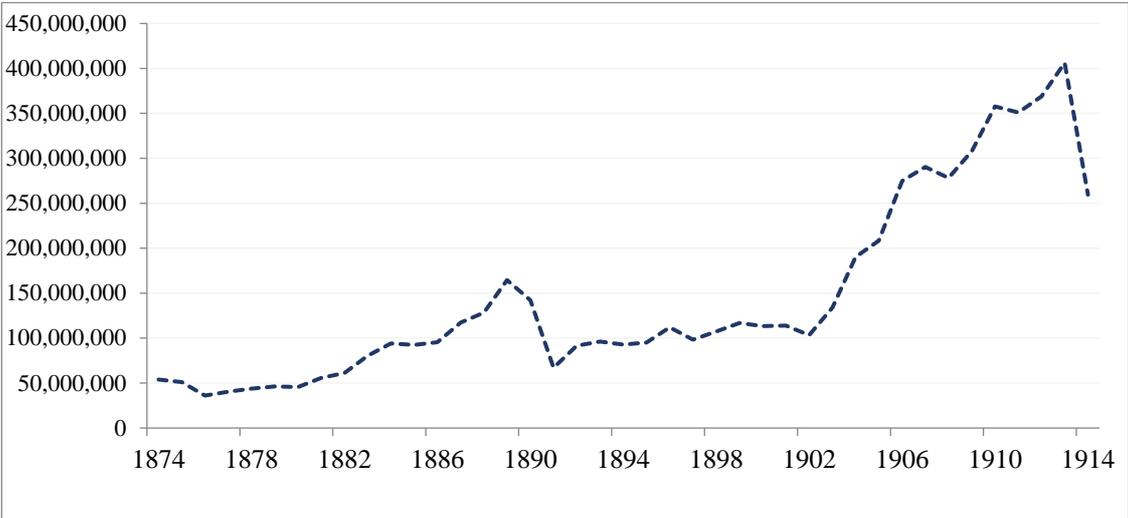
Source: See Appendix - Sources

App Figure 2: Argentine imports by skill class – Share of each class (%) on total imports – 1875, 1885, 1895, 1901, 1912
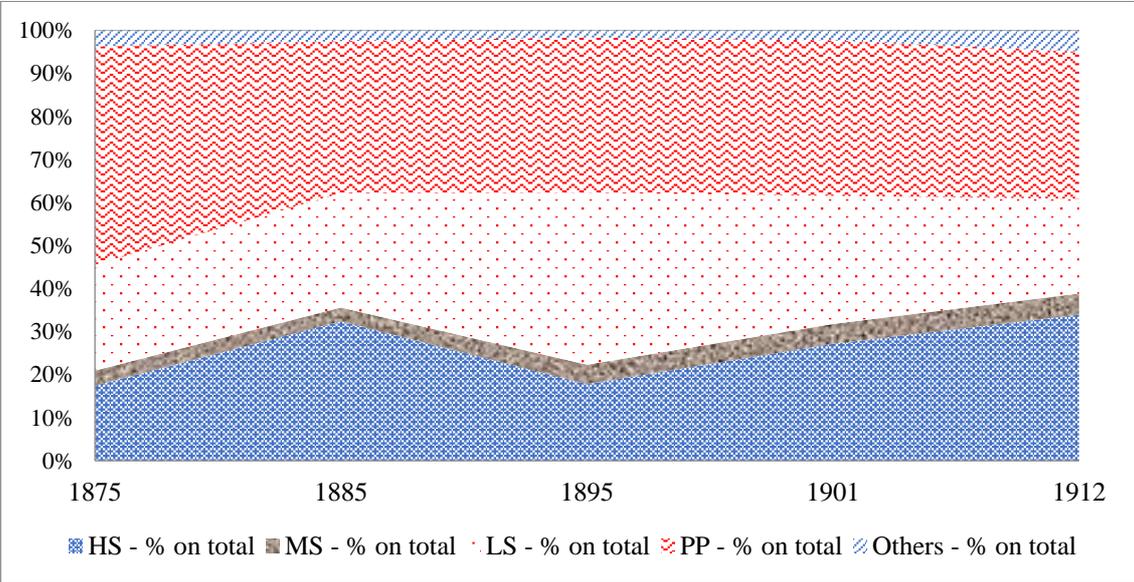
Source: See Appendix - Sources

