

# Immigration and Banking Development in Brazil

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## Abstract

In this paper we examine the link between European immigration and the long run development of banking at the municipal level in Brazil. Using an original database of bank branches at the municipal level, we examine the path-dependent effect of the inflow of European immigrants on the subsequent growth in bank branching at the local level. We argue that the European mass immigration before 1920 significantly altered the way transactions were conducted in local labor and product markets, thus leading to the establishment of more bank branches in municipalities with a higher share of foreign born population in the 1940s and 1950s. Interestingly, we find a particularly large correlation between bank branches per capita and a higher share of Italian immigrants but no significant correlation between the share of German immigrants and the subsequent development of banking.

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\*\*\*\*\*VERY ROUGH DRAFT\*\*\*\*\*

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## Introduction

While we believe European mass migration to the Western Hemisphere had an important effect on economic growth in the long run, measuring such effects has been complicated because a variety of confounding factors. Besides going to the United States, Europeans migrated *en masse* to Canada, Argentina, and Brazil. Between 1870 and 1940, approximately four million European immigrants entered Brazil, mostly Italians (around 1.5 million), Portuguese (1.3 million), Spanish (600,000), and Germans (190,000). Additionally, almost 200,000 Japanese immigrants entered Brazil in the same period. The impact that those immigrants had on the Brazilian economy has not been measured quantitatively. Furthermore, beyond any aggregate effect mass migration may have had, immigrants from Europe arrived to cities, towns and rural villages with their culture, customs, and entrepreneurial practices and affected the way labor markets, entrepreneurship, and financial markets worked at the local level. In this paper we study the relationship between immigration and banking development at the municipal level in the long run.

We are interested in studying the role of immigration to explain financial development because there is a strong link between financial development and growth (King and Levine, 1993; Levine, 1997; Levine and Zervos, 1998). In particular, the development of formal financial markets (i.e., banks and stock markets) in backward economies has been linked to rapid industrialization (Cameron, 1972; Gerschenkron, 1962). For Brazil, in particular, the link between the development of formal mortgage and corporate bond markets has been linked to the acceleration of industrialization in the late nineteenth and early twentieth centuries (Cortes, et al., 2014; Hanley, 2005; Musacchio, 2009). Despite our understanding of the importance of formal financial markets, we do not know what historical preconditions lead to the development of banking at the local level.

There are at least two competing hypotheses of the determinants of early banking expansion and of its long-run development in backward economies like Brazil. On the one hand, early institutions can determine the rule of law and a property rights regime that can then provide the right(wrong) conditions for financial development (Acemoglu, et al., 2001; Engerman and Sokoloff, 2000). For instance, one could think that in economies in which initial conditions lead to steep inequality in the distribution of economic assets and political power elites would pass laws restricting entry of banking institutions to protect the rents of the incumbent lending and entrepreneurial class; or at least there would be a weak rule of law curtailing entry of new banks. According to Haber, “where human capital is narrowly distributed, elites craft political institutions that amplify their power and produce laws and regulations that limit competition in banking...,” this is because “why, after all, should bankers extend credit to entrepreneurs who will challenge the dominance of the firms they control in the nonfinancial sector?” (p. 248) (Haber, 2012). For simplicity we will refer to this view as the *inequality hypothesis*, even if at its core this view argues that initial conditions determine inequality and that then determines the quality of institutions (Engerman and Sokoloff, 2012).

In the case of Brazil, before banks could enter a municipality, credit markets worked exclusively through “informal channels,” in which landed elites, merchants, shopkeepers and widows provided collateralized and uncollateralized credit to the locals at relatively high interest rates and with

some rationing of credit (Frank, 2010). In rural communities and small cities, the elites who controlled credit probably lobbied to preserve their rents and keep commercial bank lending out of the municipality. Banks could be a particular menace because they were the main lenders using collateralized loans in the country (e.g., mortgages) and with their capacity to diversify risks and pool savings they could easily disrupt local credit networks and erode rents for local elites (Cortes, et al., 2014).

A competing hypothesis argues that it is not so much the colonial institutions of a geographical location what matters, but the institutions of the people who inhabit that land at the moment in which modern economic growth takes off (Putterman and Weil, 2008). In particular, mass migration can alter the long-run path of banking development in a municipality or region by changing the existing institutions by adapting some of the customs they take from their home countries or communities. In other words, immigrants take with them different culture, customs and practices that then get imprinted onto the receiving community and that, in turn, sets the conditions for future banking development (Alesina and Giuliano, 2013; Putterman and Weil, 2008). We will refer to this hypothesis as the *immigration hypothesis*.

The immigration hypothesis has three implications. It could be that immigrants take knowhow, either about banks themselves or about entrepreneurship to their host communities (Bahar and Rapoport, 2014) and that then incentivizes the development of commercial banks. Alternatively, it could be that immigrants change the labor institutions of their host community in a way that then changes the demand for banking services. For instance, in post-abolition Brazil (post-1888), immigrants replaced slave labor in large plantations, mostly in cotton and coffee farms, and altered the labor institutions by increasing the diffusion of cash wages in rural areas (De Mello, 1982). Finally, immigrant workers also demand a formal banking system to facilitate the process of sending remittances back to their home countries.

Thus, under the inequality hypothesis, the distribution of land and human capital would be more important determinants of the cross-sectional variation in banking development, while in the immigration hypothesis, the share of foreign born in a locality would act as a treatment that interacts with initial conditions and then sets in motion a series of institutional changes that alter the long run path of municipalities with regards to banking development (affecting cross-sectional variation, but also creating variation over time in the development of banking in specific communities).

We examine these two hypotheses in the context of Brazil for the simple reason that European migration to this country represented a large shock that we think may have altered the local institutions of the receiving regions in the short and long run. Between 1900 and 1920, immigrants represented over 5% of the total population in Brazil. Close to 70 percent of all the immigrants to Brazil arrived between 1886 and 1920, with an annual flow of over 90,000 people arriving per year (there is less certitude regarding outflows). Thus, we examine the immediate impact that the inflow of migrants had on the development of banking, controlling for factors that can be more closely associated with the inequality hypothesis and for local economic conditions that should determine the demand for banks, such as GDP per capita, population density, the share of working adults to total population, or the share of industry in GDP. In fact, Rocha, et al. (2015) find that in

municipalities in which there were colonies (with a high share of foreigners relative to total population), human capital accumulated more rapidly and that had long-term development implications.

