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**Giuseppe De Arcangelis, Rama Dasi Mariani,
Federico Nastasi**



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P.le Aldo Moro n.5 – 00185 Roma T(+39) 0649910563

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Migration and Trade during the Belle Époque in Argentina (1870-1913)*

Giuseppe De Arcangelis[†] Rama Dasi Mariani[‡] Federico Nastasi[§]

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Abstract

Between 1870 to 1914 the Argentine economy performed spectacularly with a yearly average real growth rate of 5.94 per cent. Increased resource endowment in both land and labor, via migration, and openness to trade have been considered the two main drivers of this success. In this paper we underline the central role of Argentine immigration in contributing not only to increase resource endowments, but also to lower trade costs boosting exports and imports. By considering Argentine bilateral trade and migration from eight European countries (Austro-Hungarian Empire, Belgium, France, Germany, Italy, Spain, Switzerland and United Kingdom) we use a migration-augmented gravity model to estimate the contribution of the massive inflows of Europeans. In particular, we find that the main pro-trade effect was on imports: an increase of 10 per cent of migrants from one country could increase imports up to 8 per cent from the same trade partner. To overcome the typical endogeneity problem our study proposes migration to the US from the same countries as a instruments that could capture the same push (but not Argentine pull) factors triggering European out-migration.

Keywords: Gravity Model, Migration and Imports, China-shock based Instrumental Variable, .

JEL Classification Codes: F22, N76.

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[†]Department of Social Sciences and Economics, Sapienza University of Rome. Email address: giuseppe.dearcangelis@uniroma1.it

[‡]CEIS, University of Rome “Tor Vergata”; Department of Social Sciences and Economics, Sapienza University of Rome. Email address: mariani@economia.uniroma2.it

[§]Department of Social Sciences and Economics, Sapienza University of Rome. Email address: federico.nastasi@uniroma1.it

1 Introduction

The end of the civil war and the unification in 1862 marked the beginning of the golden age for Argentina that lasted until the First World War. The country increased its relevance in the world economy, moving from 0.99% in 1870 up to 2.42% of the world GDP in 1913 and outpaced other similar countries, like Brazil. GDP per capita rose from 2,514 US\$ up to 6,505 US\$ and the country moved from a settler economy to one of the richest countries in the world.

The Argentine economic boom was characterized by two main drivers, i.e. openness to international trade with an export-led growth, and the exceptional increase in domestic resources.

The country took great advantage of both the reduction in transportation costs and the rise in the world demand in agricultural products following the increase in European per-capita income. The other fundamental drivers were the expansion of the agricultural land and the mass immigration. A series of military campaigns between 1870 and 1885 backed the colonization of the Western and Southern territories and the extension of arable land increased by a factor of 54 by 1913. Between 1870-1913 more than 5 million of migrants entered the seaport of Buenos Aires, arriving mainly from Southern Europe, Italy and Spain in particular. The share of migrants over the native population increased from 13% in 1870 to 45% in 1913. At the time of the yellow fever (1870), the population of Buenos Aires was 207,100 and in 1913 it reached 1.5 million, where almost half were foreign-born.¹

This paper takes advantage of the extraordinary period that characterized Argentina both as a developing export-led economy and as the destination of massive inflows of migrants in order to show how the two drivers were linked, and more specifically how immigration from Europe was a relevant pro-trade factor. Argentina is an interesting and peculiar case since the origin countries of migration rapidly became also its major trading partners.

Our paper adds to the literature on the pro-trade effect of migration by making use of detailed and unexplored historical data for the destination country.² We use bilateral trade flows with eight European countries (Austro-Hungarian Empire, Belgium, France, Germany, Italy, Spain, Switzerland and United Kingdom) that cover about 75-90 percent of all the international Argentine transactions and bilateral migration flows with those same countries that were the origin of over 61 percent of all migrants on average in the whole period.

As common in this literature, we augment the standard gravity model with migration. The

¹The city was called *la Gran Aldea*, i.e. the big village, in the 1850 (see Lopez and Arrieta, 1967), but at the turn of the century it changed its nickname into the *Paris of South America* for its opulent architecture, sparkling economic activity and cultural scene. Vicente Blasco Ibáñez, Anatole France and Guglielmo Marconi participated at the celebrations for the first centenary of the independence and of the May's Revolution in 1910

²See Appendix A for a detailed description of the data that were collected at archives.

rapidly expanding economy heightens the contemporaneous-causality problem between trade and migration. The rapid increase in GDP per-capita was the main pull factor for migration, but also responsible for the rising import demand. At the same time, Argentine growth had a relevant export-led component that could have contributed to increase labor demand and prompt migration.

The endogeneity problem is treated with a two-stage approach where our instrumental variable relies on the characteristics of out-migration from the origin countries of our sample. Migrants from Italy and Spain were motivated by push factors, like the local low income, that would explain the choice of other destinations than Argentina. We take advantage of the common push factors and we instrument migration to Argentina with migration flows to the US from the same origin (European) countries. Our instrument resembles what Autor et al. (2013) proposed when using trade flows from China to other countries than the US to obtain a measure of the China trade shock for the US economy.

As a preview of the results, both OLS and instrumental-variable estimation confirm the positive effect of migration on trade. An increase of 10 percent in migration inflows raised total trade flows (exports + imports) 4-6 per cent. The addition is particularly (and statistically) significant in the case of imports and reached 8 percent. Proxies of bilateral migration stocks confirm the same conclusions.

The paper is organized as follow. In the next section we report a short review of the literature on the pro-trade effect of migration and in Section 3 we provide the historical background of Argentina in 1870-1913. The empirical analysis, including the presentation of the model, the identification strategy and the econometric results, is presented in Section 4, whereas a detailed illustration of our data sources is included in the Appendix A. Section 5 concludes.