App Figure 3: MS imports main trade partners - Share per country (%) on total MS imports – 1875, 1885, 1895, 1901, and 1912
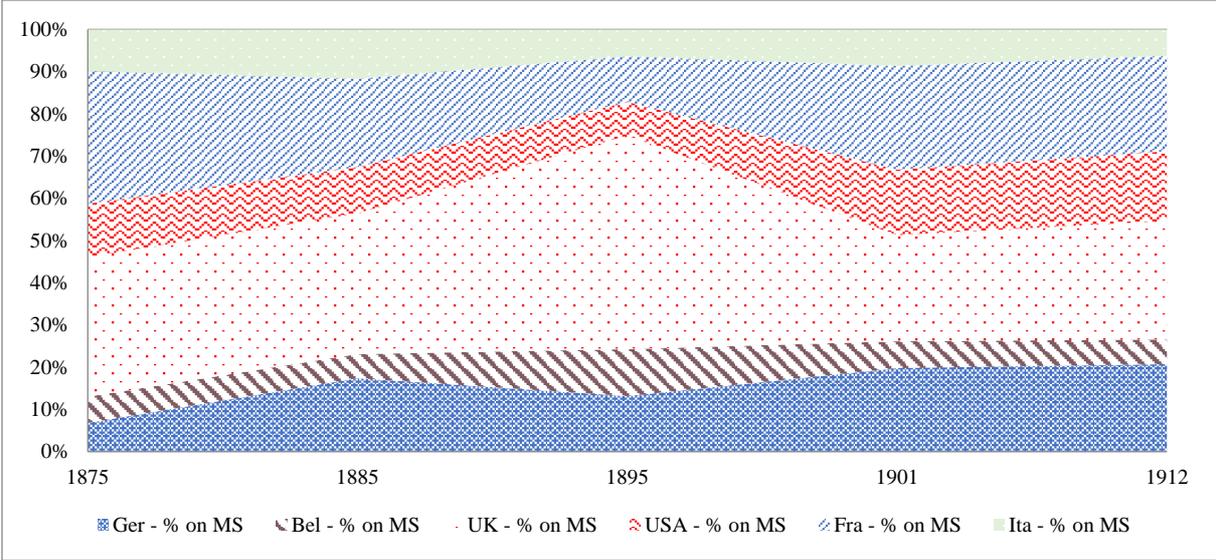
Source: See Appendix - Sources

App Figure 4: LS imports main trade partners - Share per country (%) on total LS imports – 1875, 1885, 1895, 1901, and 1912
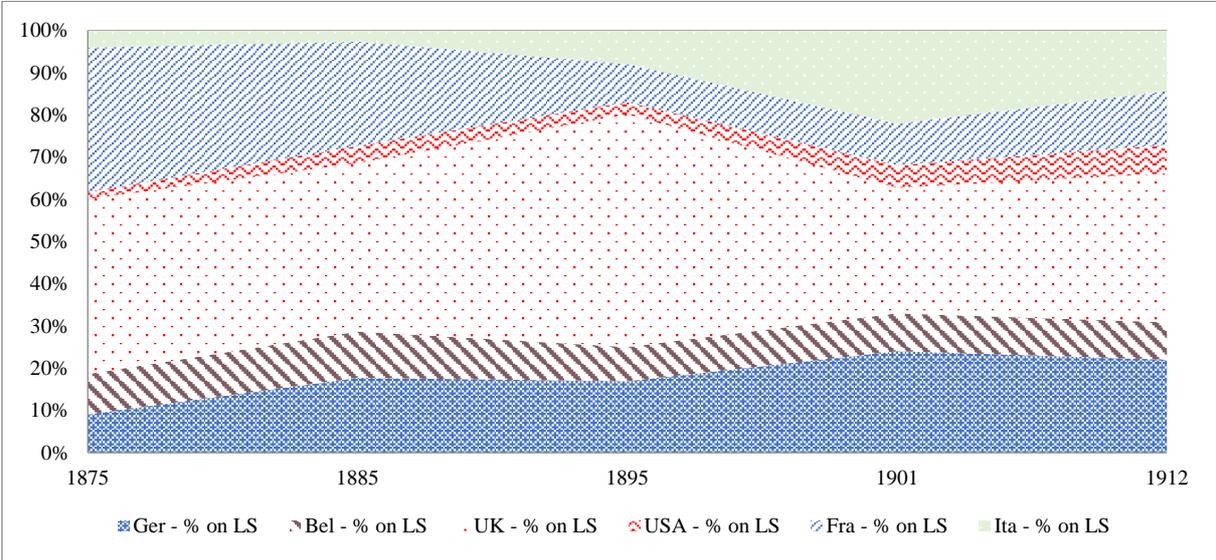
Source: See Appendix - Sources