We build a new database of bank branches, GDP and immigrants per municipality for all of the municipalities in Brazil. We build the database by copying by hand the population, banking data from the censuses of 1920, 1940, 1950 and 1960. We then create a panel linking municipalities from the past with municipalities today using minimum comparable areas from 1991 and run OLS regressions examining the determinants of bank branches per capita at the municipal level. We find very strong correlations between banking development in 1920, 1940 and 1950 and the share of foreign born population in 1920. This effect seems to be persistent and is robust to many different specifications and to the addition of different controls for economic activity, industry structure, population structure, railway connectivity, size of farms, etc. We also run alternative specifications of the change in share of foreign born and bank branches per capital in between census years, finding consistent results. This findings are important because bank branches per capita in a given census year (1920-2007) are highly correlated with GDP per capita in the following census year and up to seven census before.

Interestingly, when we decompose the foreign born population into the different nationalities of immigrants we find a consistently strong and positive effect for Italian immigrants (a somewhat strong effect for Japanese immigrants as well), but no significant effect for German immigrants. The coefficient for Italian immigrants remains consistently positive and significant, no matter what specification we use. We think this speaks about the importance of Italian immigrants had in changing labor markets at the local level, as Italian immigrants replaced slave labor in large farms, especially in coffee farms in the Southeast of Brazil. Additionally, Italian immigrants also could have increased dramatically the demand for formal banking services for two reasons: Italians were extremely entrepreneurial, especially in agribusiness and textiles and there is also evidence that Italian immigrants to Brazil sent proportionally more in remittances per migrant back to Italy than Italian immigrants to Argentina and the United States.

Below we explain the history of banking and immigration to Brazil. We then explain how we build our data and explain our methodology. The last two sections show the empirical results and discuss the implications they have for how governments think of migrants.

## **Initial Conditions and Mass Migration to Brazil**

The development of banking in Brazil was very slow for most of the nineteenth century. Throughout most of the nineteenth century the number of commercial banks was very low, oscillating between one and three commercial banks between 1808 and 1850. Most of these banks operated in large cities, especially in the capital, Rio de Janeiro. After 1850 the government authorized the establishment of five banks and from then until 1888, when slavery was abolished, the number of in Brazil ranged from five to 15.

The underdevelopment of banking intermediation for most of the nineteenth century meant that most credit transactions happened in informal markets (Frank, 2010). Collateralized loans actually developed rapidly in the second half of the nineteenth century, either in contracts with local lenders or thanks to mortgages (collateralized debt obligations) loans issued by banks (Cortes, et al., 2014). In fact, the bankruptcy law of 1890 stated clearly that collateralized debt had first priority during bankruptcy and that propelled banks to increase mortgage loans in their portfolios (Musacchio, 2009; Triner, 2000).

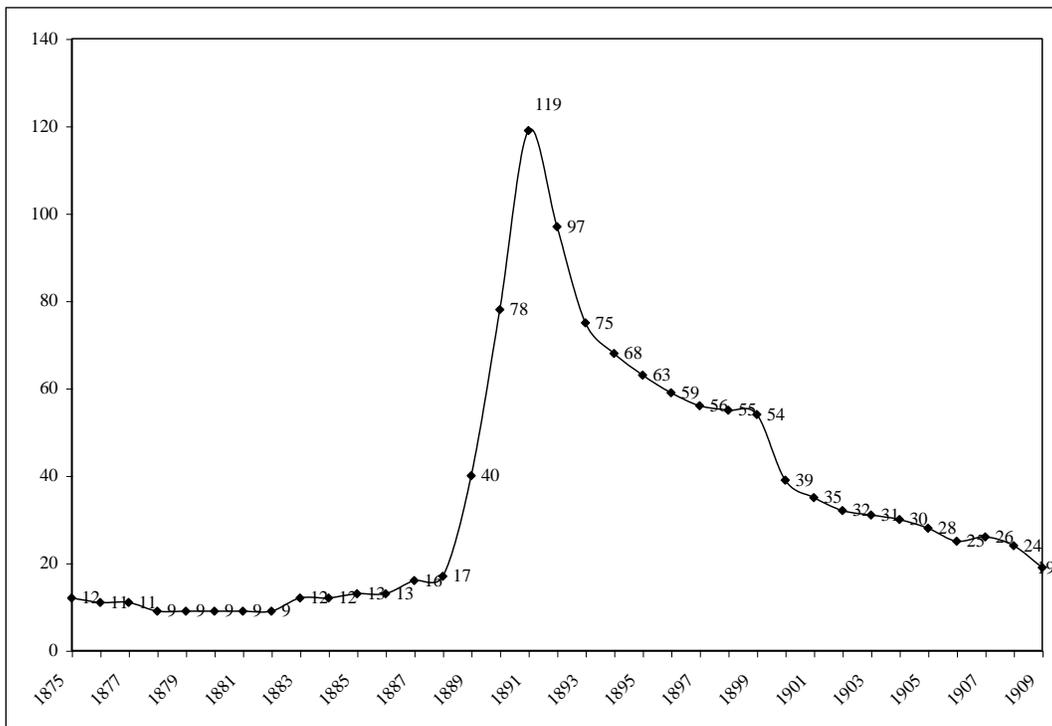
Between the 1880s and the 1890s, only large Cities in Brazil had branches from the largest banks of the time, while medium and small towns were served by bank agents. The English Bank, The Deutsche Brasilianische Bank (later Brasilianische Für Deutschland), the London and Brazilian Bank (later the British Bank of South America), the London and River Plate Bank Ltd, and later on the Banco de Commercio, the Banco Commercial Italo Brasiliano, and other local banks started opening a few branches in the interior of Sao Paulo, Rio de Janeiro, and Rio Grande do Sul. Still, most of the expansion of branching took place mostly after the first two decades of the twentieth century. Meanwhile, small and medium cities in Brazil did not have bank branches until the mid-twentieth century. Instead, bank agents representing the largest Brazilian banks operated in these towns doing basic foreign exchange operations and discounting letters of credit for local merchants (Laemmert and Sauer, 1857-1890).

The development of banking during the Imperial period (1808-1888) was to a large extent constrained by the restrictive monetary policies of the Imperial government, which unsuccessfully tried to fix the exchange rate and imposed strict controls over the issue of bank notes. These controls worked erratically; especially during times of crisis, but capital requirements, and the need for Imperial authorization to operate, de facto restricted the development of banking before 1888. The big break came with the abolition of slavery in 1888, because farmers who had employed slave labor had been switching to wage labor and it was clear that complete abolition would create a shortage of money in circulation. As a response the government allowed a major expansion of the money supply (Pelaez and Suzigan, 1981).