2 A Review on the Pro-Trade Effect of Migration

Positive correlation between migration and international trade has been widely documented for different countries, periods, and goods since Gould (1994). The literature has identified two possible channels via which migrants could stimulate trade flows: the network channel, or the business and social network effect (Rauch and Trindade, 2002) and the preference channel, or the transplanted home bias effect (Gould, 1994; White, 2007).

The first channel is based on the idea that immigrants can reduce the fixed cost of exporting because of the language, the specific knowledge of homeland institutions and norms. Moreover, immigrant networks may provide contract enforcement through sanctions and ex-

clusions, which substitutes for weak institutional rules and reduces trade costs. Chaney (2016) presents a very exhaustive literature review on ethnic networks and the patterns of international trade and underlines the positive role of migrant networks in reducing information frictions.³ Ethnic migrants are a proxy for the presence of social ties and they may affect the patterns of international trade through informal barriers and contract enforcement. Contract enforcement relates to differences in legal systems between countries, ambiguity of the extent of the jurisdiction of the national court system, the inability of buyers and sellers to fully commit to pre-established contracts ex-ante, and the inability of the justice system to perfectly enforce existing contracts ex-post. The presence of migrant networks mitigates information frictions, in particular asymmetric information, and facilitates trade. More specifically, Chaney (2016) considers the difficulty to acquire information about foreign products, the differences in taste between domestic and foreign consumers, troubles in communication among traders in the case of trade in highly differentiated and customized intermediates all as informal barriers.

Concerning the preference channel, or the transplanted home-bias effect, as in Gould (1994) and White (2007), the idea is that immigrants are characterized by different habits in consumption with respect to natives, and they may slowly modify their original home-biased demand after settling in the host country. As supportive to preference stability, Atkin (2013) investigated habit formation in tastes and concluded that preferences developed in childhood persist into adulthood. It means that preferences tend to move with migrants and thus consumers from the same ethnic group tend to share the same tastes. In an innovative work based on data of transnational migration and international trade from 40 countries, Zhang (2020) introduces consumers' heterogeneity according to the presence of migrants by ethnic groups and is able to explain the trade-bias departure from the traditional gravity model based on the representative consumer.

The existing literature suggests that the relevance of these channels would be different for different types of products and for different types of immigrants/source countries. In general, the empirical literature has shown that both mechanisms usually work together (Head and Ries, 1998; Girma and Yu, 2002) and the network channel is found to be very relevant by some authors (Rauch, 1999; Herander and Saavedra, 2005). However, when focusing on trade flows, imports can benefit not only from the network effect, but also from the preference effect, and the elasticity of import flows to migration is higher than the same elasticity of export, as found in Bratti et al. (2014). The preference effect tends to increase with the size of the stock of the migrants, as it measures the market size of the host country for imports from the home country,

³For other comprehensive reviews of the pro-trade effect of immigration see also De Benedictis and Taglioni (2011), Gaston and Nelson (2013) and Felbermayr et al. (2015).

but it may decrease over the time if a partial assimilation of migrants' tastes to the natives' preferences may occur.

Disentangling the single contribution of each channel is difficult, especially with aggregate data. The magnitude of the preference channel is usually inferred by the difference between the estimated elasticities of imports and exports to migration. Our work contributes to this literature by taking advantage of the extraordinary historical experience of the immigration in Argentina. Jacks and Tang (2018) have already shown how the correlation between migration and trade has been holding since 1870 with the exception of the interwar period, but the Argentine case can offer an interesting case study. For instance, migrants built business network in Buenos Aires (Abad and Sánchez-Alonso, 2018), but at the same time the country experienced a transition in consumption pattern with the introduction in the market of new products. Indeed, Ramon-Muñoz (2009) related to migration from the origin countries the relevant increase in Argentine imports of olive oil from Southern Europe, wine from Spain and cloth from Italy.⁴ Moreover, Fernández (2004) has underlined the correlation between overall Argentine imports and immigration flows from both Spain and Italy before World War I. Regarding evidence from the origin countries, Zamagni (1997) has argued that the growth of Italian exports to Argentina and the United States prior to 1913 could be partly explained “by the massive presence of Italian immigrants in these countries” (p. 125).

3 Historical Background

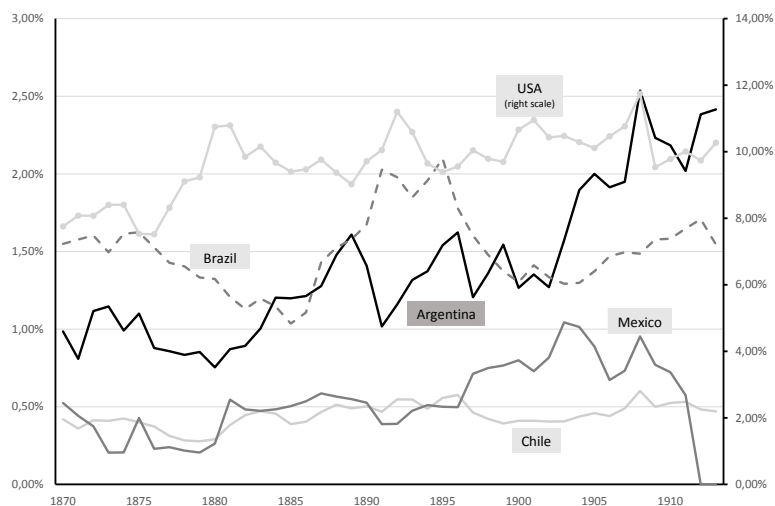
Argentina's provinces gained independence from Spain in 1816, but a series of civil conflicts occurred during the first half of the nineteenth century and the country finally united in 1862 with a constitution that contained modern values and strongly affirmed the rule of law.