App Figure 5: PP imports main trade partners - Share per country (%) on total PP imports – 1875, 1885, 1895, 1901, and 1912
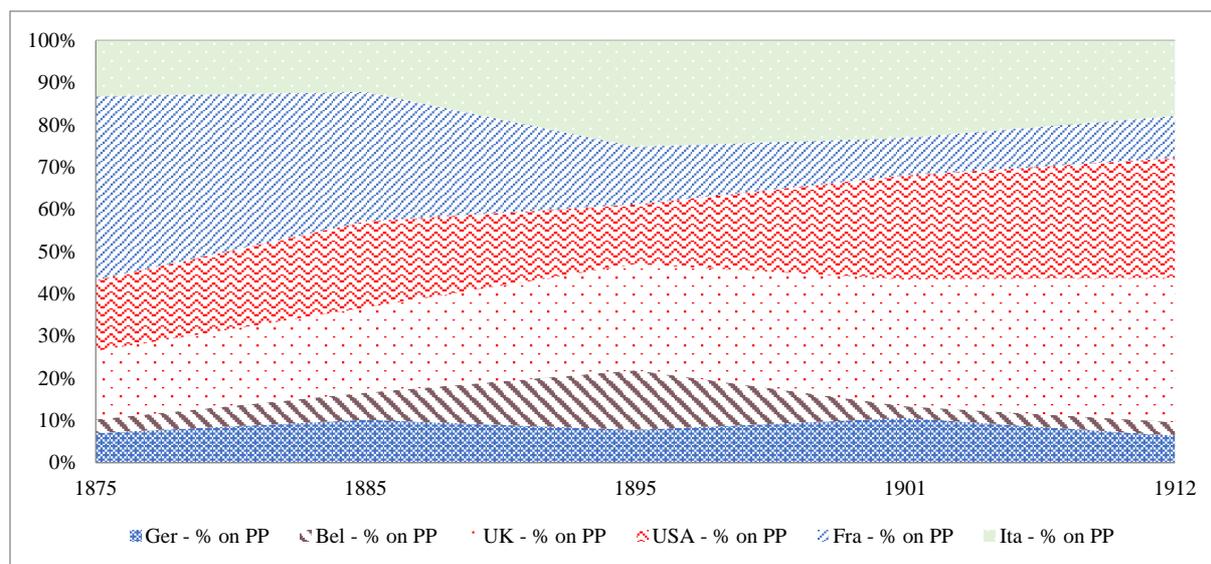
App Table 1: Classification of products of Argentinian imports and skill intensity

No Class	Product			Skill intensity	
1	**Ships**			13,01	***High Skill***
	Sailing Iron				
	Boats				
		Irons			
		wood			
		others			
2	**Machinery hardware etc**			12,65	
	Machines				
		Textil			
		Spinning			
		Weaving			
	Motors & Cars				
		Motor cars			
		Cars			
		Motorbikes			
	Locomotive				
		Heavy Locomotives			
		Carriages (Locomotive)			
	Firearms				
	Electricity				
		Electric Wire and cable			

		Dynamos, Pumps & Electric Motors	
		Supporting Articles for electricity	
	Machinery Other		
3	**Paper manufactures**		**11,65**
	Paper		
		Paper for writing	
		Paper for printing	
		Paper of other sorts	
		Paper for construcction	
	Carton		
	Books & Printings		
		Paper articles	
		Books and prints	
4	**Silk thrown**		**11,58**
	Silk		
		Silk made	
		Silk manufactured	
		Silk yarns	
	Silk Mix		
		Silk mix made	
		Silk mix manufactured	
	Silk with Cotton		
		Silk with cotton	
		Silk with cotton made	
		Silk with cotton manufactured	
5	**Iron, steel, metals manufactures**		**11,29**
	Iron		
		Iron bars, ingots, angles,shapes	
		Iron galvanised	
		Iron manufactured	
		Iron articles (manufactured)	
	Steel		
		Steel bars, ingots, angles,shapes	
		Steel galvanised	
		Steel manufactured	
	Iron & Steel		
		Iron and steel manufactured	
	Wire		
		Wire steel or iron	
		Wire steel or iron galvanised	
		Wire other classes	
	Tins		
		Tin bars, ingots etc	
		Tin manufactured	
	Railways		
		Rails	