In 1889 as the Imperial government was overthrown by a peaceful Republican upheaval, the new Republican government liberalized banking entry and eased the requirements to issue bank notes. For almost ten years, the banking system expanded rapidly until it came to a grinding halt in 1898 (Triner, 2000). A severe recession a major bankruptcies restructured the banking sector and banking power moved rapidly to Sao Paulo, where the coffee boom took off at the beginning of the century (Hanley, 2005).

In the Rio de Janeiro Stock Exchange, the largest in the country until the 1940s, the number of listed commercial banks exploded in the 1890s and then stabilized closer to 20 by the 1910s. In the 1890s the number of banks listed in the Rio de Janeiro Stock Exchange ranged from 54 to 119, but after a severe recession from 1898 to around 1902, bankruptcies and mergers reduced the number of banks gradually to 20 or 30 (see Figure 1).

Even if there was variation in the number of banks in Brazil, most municipalities in the country did not have any bank branch until 1950 or later. Table 1 shows data to understand the diffusion of bank branches in Brazilian municipalities at the beginning of the twentieth century. In 1920, only 14 percent of the municipalities in Brazil had a branch bank, including only 80 percent of the state capitals. By 1940 34 percent of the municipalities had bank branches, including all major cities. It was in 1950 when almost 50 percent of municipalities actually had a bank branch. Therefore, it is between 1920 and 1950 that the adoption rates for bank branches accelerate. This also helps our setup because most of the adoption of banking at the municipal level happened *after* the large inflow of immigrants took place.



**Figure 1. Number of Commercial Banks listed in the Rio de Janeiro Stock Exchange**

Source: Calculated by the authors using the annual summary of the Rio de Janeiro Stock Exchange in the *Journal do Commercio*, 1875-1910

The number of bank branches per municipality, included in Table 1, show that State capitals were early adopters, having over 2 branches, on average, in 1920, while the majority of municipalities had no branches. The average municipality did not have a branch until 1950, when the average went to two branches per capita. Capital cities, in contrast, developed faster. The average number of branches in a capital city was close to 8 in 1940 and close to 20 in 1950. In the latter year, the City of Rio de Janeiro had 120 branches. According to the diffusion trends portrayed in Table 1 it makes sense to study the conditions that led to the adoption of bank branches in the middle of the twentieth century looking at municipal characteristics in 1920, because most of the initial variation over time took place precisely between 1920 and 1950.

Finally, there are important regional effects we need to examine further in our empirical work. For instance, in the South and Southeast close to 25 percent of municipalities had a bank in 1920 and over 70 percent got them by 1950. In the Northeast, Central West and Northern regions the figures are very different. In 1920 these three regions had bank branches in only 3 to 4 percent of their municipalities and, even by 1950, in the poorest two of these regions only 22 percent of the municipalities had bank branches.

### *Mass Migration to Brazil (Immigrants did not select where to go)*

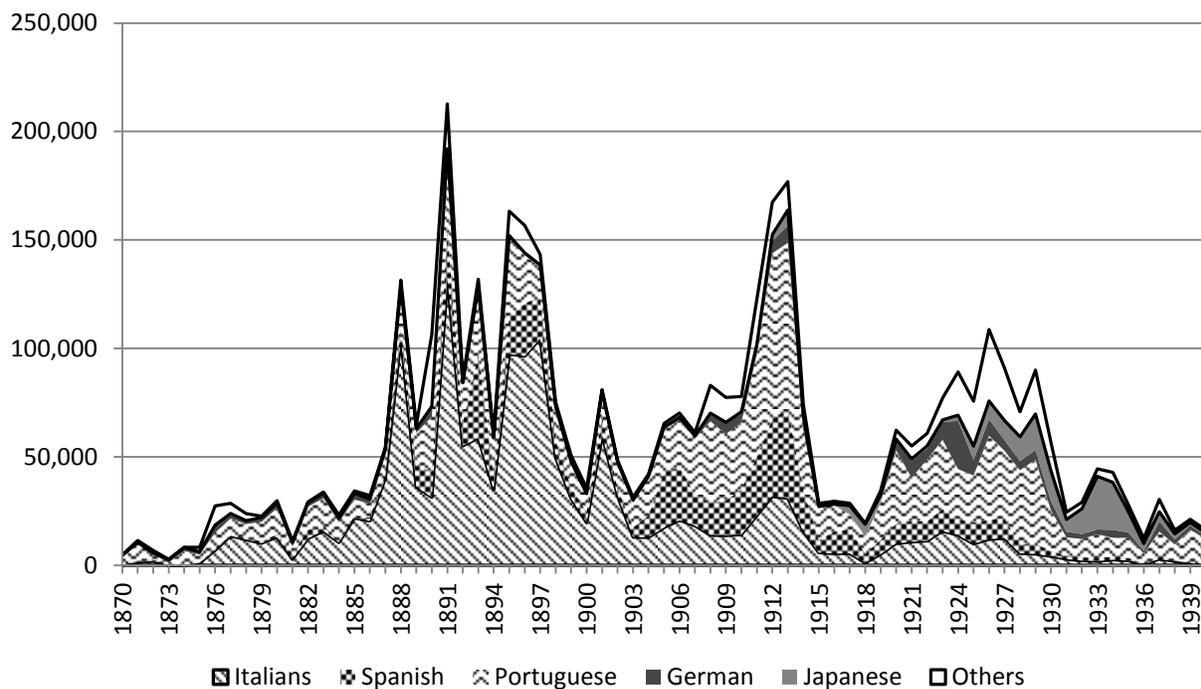
In 1808 the Portuguese Imperial Court had to flee their country, fearing Napoleon's invasion, and re-settled in the Brazilian northeastern city of Salvador, Bahia. As the Court moved, so did a large group of merchants and other European immigrants that either wanted to do business with the Portuguese or wanted to explore the New World. Between 1808 and 1933 there were almost no restrictions to European and Japanese immigration to Brazil.