Besides well-designed institutions, Argentina boomed economically thanks to both the rapidly increased endowment of economic resources – both land and labor – and the openness to trade. As stated in the Introduction, Argentina outpaced many similar countries, like Brazil and Mexico, as a share of world trade (see Figure 1).

Land resources were acquired with the expansion of the frontier by means of military campaigns, differently from the US case of civilian settlers. During the *Conquista del Desierto* 15,000 square leagues were subtracted from the indigenous dwellers and assigned to the Argentin-

⁴Since the colonial period, Argentina imported wine from Catalonia and Valencia and up to 1880 wine was the main commodity imported from Spain. In 1887 Spanish immigrants established the Spanish Chambers of Commerce of the Argentine Republic in order to promote Spanish trade penetration in the former colony.

Figure 1: Share of World Trade for Argentina, Brazil, Chile and Mexico (USA for comparison), 1870-1913.



Source: Fouquin and Hugot (2016).

tine settlements.⁵

The demographic dynamics was the other important factor that determined the rapid and deep transformation in Argentina in the second half of the nineteenth, with migration playing a key role.⁶ Argentine territory was highly underpopulated at the beginning of the nineteenth century with 600,000 inhabitants overall in 1810 and characterized by rural settlements (71.2% rural population in 1870). One century later in 1910 the population had increased tenfold and the urban population (51.1%) had overcome the rural population. Illiteracy was reduced from 78.24% in 1869 to 37.87% in 1914 and reached percentages similar to the major developed economies.

Argentina showed an exceptional ability to attract immigrants, as shown in Table 1. In terms of stocks, between the mid-nineteenth century and 1930 approximately four million Europeans settled in Argentina, some two million in Brazil, and slightly fewer than 600,000 in Cuba and Uruguay (Sánchez-Albornoz, 1974, p. 129).

There are three main reasons why Argentina was so successful in attracting migrants.

First, the complementarity between land and labor induced a big increase in labor demand, created by both the abolition of slavery (1853) and the need to populate the new lands following

⁵See Droller (2018).

⁶As the British consul in Buenos Aires noted, circa 1890, “Never has such a proportionally large immigration entered in a country in a short period before” (see Cortés Conde, 1968, p. 59).

Table 1: Migration to the New World by destination (per thousand population)

	1860-71	1871-80	1881-90	1891-1900	1901-10
Argentina	99.1	117	221.7	163.9	291.8
Brazil		20.4	41.1	72.3	33.4
Cuba					118.4
Uruguay			118.3	88	123.3
Australia	122.2	100.4	146.9	7.3	9.9
Canada	83.2	54.8	78.4	48.8	167.6
USA	64.9	54.6	85.8	53	102

Source: Sánchez-Alonso (2019).

the expansion of the land frontier. As a result, the real wage increased and became one of the main drivers of immigration. In Figure 2 we report the real-wage premia of Argentine wages over Italian and Spanish wages in comparison with the migration inflows from the same two countries evincing a positive correlation, especially for the period 1870-1890 (between 0.33 and 0.36). The inflows dropped during the years around the Baring crisis in 1890 – one of the first international sovereign-debt crisis that intensively hit Argentina⁷ – but resumed in the early 1900s after the period of immigration policy restrictions in 1890s following the general trend of gradual closing adopted in Anglo-Saxon countries (Timmer and Williamson, 1998).

Second, the Argentine government implemented measures to promote immigration that were in place until the end of the century.⁸

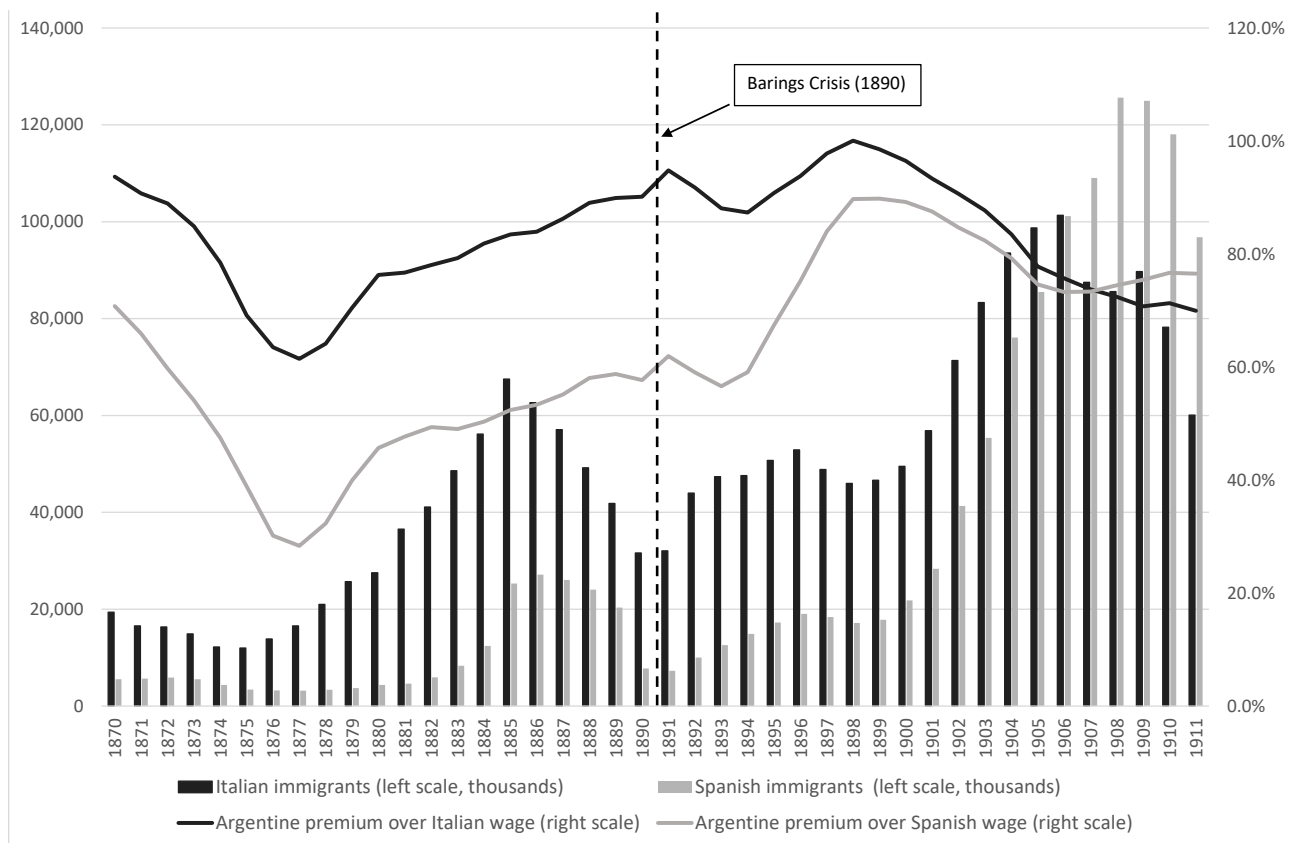
Third, network effects and lower social-economic costs of integration can explain the selection of Argentina as a destination in the New World. Cultural affinity, language similarity and the stock of previous emigrants were decisive for the selection of the final arrival countries.