	Other Metals	*Railway Material*		
		Other metals bars, ingots, angles		
		Other metals manufactured		
		Metal jewelry		
6	**Leather manufactures**		11,00	
	Calf			
		Calf Skins		
		Other skins		
	Leather			
		Leather made		
		Leather manufactured		
7	**Copper lingots, cakes, slabs**		10,01	***Mid Skill***
	Copper			
		Copper lingots, cakes, slabs		
		Copper manufactured		
8	**Alkali chemical products**		9,64	
	Acids & Salts			
		Acids		
		Salts		
	Sulphate			
		Sulphate of copper(s/cwt)		
		Sulphate others		
	Soda			
		Bicarbonate Soda		
		Crystals of Soda (Sodium carbonate)		
	Carbide			
	Belaching powder			
	Pitch			
	Ink & Colors			
	Others			
9	**Apparel**		9,27	
	Apparel General			
	Apparel Silk			
		Silk		
		Silk mix		
	Apparel Leather			
	Apparel Wool			
		Wool		
		Wool mix		
	Apparel Cotton			
		Cotton		
		Cotton mix		
	Apparel other fibers			
10	**Woollen & worsted manufacture**		7,90	***Low Skill***

	Wool		
		Wool made	
		Wool manufactured	
	Wool Mix		
		Wool mix made	
		Wool mix manufactured	
	Wool with Silk		
		Wool with silk made	
		Wool with silk manufactured	
11	**Cotton manufactures**		7,74
	Cotton		
		Cotton made	
		Cotton made white	
		Cotton made colored	
		Cotton manufactured	
		Cotton manufactured raw	
		Cotton manufactured white	
		Cotton manufactured colored	
		Cotton manufactured printed	
		Cotton manufactured dyed	
	Cotton Mix		
		Cotton made mix	
		Cotton manufactured mix	
	Cotton with Silk		
		Cotton with silk made	
		Cotton with silk manufactured	
12	**Jute & Hemp manufactures, canvas and sacking**		7,04
	Jute		
		Jute yarn	
		Jute made	
		Jute manufactured	
		Jute canvas and sacking	
	Hemp		
		Hemp Yarn	
		Hemp made	
		Hemp manufactured	
		Hemp canvas and sacking	
13	**Woollen yarns (stuffs all wooll)**		6,20
	Woolen Yarn		
	Woolen Yarn Mix		
	Woolen Yarn with Silk		
14	**Linen yarn**		5,90
	Linen		
		Linen yarns unbleached	
		linen yarns single	
		linen yarns double	

15	**Cotton yarns (undyed)**		5,80	
	Cotton thread			
		Cotton thread for sewing		
	Cotton Yarn			
		Cotton yarn Grey		
		Cotton yarn bleached or dyed		
		Cotton yarn colored		
		Cotton yarn painted		
	Cotton Yarn Mix			
	Cotton Yarn with Silk			
16	**Other Fibers**		*5*	
	Other Fibers			
		Made		
		Manufactured		
		Yarn		
17	**Crystal, Ceramics**		*5*	
	Crystal			
		Crystal		
		Crystal Artifacts / Articles		
	Ceramic			
		Ceramic		
		Ceramic Artifacts / Articles		
	Glass			
		Glass		
		Glass Artifacts / Articles		
18	**Food: grains**		*< 5*	***Primary Products***
	Corn			
		Wheat		
		Maize, or Indian Corn		
	Rice			
	Nuts, Fruits and Vegtables			
	Cereals and Cookies			
	Others			
19	**Food: animal products**		*< 5*	
	Meat and Fish			
	Bacon			
	Beef			
	Living Animals			
	Spice, Oils, and Sauces			
	Butter, Milk, and Cheese			
	Medical Oils			
	Others			
20	**Food: tropical**		*< 5*	
	Coffee			
		Coffee, Raw		