Immigration to Brazil was modest through most of the nineteenth century. It is not until the mid-1880s when it became a large phenomenon. In the 1870s, planters in the state of Sao Paulo organized to get support from the government to attract immigrants from Europe. The objective of this program was to attract 15,000 workers, yet even after it was extended until 1879, the total number of immigrants the program attracted was 10,455. By 1881, the planter elite lobbied the Provincial Assembly to finance the construction of an immigrant receiving station. Nicolaou de Souza Queiroz, a coffee planter of the Western plateau of Sao Paulo, led the effort and was put in charge of the immigration service. Between 1883 and 1888 the government of the state build a receiving station conveniently located near the train station that the received the rail lines coming from the port of Santos and Rio de Janeiro. By 1888 the finished building could host 4,000 immigrants. (Holloway, 1980).

The Federal Government of Brazil built a similar receiving station in the Flower Island (Ilha das Flores) in the port of Rio de Janeiro. The hostel opened in 1883. From the book *Les colonies agricoles*, which was a guide for European immigrants going to Brazil, we know that immigrants arrived to a port, registered with local officials, and then they were hosted at the Immigrant Hostel near the port (or in the case of Sao Paulo and Minas Gerais, in the capital of the state). Immigrants usually stayed between three to eight days in the Hostel until an official of the Bureau of Immigration received requests for immigrant labor from a planter or local industrialist. Immigrants were also free to go find jobs locally. Their train or steam boat ticket immigrants had to take to arrive to their new jobs, after they left the Hostel, were usually paid for by their employer (who later on recovered the cost by garnishing the immigrant wages) (Perrin, 1912).

In fact, state governments all over Brazil hired companies to recruit immigrants in Europe to come to Brazil. The government of the state of Sao Paulo had one of the most organized campaigns, even financing a state-sponsored company, the Sociedade Promotora da Imigração, during the last two decades of the twentieth century (Holloway, 1980). State governments asked the agents, usually shipping companies, to recruit Europeans with experience in farming (to facilitate the placement in farm jobs once they arrived) and targeted entire families for a number of years. Still, planters in Sao

Paulo complained about the quality of the immigrants they received from these companies and the Consular corps in Sao Paulo also complained about the treatment immigrants received in Brazil. In particular, there is evidence that Italian immigrants that replaced slave labor in coffee farms were mistreated either beaten, held against their will, or simply forced to work with indentured labor contracts in which all of their transportation costs and any advance the farmer made to the immigrants were then paid off out of the workers' wages (Holloway, 1980; Sapienza, 1991; Trento, 1989). In 1902, the Italian government issues the Prinetto Decree, which prohibits immigration companies from recruiting Italians at home to travel to Brazil, yet allowing spontaneous immigration to that country. After the Italian government passed this decree Italian immigration to Brazil fell precipitously (Trento, 1989) (see Figures 2 and 3).



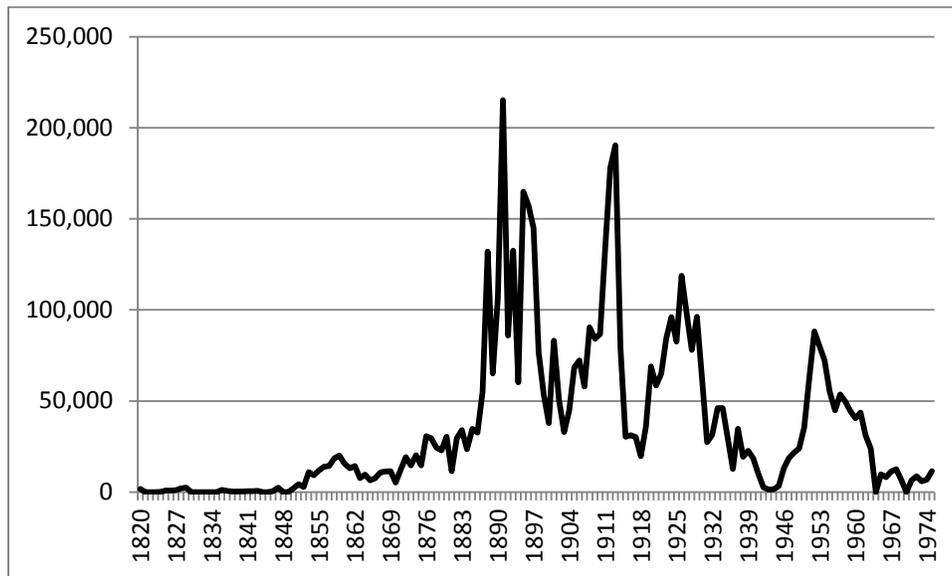
**Figure 2. Inflow of Immigrants to Brazil by Nationality, 1870-1940**

Source: Created with data in Basto (2000)

In Figure 2 we can see that the initial wave of mass migration had a large share of Italian immigrants. This wave is closely related to the work of the immigration agencies in Europe, sending immigrant families using the subsidies of the state and federal governments. Those Italian immigrants were important for Brazilian farmers as a way to replace slave labor in large farms.

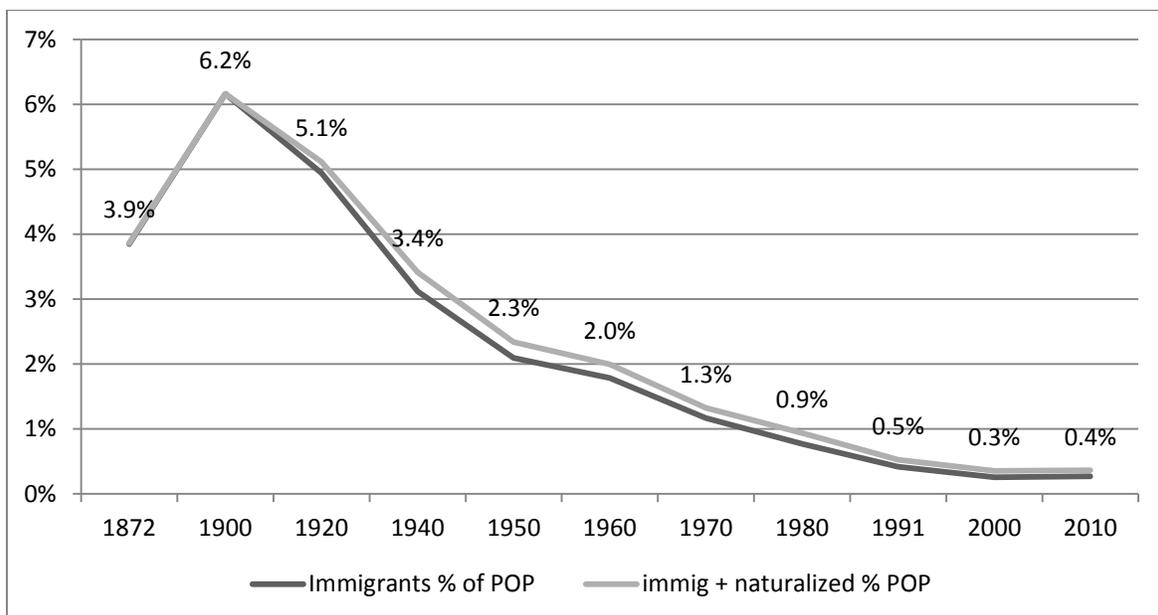
The abolition of slavery in Brazil happened in stages, with the freeing of newborns first, then with the freeing of elderly slaves, and finally with the abolition of all slaves in 1888. Holloway explains that the demand for immigrant labor increased gradually as slavery declined as an institution: "The imperial laws of 1850, 1871, 1885 were accompanied by a sporadically intense abolitionist campaign, demographic attrition, and increasing unrest among the slaves themselves" (p. 35)