The average wage for unskilled work in the 1870s were only 43 percent of the same wage in Argentina, but 22 percent of that in the United States. Notwithstanding the different wage gaps, in the 1870s and 1880s the destination of many Italian migrants was Argentina (Devoto, 2006). This phenomenon shows how the real wage differential can be the trigger to out-migration, but in the choice of final destination the presence of social networks and cultural affinity may play an even more relevant role, as argued by Moretti (1999). Along the same lines, Sánchez-Alonso

⁷The GDP growth rate dropped to -8.2% in 1890 and to -5.3% in 1891. See, for instance, Mitchener and Weidenmier (2008).

⁸An illustrative case is the *Ley Avellaneda* (Ley Nacional n. 817/1876). In May 1876 President Avellaneda declared to the National Congress “the imperative need to attract migration” and created the Immigration National Direction, which encouraged migration from Europe through immigration agencies and relevant subsidies for transoceanic travels.

Figure 2: Real-wage premia of Argentine wages and immigration flows, 1870–1913 (5-year centered moving average).



Source: Inklaar et al. (2018), Banco Central de la República Argentina (1915).

Table 2: Population and Immigration in Argentina 1870–1913

Period	Population (annual average)	Share of immigrants	% Italians	% Spaniards
1870-1880	2.208.000	17.60%	43.00%	15.70%
1881-1890	3.039.000	29.20%	52.70%	14.90%
1891-1900	4.118.400	37.80%	61.10%	19.10%
1901-1913	6.037.923	43.80%	67.00%	30.90%

Source: Ferreres (2005).

(2019) argues that many skilled Italian migrants preferred Argentina over the US, given the proximity between the Italian and Spanish language compared to English that could allow them to be more easily employed into commerce and open business activities.

As reported in Table 2, the weight of foreign-born population kept on increasing and accounted to almost 44% on a yearly average in the first decade of the 1900. The Table also highlights how migration tended to polarize into two main nationalities, i.e. Italians and Spaniards.

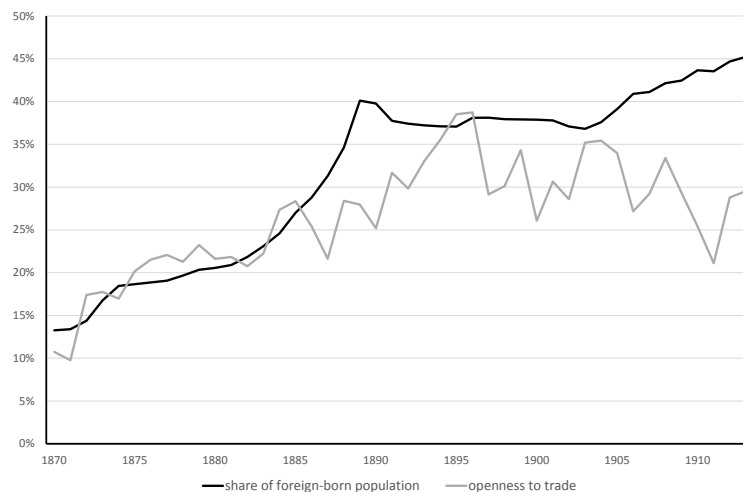
The second important factor for the Argentine economic rise was provided by the increase in international trade during the first globalization. Demand for agricultural products rose in the late nineteenth century mainly from North-Western Europe as a result of the fast population growth in conjunction with the rising average per-capita income. Given her increased endowment of land and natural resources, Argentina became of the major exporters in primary products in exchange for manufactured goods with advanced European countries (see Schedvin, 1990 and Denoon, 1983).⁹

Overall, between 1870 and 1913 its share in world exports rose from 0.8% to almost 4%. The main trading partners were Great Britain, France, Belgium and Germany. Spain and Italy lagged behind, but still played an important role in trade. In terms of value, Argentina traded 4.45 million US\$ with Italy in 1881 and the flow reached 59.27 million US\$ in 1913. The trade flow with Spain soared from 3.82 million in 1881 to 18.96 million in 1913.