	Sugar			
		Sugar, unrefined, beetroot		
		Sugar, unrefined, cane		
		Sugar, refined		
		Sugar other classses		
	Cacoa, Chocolate, Tea etc			
	Others			
21	**Tabacco**		*< 5*	
	Tobacco			
		Tobacco, raw		
		Cigarrs		
22	**Beverages**		*< 5*	
	Beverages			
		Alcoholic		
		Non Alcoholic		
23	**Minerals**		*< 5*	
	Oils			
		Petroleum		
		Kerosine		
		Mineral Oils		
		Nafta (Petrolio)		
	Coal			
	Iron, ore of			
	Stones			
		Stones		
		Precious Stones		
		Stones for construcction		
	Others			
		Earths		
		Other Minerals and Stones		
24	**Wood**		*< 5*	
	Wood			
		Raw		
		Manufactured		
		For Paper		
25	**Other Articles**			*Others*
	Other Primary Products			
	Other Materials			
	Other Manufactured			
	Other			

Source: See Appendix - Sources

Note: *made = "confeccionados" in the original statistics*

manufactured = "manufacturados" in the original statistics

App Table 2: Representation of the *Deutsche Überseeische* and the *Deutsche Südamerikanische Bank* in exporting German companies in 1913 – Sectorial composition

SIC	Industry	Deutsche Übers. Bank		Deutsche Südam. Bank		Total	
		Seats	No. Companies	Seats	No. Companies	Seats	No. Companies
1	Agriculture, forestry and fishing	0	0	0	0	0	*0*
2	Mining and quarrying	0	0	2	2	4	*2*
3	Food, drink and tobacco	0	0	1	1	2	*1*
4	Coal and petroleum products	3	2	1	1	7	*3*
5	Chemicals and allied trades	0	0	2	1	3	*1*
6	Metal manufacture	5	4	5	5	19	*9*
7	Mechanical engineering	0	0	1	1	2	*1*
8	Instrument engineering	0	0	0	0	0	*0*
9	Electrical engineering	2	2	0	0	4	*2*
10	Shipbuilding and marine engeering	0	0	0	0	0	*0*
11	Vehicles	0	0	0	0	0	*0*
12	Other metal	0	0	0	0	0	*0*
13	Textiles	2	2	0	0	4	*2*
14	Leather goods	0	0	0	0	0	*0*
15	Clothing and footwear	0	0	0	0	0	*0*
16	Brick, pottery, glass and cement	0	0	1	1	2	*1*
17	Timber, frunishing	0	0	0	0	0	*0*
18	Paper, printing and publishing	1	1	0	0	2	*1*
19	Other manufacturing	0	0	0	0	0	*0*
20	Construction	7	2	0	0	9	*2*
21	Gas, electricity and water	7	3	3	2	15	*5*
22	Transport and communication	0	0	1	1	2	*1*
	Total	*27*	*16*	*17*	*15*	*44*	*31*

Source: See Appendix - Sources

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App Table 3: British hypothetical bank-connected and not bank-connected exports – Share on total exports (%) and growth respective to the previous year (%)

Year	Share – Bank-connected	Share - Not connected	Growth – Bank-connected	Growth - Not connected
1875	45,10	54,90		
1885	60,83	39,17	67,80	39,13
1895	42,04	57,96	-30,47	39,05
1901	46,96	53,04	2,82	-18,58
1912	56,64	43,36	75,95	64,51

Source: See Appendix - Sources

App Table 4: Robustness 1 – Difference-in-Difference estimation for German, British, US, French, and Belgian Exports to Argentina - 1875-1912

	DÜB (Equation 2.10)	DÜB/SÜD (Equation 2.11)
CON1B (γ)	-1.234***	
	(0.464)	
CON2B (γ)		-1.122***
		(0.330)
INTERV (δ)	1.804***	1.501***
	(0.396)	(0.256)
lnARGIMP (λ)	0.936***	0.938***
	(0.0711)	(0.0711)
lnADV (θ)	-0.298	-0.266
	(0.257)	(0.261)
lnDIST (φ)	-12.22***	-11.66***
	(2.316)	(2.465)
COUNTRY (ϕ)	YES	YES
PRODUCT (α)	YES	YES
YEAR (μ)	YES	YES
Number of observations	4,650	4,650
Method of estimation	PPML	PPML