(Holloway, 1980). Still, in 1872 slaves represented 15 percent of the population (close to 1.5 million people) and replacing them with wage labor was going to take a few years.



**Figure 3 Annual Gross Inflow of Immigrants to Brazil, 1808-1975**

Source: Ipeadata, available at [ipeadata.gov.br](http://ipeadata.gov.br)



**Figure 4. Foreigners as a Percentage of Total Population, Census years, 1872-2010**

Source: Created by the authors using census data from [ipeadata.gov.br](http://ipeadata.gov.br)

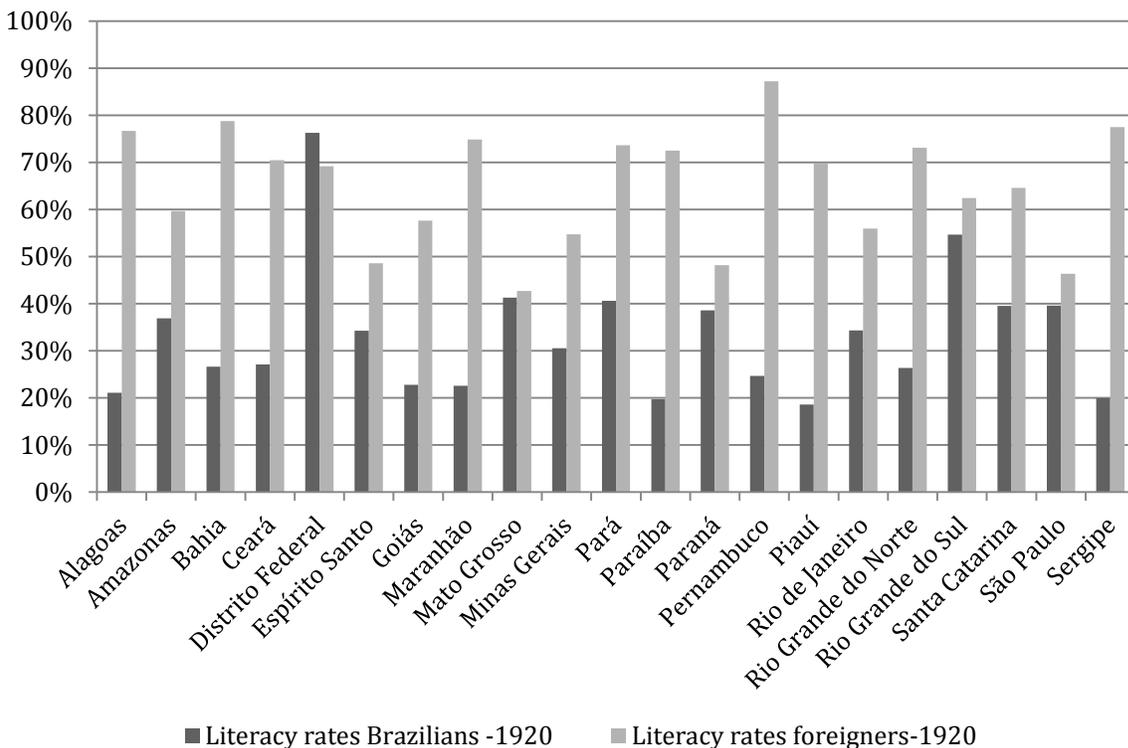
Depending on how the figures are analyzed, the decline of European mass migration happened sometime before or after World War I. If we look at Figures 2 and 3, based purely on the inflow of immigrants, the decline in gross inflows takes place in the late 1920s. Yet, if we look at the percentage of total immigrants as a percentage of nationals (the stock of immigrants), the peak happened early in the twentieth century and by World War I there was a clear decline in the size of the immigrant population relative to the total (see Figure 4).

If the flow of immigrants was a historical “treatment” to the Brazilian economy and society, then we need to understand what these immigrants took with them and how that may have changed their host community. Perhaps one of the most important elements to consider is that most of the European immigrants that went to Brazil had literacy rates significantly higher than those of Brazilians. Figure 5 shows the levels of literacy of foreigners living in Brazil, compared to those of Brazilians by state. Only in the capital of the country (Rio de Janeiro city) and the richest states, such as Sao Paulo, Rio Grande do Sul, or Santa Catarina do the levels of literacy of locals compared to those of immigrants. In most states literacy rates were dismal, while immigrants had literacy rates of 60-70 percent. These high rates of literacy are to a large extent a consequence of the fact that immigration companies recruited Italians, the largest immigrant group, from the Northern regions of the country. In fact, 53 percent of Italian immigrants who entered Brazil between 1878 and 1902 (before organized mass emigration was prohibited in Italy) were from the northern regions of Italy, especially from Veneto and Friuli (35 percent), while only 36 percent were from the South and the Islands (with 12.6 percent from Campania) (Trento, 1989; p. 39). Most emigration from southern Italy, where the less educated regions of the country were located, to Brazil happened between 1903 and 1920.

Second, European immigrants were extremely entrepreneurial and were active participants in the early industrialization of Brazil, not only financing and developing the companies, but also as skilled and unskilled workers (Dean, 1969; Stein, 1957). Therefore, there could have been a positive effect of immigration on the development of municipal economies in Brazil. Additionally, if immigrants improved the distribution of human capital in Brazil, then one could think they had a positive effects not only on the distribution of economic assets, but could have also affected the political economy of banking, as literate immigrants could have hindered the capacity of domestic elites to restrict entry to new businesses and banks or the capacity these elites had to restrict access to public education {Haber, 2012 #353; Rocha, 2015 #357; Musacchio, 2014 #316}.