Several studies argue the export-led characteristic of Argentine growth, e.g. Conde (2005) and Taylor (1994). More recently, Pinilla and Rayes (2019) uses a gravity model on Argentine exports between 1880 and 1929 and shows the relevance of both the supply and demand sides, as well as the positive impact of the reduction in transport costs. The authors show how the Argentine export-led model was a result of the strong integration and complementarity with European countries that were at a more advanced stage in their industrialisation process

⁹A common expression was *Argentina as the breadbasket of the world*.

Figure 3: Share of Foreign-born Population and Openness (Exports+Imports/GDP) in Argentina, 1870-1913.



Source: Federico and Tena-Junguito (2017) and Ferreres (2005).

(especially Great Britain).

Our main point in this study is to uncover the interplay between these two factors that contributed together to Argentina's fortunes. As Figure 3 shows, the two phenomena occurred at the same time and in our empirical evidence we aim at disentangling the channel of immigration as a pro-trade factor igniting growth.

4 Empirical Analysis

Our analysis aims at identifying the additional contribution of migration on the trade flows between Argentina and its major European partners that were also the major origin countries of Argentine immigration. The data source for bilateral nominal trade flows, nominal GDP and gross national expenditure (GNE) is the TRADHIST dataset (Fouquin and Hugot, 2016).

Bilateral migration inflows of Argentina with eight European countries (Austro-Hungarian Empire, Belgium, France, Germany, Italy, Spain, Switzerland and United Kingdom) from 1870 to 1913 are obtained from several historical archives, as Banco Central de la República Argentina (1915) and Commissariato generale dell'emigrazione (1926). More detailed information is provided in the Appendix A.

4.1 The Empirical Model and the Identification Strategy

Our empirical strategy relies on the standard gravity model when there is one pivot country A as both exporter and importer, i.e. Argentina, with its partners i , that are: Austro-Hungarian Empire, Belgium, France, Germany, Italy, Spain, Switzerland and United Kingdom. Following Head and Mayer (2014), we combine definitions 1 and 2 of general and structural gravity with the pivot country A and obtain:

$$X_{i,t}^A = \begin{cases} \frac{Y_{i,t}}{\Omega_{i,t}} \frac{X_{A,t}}{\Phi_{A,t}} \phi_{A,i,t} & \text{when } A \text{ is importer} \\ \frac{Y_{A,t}}{\Omega_{A,t}} \frac{X_{i,t}}{\Phi_{i,t}} \phi_{i,A,t} & \text{when } A \text{ is exporter} \end{cases} \quad (1)$$

where, for each time period t , $X_{i,t}^A$ is the trade flow between Argentina and its partners, either imports or exports, $Y_{h,t}$ and $X_{h,t}$ would represent respectively gross production and total expenditure in country $h = A, i$; $\Omega_{h,t}$ and $\Phi_{h,t}$ are multilateral resistance terms for country $h = A, i$.

The bilateral resistance terms $\phi_{A,i,t}$ and $\phi_{i,A,t}$ are assumed to be symmetric and such that:

$$\phi_{A,i,t} = \phi_{i,A,t} = (\text{dist}_i^A)^\eta (\text{MIG}_{A,i,t})^\delta$$

where dist_i^A is the sea distance of each country i from Argentina and $\text{MIG}_{A,i,t}$ is immigration to Argentina from country i at time t .¹⁰

By taking log transformation we estimated model (1) with two different empirical approaches.¹¹

In one case we consider Argentina as an importer and an exporter in one single equation as follows

$$x_{(h,j),t} = \alpha + \beta_{\text{imp}} y_{h,t} + \beta_{\text{exp}} x_{j,t} + \delta \text{mig}_{(h,j),t} + \eta \text{dist}_{(h,j)} + \mu_{(h,j)} + \mu_t + \epsilon_{(h,j),t} \quad (2)$$

where for $h = A, i$ $j = A, i$ $h \neq j$:

- $x_{(h,j),t}$ as imports of h from i ;
- $\text{mig}_{(h,j),t} = \text{mig}_{i,t}^A$, i.e. the only relevant migration flows for that period was from each country i to Argentina (see footnote 10);

¹⁰Since migration represents an asymmetric and direction-specific term, we should have included also $\text{MIG}_{i,A,t}$. We assume that the only relevant migration flows were from i to A as the return migration flows that occurred during that period could not be considered as Argentine natives moving to Europe.

¹¹Small-letter variables represent log-transformation of capital-letter variables: $\ln Z \equiv z$.

- $\mu_{(h,j)}$ is a country-pair dummy to capture the time-invariant heterogeneity in the relationship between h and j not included in the sea distance $dist_{h,j}$.

In the second case, we consider two different empirical models depending on whether Argentina is the importer or the exporter country:

$$x_{i,t}^A = \begin{cases} \alpha_{imp} + \beta_{imp}y_{i,t} + \delta_{imp}mig_{A,i,t} + \\ \quad + \eta_{imp}dist_i^A + \mu_{i-exporter} + \mu_t + \epsilon_{i,t} & \text{when } A \text{ is importer} \\ \alpha_{exp} + \beta_{exp}x_{i,t} + \delta_{exp}mig_{A,i,t} + \\ \quad + \eta_{exp}dist_i^A + \mu_{i-importer} + \mu_t + \epsilon_{i,t} & \text{when } A \text{ is exporter} \end{cases} \quad (3)$$

The two approaches present pros and cons. By estimating (2) we save degrees of freedom, but we miss the possibility of disentangling the different effects of migration on imports and exports since there is a common δ estimate. When considering model (3), the number of degrees of freedom drops, but we estimate two distinct parameters for migration, δ_{imp} and δ_{exp} , respectively as the effects of migration to Argentina on Argentine imports and exports.