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Note: Dependent variable in each column is the total value of German, British, US, French, and Belgian exports by product to Argentina. The sample includes the years 1875, 1885, 1895, 1901, 1912 and a total number of 217 products in each year. The number of observations is reduced as for some products ad valorem year observations are missing. For the classification of products Table 8 and Data Set. Robust standard errors are clustered by product and year and are indicated in brackets. *Sources:* See Appendix - Sources

App Table 5: Robustness 2 – Pre-Treatment-test for the Difference-in-difference estimations 10 and 11

	(1) DÜB	(2) DÜB/SÜD	(3) DÜB	(4) DÜB/SÜD
CON1B (γ)	18.43		-0.689*	
	(22.21)		(0.366)	
CON2B (γ)		18.54		-0.962*
		(47.79)		(0.547)
INTERV (δ)	-0.126	-0.169	-0.00951	0.387
	(0.225)	(0.236)	(0.437)	(0.479)
lnARGIMP (λ)	0.792***	0.789***	1.045***	1.043***
	(0.196)	(0.193)	(0.109)	(0.108)
lnADV (θ)	-3.446*	-3.512*	-3.137**	-3.075**
	(1.931)	(1.942)	(1.366)	(1.367)
lnDIST(φ)			-22.02	-11.66***
				(2.465)
COUNTRY (ϕ)			YES	YES
PRODUCT (α)	YES	YES	YES	YES
YEAR (μ)	YES	YES	YES	YES
Number of observations	372	372	1,860	1,860
Method of estimation	PPML	PPML	PPML	PPML

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Note: Dependent variable in the columns (1) and (2) is the total value of German exports to Argentina. The dependent variable in the columns (3) and (4) is the total value of German, British, US, French, and Belgian exports by product to Argentina. The variable *lnDIST* is the great circle distance between the respective capital cities of Germany, Great Britain, the USA, France, Belgium and Argentina in kilometers. The sample includes the years 1875, 1885 and a total number of 217 products in each year. The number of observations is reduced as for some products ad valorem year observations are missing. For the classification of products see section 3.3 and Data and Appendix - Sources. The assumed pre-treatment period is year 1875, the assumed post-treatment period is year 1885. Robust standard errors are clustered by product and year and are indicated in brackets. *Sources:* See Appendix - Sources

App Table 6: Descriptive Statistics - Equations 1 to 9 (Gravity Models)

	Obs	Mean	Std. Dev.	Min.	Max.
Imports Total	165	4421324	1.34e+07	0	1.25e+08
Imports HS	165	1313951	4951872	0	4.01e+07
Imports LS	165	1162951	4283939	0	4.14e+07
Total-EM	165	250.5115	331.1374	0	991.6
Total-IM	165	60.08788	124.7085	0	788.6
HS-EM	165	237.1788	352.8287	0	995.8
HS-IM	165	203754.7	1852836	0	1.84e+07
LS-EM	165	60.88547	778.4772	0	10000
LS-IM	165	163.0331	1524.14	0	16889
Ln(AdvW)	96	0.4452532	2.111282	0.009475	20.89228
Ln(AdvW-HS)	96	0.1543823	0.0939575	0	0.4623242
Ln(AdvW-LS)	96	0. 1988251	0.098224	0	0.502166
Ln(wages)	70	4.334962	0.442622	3.332205	5.32301
Ln(gdp)	140	14.94687	5.535815	6.654152	22.97855
Ln(distance)	165	21.0262	1.21348	17.79252	22.98524
No. of Banks	165	0.1393939	0.5727232	0	4

App Table 7: Descriptive Statistics - Equations 10 and 11 (Difference in Difference)

	Obs	Mean	Std. Dev.	Min.	Max.
CON1B	1085	.1889401	.3916415	0	1
CON2B	1085	.2304147	.4212925	0	1
INTERV (DÜB)	1085	.1133641	.3171835	0	1
INTERV (DÜB/SÜD)	1085	.1382488	.3453202	0	1
lnARGIMP	1085	8.446188	6.374236	0	17.40847
lnADV	930	.2270082	0.1119269	0	.8613707