In particular municipalities the effect of European immigration was especially strong because both the Federal and State governments promoted the development of “European Colonies” (*Nucleos Coloniais*). The so-called Nucleos were agricultural communities, usually in localities with temperate weather and geography that resembled central Europe. Governments used those settings to attract families of European immigrants to create settler societies. In some of those Nucleos, the Federal government mandated that at least 30 percent of the land be given to Brazilians (Perrin, 1912; Rocha, et al., 2015). We have identified 60 European Colonies, all in the southeastern states of Sao Paulo, Minas Gerais, Rio de Janeiro, Espirito Santo, Santa Catarina, Parana and Rio Grande do Sul. Thus, in those municipalities there could be a high “dosage” of immigrants, requiring special attention when we study the effect of immigrants on municipalities.

One additional important factor that may have impacted the demand for banks is the need that immigrants, especially from Italy, had to send remittances. There is no systematic evidence of this, but Trento (1989), using data on remittances from Franceschini (1908) and the Statistical Annual of Italian Immigration (*Annuario statistic della emigrazione italiana*), argues that Italian migrants to Brazil sent less aggregate remittances per year, compared to Italians in Argentina and the United States. Yet, between 1902 and 1920, data from the Bank of Napoli shows that the average remittance ticket coming from Brazil was 509 liras, while the average ticket from the United States and Argentina were 323 and 322 liras, respectively (Trento, 1989; p. 74).



**Figure 5. Literacy Rates among Immigrants and Brazilians, by state, according to the 1920 census**

Besides the decline in Italian immigration after 1902 the other important factor curtailing the wave of mass immigration took place in the 1930s, just after Japanese immigration had started to increase (see Figure 2). In 1934, President Getulio Vargas stopped the possibility of mass migration altogether with the introduction of what later became known as the Law of Quotas (“Lei de Cotas”), codified in Article 121 of the Constitution of 1934. Initially, President Vargas, through Decrees 24.215 and 24.258, May 1934, centralized the management of immigration programs in the hands of the federal government, restricting entry to immigrant farmers that did not have a visa officially requested by Brazilian landowners. He also complicated the process of entry by introducing a variety of requirements to get a visa for foreigners. There were even explicit restrictions against physically disabled immigrants. The situation got even worse for migrants because by the time

these decrees made it to the Constitution of 1934, the language took a stronger tone. Paragraph six of Article 121 stated literally that:

The entry of immigrants to the national territory will have the necessary restrictions to guarantee immigrants are physical able and can integrate ethnically to Brazil. The migratory current per year from any nation cannot exceed the limit of two per cent of the total number of immigrants from that nation who have already been living in Brazil for the past 50 years. (§6, Article 121, Constitution of 1934).<sup>1</sup>

Since there was no accounting of the stock of immigrants and the law made no clarification of what ethnic integration meant, the law was used to restrict immigration discretionarily. De facto, the law was used to ration entry to Japanese immigrants (See Figure 2) and to allow a large inflow of Portuguese immigrants. In fact, in the 1940s there is a large, short-term increase in Portuguese immigration into Brazil. After the 1940s immigration inflows were controlled using this law and immigration as a percentage of population was never as large as it was before 1920.

## Data

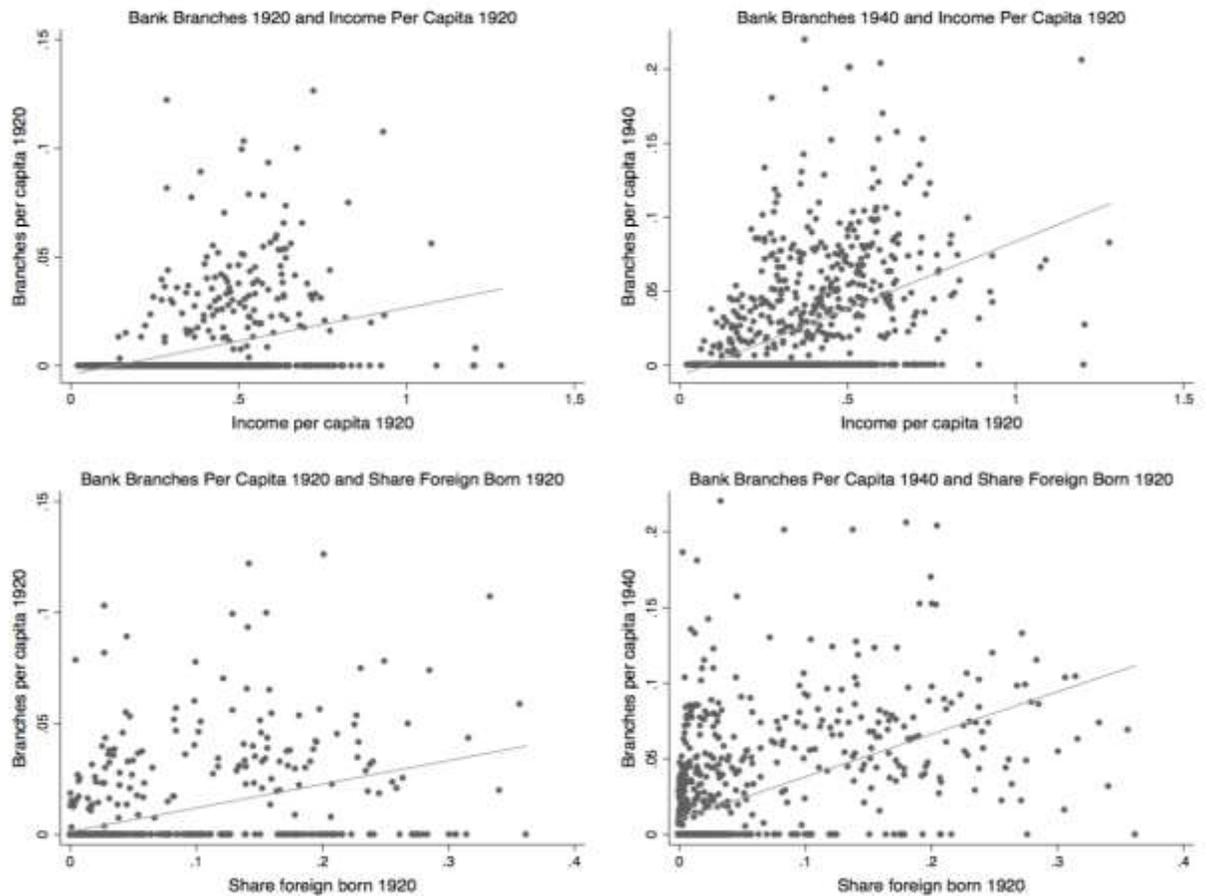
In order to study the development of bank branches at the municipal level, we had to copy by hand the number of bank branches from the census books of 1920, 1940, and 1950. We also complemented this information using data from Almanaks and other publications (Laemmert and Sauer, 1857-1890). We also hand-collected the number of immigrants, by nationality, at the municipal level from the census books for those same years. Additional information, such as population by race right after emancipation, comes from the 1890 census. Data on the location of European Colonies (Nucleos Coloniais) comes from (Rocha, et al., 2015) and (Perrin, 1912). In order to locate those colonies and the 1890 municipalities in 1920 we had to hand code the codes for the municipalities that changed names over time (a time-consuming effort given that Brazil had a peaceful Republican revolution in 1890 that gave more power to municipalities and encouraged the drawing of new municipal lines).