The OLS estimation is likely to produce biased and inconsistent estimates because migration could be endogenous, due to reverse causality or confounding factors, violating the orthogonality condition with the error term. Argentine export-led growth might have caused both an increase in imports and a surge in labor demand that could have set off the arrival of foreign-born workers.

Therefore, in order to cut out the confounding effect of labor demand we selected instrumental variables (IV) that could only represent movements of the labor supply due to migration, i.e. general push factors of European out-migration.

Our IV approach is related to the identification strategy in Autor et al. (2013) where Chinese exports to all countries but the US were the instruments for Chinese exports to the US. Similarly, we use out-migration of the selected European countries to the United States as our instrument. The idea is that the push factors for European out-migration in late nineteenth century are very similar to all destination countries in the New World, but the Argentine trade pattern did not affect the European migration flows to United States (our exclusion restriction) and the effects of migration to the US did not increase Argentine imports and exports.

Data of migration flows by nationality into the United States from 1870 to 1913 are obtained from the US Bureau of the Census (1949). We sampled the migration flows from 6 European national entities: Italy, other Southern countries – which include Spain, Portugal and Greece – Austria-Hungary, Germany, United Kingdom and other North-Western countries – which

include France, Belgium, Netherlands, Switzerland and Luxembourg. In order to assure consistency between our trade data and the differently-aggregated data in the US-based instrumental variable, we have merged trade flows from France, Belgium and Switzerland.

Table 3: OLS and IV Country-Pairs Estimation of the (Log-Linearized) Gravity Model (2) for Argentina (1870-1914) Augmented with Immigration Flows.

	OLS				IV			
Gross Prod. @ Origin	0.973*** (0.178)	2.321*** (0.243)	0.987*** (0.203)	2.309*** (0.298)	1.002*** (0.204)	2.649*** (0.248)	0.979*** (0.233)	2.727*** (0.348)
Gross Exp. @ Dest.	0.747*** (0.155)	2.100*** (0.276)	0.675*** (0.158)	2.051*** (0.298)	0.729*** (0.162)	2.442*** (0.299)	0.667*** (0.161)	2.486*** (0.405)
Imm. Flow	0.0889 (0.0991)	0.278*** (0.107)	0.119 (0.105)	0.276** (0.111)	0.0706 (0.136)	0.546** (0.209)	0.132 (0.154)	0.603** (0.265)
Sea Dist.	-7.622 (4.883)	-7.242** (2.945)	-2.039*** (0.438)	-8.182*** (1.27)	-8.032 (5.049)	-4.137 (3.585)	-2.017*** (0.514)	-10.40*** (1.636)
Observations	480	480	480	480	480	480	480	480
Num. of Country Pairs	12	12	12	12	12	12	12	12
Year FE	NO	YES	NO	YES	NO	YES	NO	YES
Country pair F Stat	NO	NO	YES	YES	NO	NO	YES	YES
					81.313	37.374	135.717	70.725

Robust standard errors are reported in parenthesis; * p<0.10, ** p<0.05, *** p<0.01

4.2 Main Results

The estimation of the augmented gravity model in Equation (1) is performed with the two different approaches, presented in (2) and (3). As mentioned above, only six of the original eight countries can be used for the IV estimation, therefore in the OLS estimation we consider the consistent 6-countries sample with Austro-Hungarian Empire, Germany, Italy, Spain, BFS (an aggregate of Belgium, France and Switzerland) and United Kingdom.

In Table 3 we report OLS and IV estimates when using approach (2), i.e. flipping the role of countries depending on whether it is an importer or an exporter. The IV estimation has been implemented with a standard two-stage approach (see Baltagi, 1981). All the traditional gravity variables have the expected signs and are significant. Measures of economic masses (capability of exporting and absorption) show an elasticity not significantly different from one as reported in the literature (see Head and Mayer, 2014), except when including time fixed effects, which may signal that common time-variant events (as the decreasing trade costs during that period) made trade more sensitive to measures of domestic economic activity. Migration inflows have a positive and significant effect that is confirmed when implementing the IV estimation.¹² In

¹²We always refer implicitly to the traditional 95% significant level if not said otherwise.

particular, the IV significant estimates show an elasticity that ranges between 0.5 and 0.6 percent.

The results for the specification (3) with the differential effect of migration on exports and imports are reported in Table 4 when using both OLS and IV methods.¹³ The partner GDP or GNE – i.e., measure of the penetrating capability into the Argentine domestic market or proxy for absorption of Argentine exports – shows an elasticity consistently greater than unity, where one percent increase in the partner variable induces about 2 percent increase in trade with Argentina. The measure of bilateral resistance is consistently negative as expected.

Immigration flows affect positively and significantly both trade flows in the OLS estimation with a slight higher effect on imports. However, as discussed in Section 4.1, the OLS estimation may produce unreliable estimates and cannot be used for a causal interpretation. The IV estimates in the lower part of Table 4 are not very different from the OLS estimates for distance and economic mass. Instead, we obtain different effects of migration for exports and imports. Immigration is more relevant for imports where one percent increase in migration inflows is associated with an increase in imports that is never lower than 0.5 per cent and is equal to 0.9 per cent when controlling for all possible fixed effects. The estimates for exports are not significant in two out of the four fixed-effects cases and never higher than 0.4.

4.3 Robustness Checks

The literature underlines the importance of *migration stocks* besides migration flows. Reliable measures of migration stocks with the origin-country breakdown are only available for three years from the Census. Therefore, we resort to two indirect ways to measure yearly immigration stocks at the origin-country level. First, we cumulated the past five years of migration flows and used this variable instead of migration flows.¹⁴

Table 5 reports the OLS and the IV estimation for model (3) with the cumulated flows when including all fixed effects. The migration variable has always a positive effect and it is confirmed that the import elasticity is significantly positive and higher than the export elasticity, in line with the previous estimation in Table 4.