Local governments in Brazil have been organized into municipalities since independence. Municipalities in Brazil are equivalent to counties in the United States. Yet, working with municipal data in Brazil over time is problematic because municipalities split up or are absorbed by other municipalities. Therefore, we follow the literature that studies patterns of urbanization in Brazil (Da Mata, et al., 2005; Feler and Henderson, 2011) and create Minimum Comparable Areas (MCAs) across census years to be able to work with panel data. The MCAs we use follow the methodology of (Reis, et al., 2011) to collapse municipal data back to 1920. That is, we collapse municipalities to the original municipal division of 1920 or to areas that include a variety of municipalities in 1920 and that can be linked to municipal boundaries in future censuses. In 1920, Brazil had 1,304 municipalities and by 1950 there were 1,891 municipalities. In order to work with MCAs we collapse all the data from 1920 to 952 areas that can be linked across censuses for the twentieth century (Feler and Henderson, 2011).

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<sup>1</sup> Translated by the authors.

## Descriptive statistics



**Figure 6.** Correlations between income, share foreign born, and branch banking per capita in 1920 and 1940.

Source: Data collected by the authors from the Census books, 1920 and 1940.

In Figure 6 we can see that there is a positive correlation between the share of foreign born in 1920 and branch banks per capita in 1920. Municipality-level characteristics, such as income per capita, seem to also be highly correlated with the development of branch banks per capita. These scatter plots also show persistent correlations as the correlations between the 1920 share of foreign born by municipality is also highly correlated with bank branches per capita in 1940.

## Empirical Methodology and Results

We start our analysis with an OLS baseline specification that looks at the correlation between bank branches per capita at the municipal level and a variety of municipal-level characteristics. This baseline specification looks like this:

$$BB_{it} = \alpha + \beta sh. foreign_{it} + \theta X_{it} + \varphi_j + \sigma_i + \varepsilon_{it},$$

where  $BB_{it}$  is the number of bank branches per capita,  $\alpha$  is a constant,  $\beta$  measures the correlation between the share of foreign born population (to total population) and bank branches per capita (in some specifications we disaggregate the share of foreign born by nationality).  $X_{it}$  is a vector of municipal-level characteristics that may be important determinants of bank branching, such as the log of income per capita, the size of the municipality ( $\ln(\text{landarea})$ ), the share of labor in manufacturing (shind), population density, a dummy if the municipality in year  $t$  had a railway station, and the number of railway stations in 1920. In order to examine partially the inequality hypothesis we include the literacy rate in some specifications. In some specifications we include  $\varphi_j$ , fixed effects for the  $j$  regions in Brazil (North, Northeast, Central West, Southeast, and South), and state fixed effects ( $\sigma_i$ ).  $\varepsilon_{it}$  is the error term.

In terms of variables of interest, we are obviously interested in the correlation between the share of foreign born and the number of bank branches in a municipality. Additionally, we want to test the inequality hypothesis. We can test it in two ways. First, we control for the literacy rate in the municipality. Second, in some specifications we control for the racial composition of the municipality right after abolition using racial data from the 1890 census. Even if imperfect, given that Brazil had a large proportion of freed slaves, it can serve as a proxy for institutions that promote inequality in the distribution of assets and political power. Most freed blacks lived in the cities, thus our dummies for state capitals would probably control for that. Now, municipalities with more former slaves were also the municipalities that demanded more foreign immigrants and there is precisely where immigrants altered labor institutions by forcing the development of wage labor markets. Therefore, in these municipalities that had a large percentage of blacks and had a large inflow of immigrants, we would want to go which effect seems to dominate by adding an interactive term.

Table 4 shows our OLS regressions examining the contemporaneous correlation between the share of foreign born and bank branches per capita in 1920 at the municipal level. The coefficient for share of foreign born is positive and significant across specifications, despite the addition of controls. The addition of state fixed effects absorbs much of the effect of share foreign born and leaves us with a coefficient of approximately 0.052. The coefficient is relatively small in economic terms, though; an increase in the share of immigrants of one standard deviation (s.d.=6 percent) is correlated with having only 10 percent more bank branches per capita. In columns 2 to 8 we add a control for the literacy rate (the inequality hypothesis) and find positive and significant coefficients across the board, no matter what other controls we add. This variable is interesting because having more migrants also increase the literacy rate in a municipality. Yet the addition of this control in the

specifications in Table 4 weakens only partially the direct effect of the share of foreign born variable. This implies that immigration affects bank branches per capita through more than one channel and it does not seem like the main channel has to do with an interaction between literacy and share of immigrants in total population given that interactions between literacy and share foreign immigrant, however, were not significant.