Secondly, we use lagged immigration flows up to five years to see whether *past* migration affects trade via the different channels (decreased information costs for exports and preference for imports). Table 6 reports the IV estimation results by including yearly lags of immigration

¹³In the Appendix B we report the estimation of the baseline model without migration in Table 8.

¹⁴This is an imperfect measure of stocks since we did not cumulate *net* migration flows and during that period there were return migration flows.

Table 4: OLS and IV Estimation of the (Log-Linearized) Gravity Model (3) for Argentina (1870-1914) distinctly for Exports and Imports

<i>OLS Estimation</i>								
	IMP				EXP			
Partner GDP or GNE	2.352*** (0.279)	2.265*** (0.0916)	2.381*** (0.348)	1.881*** (0.293)	2.685*** (0.475)	2.343*** (0.324)	2.767*** (0.590)	2.034*** (0.331)
Imm. Flow	0.312*** (0.0617)	0.284*** (0.0669)	0.306*** (0.0735)	0.218 (0.146)	0.300*** (0.0952)	0.307** (0.140)	0.281** (0.123)	0.252 (0.214)
Sea Dist.	-5.525*** (1.670)	-6.609*** (1.509)	-3.861*** (0.729)	-2.637*** (0.774)	-3.696 (3.955)	-5.004** (2.177)	-4.746*** (1.223)	-3.030*** (0.999)
Observations	240	240	240	240	240	240	240	240
Num. of Countries	6	6	6	6	6	6	6	6
Year	NO	YES	NO	YES	NO	YES	NO	YES
Country FE	NO	NO	YES	YES	NO	NO	YES	YES
<i>IV Estimation</i>								
	IMP				EXP			
Partner GDP or GNE	1.708*** (0.310)	3.334*** (0.342)	1.695*** (0.319)	2.757** -1,053	2.610*** (0.596)	1.846** (0.642)	2.626*** (0.651)	1.946** (0.650)
Imm. Flow	0.548** (0.195)	1.216*** (0.347)	0.553** (0.201)	0.873* (0.439)	0.374** (0.148)	0.120 (0.447)	0.369* (0.169)	0.189 (0.442)
Sea Dist.	-5.776 (4.124)	0.389 (4.303)	-2.683*** (0.574)	-5.501* (2.597)	-2,638 (4.092)	1.64 (1.445)	-4.509** (1.327)	-2,762 (1.976)
Observations	240	240	240	240	240	240	240	240
Num. of Countries	6	6	6	6	6	6	6	6
Year	NO	YES	NO	YES	NO	YES	NO	YES
Country FE	NO	NO	YES	YES	NO	NO	YES	YES
F Stat	59.630	14.493	50.820	33.382	62.261	16.355	105.265	31.302

Robust standard errors are reported in parenthesis; * p<0.10, ** p<0.05, *** p<0.01

Table 5: OLS and IV Estimation of the (Log-Linearized) Gravity Model (3) for Argentina (1870-1914) Augmented with Immigration Cumulated Flows as a Proxy for Stocks.

	OLS		IV	
	EXP	IMP	EXP	IMP
Partner GDP or GNE	1.276*** (0.482)	1.869*** (0.526)	1.401* (0.621)	2.462** (0.865)
Cumulated 5-year Lag Imm.	0.110 (0.336)	0.373*** (0.141)	0.209 (0.570)	0.827** (0.330)
Sea Distance	-1.161 (1.479)	-3.006** (1.297)	-1.568 (2.085)	-4.916* (2.074)
Observations	216	216	216	216
Num. of countries	6	6	6	6
Year FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
F Stat			74.292	73.001

Robust standard errors are reported in parenthesis; * p<0.10, ** p<0.05, *** p<0.01

flows one at the time up to time.¹⁵ The significant effect on imports is fully confirmed and it slowly decreases over time: after five years the estimated elasticity is 0.65, i.e. only less than 0.2 than the 1-year lagged migration. The effect on exports is instead never significant at all lags.

The stronger and consistent effect of migration for imports supports the interpretation that during this period migration worked more as a factor that increased the demand for products from the origin countries (the so-called *olive oil effect*) rather than a facilitator for exports.

Table 6: IV Estimation of the (Log-Linearized) Gravity Model for Argentina (1870-1914) Augmented with Immigration Lags.

	EXP					IMP				
Partner GDP or GNE	1.845**	1.571**	1.451**	1.324**	1.259**	2.630**	2.546**	2.367**	2.279**	1.970**
	(0.627)	(0.601)	(0.541)	(0.524)	(0.367)	-1.032	(0.986)	(0.842)	(0.822)	(0.710)
Sea Distance	-2.471	-1.814	-1.534	-1.231	-1.140	-5.182*	-4.949*	-4.494*	-4.290*	-3.455*
	(1.911)	(1.877)	(1.734)	(1.720)	(1.240)	(2.504)	(2.368)	(2.009)	(1.945)	(1.692)
Imm. (<i>t-1</i>)	0.129					0.833*				
	(0.428)					(0.392)				
Imm. (<i>t-2</i>)		0.107					0.819*			
		(0.469)					(0.378)			
Imm. (<i>t-3</i>)			0.102					0.767*		
			(0.466)					(0.328)		
Imm. (<i>t-4</i>)				0.0915					0.770*	
				(0.509)					(0.323)	
Imm. (<i>t-5</i>)					0.148					0.654*
					(0.464)					(0.276)
Observations	236	231	226	221	216	236	231	226	221	216
Num. of countries	6	6	6	6	6	6	6	6	6	6
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FStat	28.345	30.622	37.745	38.353	53.958	31.020	31.677	37.962	37.697	65.415

Robust standard errors are reported in parenthesis; * p<0.10, ** p<0.05, *** p<0.01

5 Conclusions

In this paper we analyze the relationship between immigration and trade, focusing on a unique case-study — the European mass migration to Argentina at the end of the nineteenth century. During this Golden Age the Argentine Republic was founded and the country experienced its most spectacular growth ever. Two structural changes characterized that period: the demographic transformation, where migration from Europe played a key role, and the tremendous increase in openness to trade, due to technological progress and a reduction in transport costs.

We study the inter-relationship between these two phenomena and claim that immigration helped open the economy by favoring both exports and imports. We assess this effect

¹⁵In the Appendix B we also report the OLS results.

by estimating a gravity model augmented by immigration. OLS results show that migration from six different European countries fostered Argentine bilateral trade interactions with those countries.

Concerns on the endogeneity of migration flows have been taken into consideration given the extraordinary growth of the Argentine economy during the same period. Therefore, we propose an IV approach with an instrument mimicking what Autor et al. (2013) did to instrument Chinese exports to the US with Chinese exports to the rest of the world. We consider out-migration from Europe to the US so that we could capture the common push factors of migration decisions, but not the pull factors related to Argentine economic boom.

The IV results confirm the OLS estimates and the most important effect of migration on imports rather than exports, therefore confirming the importance of channels like the preference hysteresis of migrants.

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Appendix

A Data Sources

Trade flows, GDP , common-language dummies, tariffs:

- All the nominal variables (Trade flows, GDPs, tariffs and transport costs) are expressed in British pound sterling.
- Source: TRADHIST Fouquin and Hugot (2016)
- For Argentina the source is Ferreres (2005); Argentine currency has been converted into British pounds by means of Fouquin and Hugot (2016).

Distance:

- Sea distance in maritime miles.
- Source: Mayer and Zignago (2011)

Immigration flows into Argentina:

- Inflows of overseas migrants in Argentina (excluded first class passengers) from Austro-Hungarian Empire, Belgium, France, Germany, Italy, Spain, Switzerland and United Kingdom..
- Source: Banco Central de la República Argentina (1915)

Immigration flows to the US:

- Inflows of migrants to the US
- Source: US Bureau of the Census (1949)

B Additional Empirical Analysis

Table 7: OLS Country-Pairs Estimation of the (Log-Linearized) Standard Gravity Model (2) for Argentina (1870-1914): Baseline

Gross Prod. @ Origin	1.032*** (0.153)	1.981*** (0.250)	1.058*** (0.169)	1.958*** (0.332)
Gross Exp. @ Dest.	0.794*** (0.135)	1.758*** (0.267)	0.755*** (0.142)	1.685*** (0.297)
Sea Dist.	-8.968* (4.868)	-10.57*** (3.041)	-2.251*** (0.340)	-6.312*** (1.285)
Observations	480	480	480	480
Num. of Pairs	12	12	12	12
Year FE	NO	YES	NO	YES
Country pair FE	NO	NO	YES	YES

Robust standard errors are reported in parenthesis; * p<0.10, ** p<0.05, *** p<0.01

Table 8: OLS Estimation of the (Log-Linearized) Standard Gravity Model (3) for Argentina 1870-1914: Baseline

	IMP				EXP			
Partner GDP or GNE	2.565*** (0.249)	1.865*** (0.315)	2.626*** (0.272)	1.584*** (0.308)	3.063*** (0.311)	1.983*** (0.278)	3.217*** (0.384)	1.680*** (0.309)
Sea Distance	-14.68*** (1.735)	-12.75*** (3.022)	-4.277*** (0.612)	-1.900*** (0.702)	-8.490 (6.154)	-8.289*** (2.507)	-5.504*** (0.865)	-1.954*** (0.740)
Observations	240	240	240	240	240	240	240	240
Num. of countries	6	6	6	6	6	6	6	6
Year FE	NO	YES	NO	YES	NO	YES	NO	YES
Country FE	NO	NO	YES	YES	NO	NO	YES	YES

Robust standard errors are reported in parenthesis; * p<0.10, ** p<0.05, *** p<0.01

Table 9: OLS Estimation of the (Log-Linearized) Gravity Model (3) for Argentina (1870-1914) Augmented with Immigration Lags.

	EXP					IMP				
Partner GDP or GNE	2.027*** (0.284)	1.695*** (0.307)	1.499*** (0.329)	1.325*** (0.331)	1.188*** (0.293)	1.953*** (0.365)	1.914*** (0.425)	1.830*** (0.444)	1.768*** (0.437)	1.645*** (0.411)
Sea Distance	-3.037*** (0.882)	-2.202** (0.918)	-1.689* (1.026)	-1.236 (1.018)	-0.889 (0.894)	-3.061*** (0.865)	-2.979*** (1.011)	-2.791*** (1.070)	-2.638** (1.048)	-2.341** (0.980)
1-year Lag Imm. Flow	0.268 (0.213)					0.295*** (0.114)				
2-year Lag Imm. Flow		0.207 (0.229)					0.313*** (0.112)			
3-year Lag Imm. Flow			0.145 (0.276)					0.314*** (0.115)		
4-year Lag Imm. Flow				0.0937 (0.284)					0.305*** (0.0996)	
5-year Lag Imm. Flow					0.0622 (0.284)					0.293*** (0.0916)
Observations	236	231	226	221	216	236	231	226	221	216
Number of country	6	6	6	6	6	6	6	6	6	6
Year FE	YES	YES	YES	YES	YES	NO	NO	YES	NO	YES
Country FE	YES	YES	YES	YES	YES	NO	NO	NO	YES	YES

Robust standard errors are reported in parenthesis; * p<0.10, ** p<0.05, *** p<0.01