In Table 5 we disaggregate the correlation between bank branches per capita and the share of foreign born. In Column 1 we show the baseline regression, while in column 2 two we separate the effect and control for the 30-60<sup>th</sup> percentiles and the 60-90<sup>th</sup> percentiles. The coefficient for the top three deciles (*Shfor<60 percentile*) a fifth of the main effect, but it is significant, suggesting that there is a higher correlation between having more branches and having a larger share of immigrants in the municipality, 10 percent or higher. In the last column we disaggregate the effect of share of foreign born by country origins and only Italians have a significant coefficient. This could be because wherever there were Italians there were other immigrants (that is why the coefficient of Italians is smaller than the main effect in Column 1), or simply because Italians are driving the results because they were the ones that changed local institutions in a way that was more conducive for banking development. The coefficient estimates for share Spanish and share Japanese are consistently positive but not significant. This table also has a surprising result: municipalities with higher shares of German immigrants as a percentage of total population do not have more banks per capita. This result is surprising because if the mechanism that mattered for the development of banking was that immigrants took with them a “culture of banking” or the knowhow of banking, then we would expect the German immigrants, who come from a traditionally bank-based economy, to live in municipalities with more bank branches per capita.

In Table 5 we run similar regressions but we use bank branches per capita in 1940 and 1950 as dependent variables. The main effects in columns 1 and 4 are actually larger than before. That is, the correlation between the share of foreign born and the establishment of banks in a municipality is larger as time goes by. Again, the effect seems to be more important for municipalities with over ten percent of foreigners (Columns 2 and 5). The correlation between the share of Italian immigrants in 1920 and bank branches per capita in 1950 is large and significant and the coefficient for 1950 is double what it is for the 1940 data. Surprisingly, the share of Japanese immigrants in 1920 is correlated with having more bank branches in 1940, while the “others” dummy is correlated with bank branches in 1950. Obviously there could be a variety of confounding factors linking immigration in 1920 and the outcomes in 1940 and 1950, but the correlations are strong and consistent across specifications.

In Table 7 we test whether the racial composition of the municipality right after abolition matters for the development of banking by adding a variety of control variables from the census of 1890. Using census data from 1890 forced us to use different minimum comparable areas (MCAs). In this case we have to collapse all the data into very large geographical MCS for 1872. This means that the treatment effect, which could have been focused on a town or municipality in 1920 may be diluted while we study its correlation with banking in a large area around it. Still, the share of foreign born is significant across specifications and remains large. In column 2 we control for the share of whites in the municipality in 1890, in Column 3 we control for the share of blacks only, and in column 4 we

control for the share of blacks and mixed race inhabitants. In none of these specifications do we find significant coefficients. The same happens when we use 1940 and 1950 as dependent variables (Columns 7-9 and 12-14).

We then test if in communities with high dosage of immigrants get larger correlations with bank branches per capita. IN Table 7, columns 5, 10, and 15 we control for whether there was a Nucleo Colonial in the municipality, that is whether there was a European colony, with almost 70% of foreigners living in the colony. We get no significant correlation for that dummy variable. This could be because the Nucleos were relatively small compared to the size of the municipalities (especially using 1870 MCAs) or because most of the Nucleos were mostly agricultural communities relatively isolated from civilization. Only about 10 to 15 nucleos coloniais in our sample were located near a large city.

In Table 8 we examine the path dependence of bank branches and in Table 9 we examine the correlation between bank branches in the past and GDP per capita in 2000. We not only find strong correlations with bank branches in previous periods, but the it seems that the correlation is stable even with bank branches in 1920. It seems that having an initial bank branch is correlated with having more banks in the future and having a richer economy in the future. That is, the initial determinants of banking have strong path-dependent effects in the future.

## **Conclusion**

In this paper we present evidence showing a very strong correlation between large inflows of immigrants and the development of banking at the municipal level. This is obviously not a perfect experimental setting, but given the characteristics of the mass migration to Brazil, the results definitively shed some light on important issues related to immigration policy and banking development. On the one hand, governments try to promote banking because we know there is a strong correlation between the development of financial intermediaries and economic growth. On the other hand, governments around the world debate the possible negative effects of allowing a large inflow of migrants into their economies. In particular, they fear the negative implications that can have for labor markets, in terms of wages and skill premia. Most of these discussions are related to the case in which countries face large inflows of immigrants with low levels of education.

Our paper examines one aspect of what happens when a large inflow of immigrants with higher literacy rates than that of the nationals of the host country enters an economy. We find that Brazilian municipalities that receive a large proportion of European (and Japanese) immigrants actually ended up having more bank branches per capita in the long run. We also show that bank branches per capita is a good lagged indicator to explain GDP per capita at the municipal level in Brazil. That is, our evidence shows a positive side of mass migration.

The channel through which large inflows of European immigrants, especially Italian, affected the development of banking institutions is complicated. For one, European immigrants altered labor markets, diffusing widely wage labor. Also, European immigrants, in particular Italians seem to

have demanded banks to send money home. The sparse evidence we have on remittances shows that the average remittances to Italy were higher in Brazil than in Argentina and the United States.

In sum, immigrants can alter local conditions in a positive way. In the case of Brazil, immigrants seem to have partially changed the institutional inheritance at the local level and most likely promoted the development of banking.

Tables

**Table 1. Bank Branches per Municipality, 1920-1950**

	<u>Outside state capital</u>				<u>In capital of state</u>				<u>All munis</u>	
	mean	sd	Min	max	mean	sd	min	max	mean	sd
Percentage of municipalities with Banks in										
1920	0.13	0.34	0	1	0.82	0.39	0	1	0.15	0.36
1940	0.35	0.48	0	1	1	0	1	1	0.36	0.48
1950	0.49	0.50	0	1	1	0	1	1	0.50	0.50
Number of bank branches per municipality										
1920	0.2	0.6	0	6	2.5	3.1	0	12	0.2	0.8
1940	0.8	2.7	0	55	7.7	12.7	1	48	1.0	3.4
1950	1.9	6.7	0	155	18.8	33.1	2	120	2.2	8.6

Source: Calculated by the authors using data from the Census of Population, 1920, 1940, 1950.

**Table 2. Summary Statistics**

variable	mean	median	sd	min	max
branchpc	0.005	0.000	0.016	0.000	0.126
branchpc40	0.021	0.000	0.036	0.000	0.220
branchpc50	0.042	0.000	0.061	0.000	0.496
branchpc60	0.060	0.028	0.078	0.000	0.520
branchpc70	0.084	0.054	0.092	0.000	0.534
branchpc80	0.120	0.093	0.106	0.000	0.865
branchpc90	0.126	0.109	0.084	0.000	0.593
branchpc00	0.101	0.085	0.075	0.000	0.488
branchpc07	0.095	0.080	0.068	0.000	0.526
<u>Main control variables</u>					
lnincpc	-1.415	-1.342	0.715	-3.827	0.247
incpc	0.306	0.261	0.201	0.022	1.281
density	0.024	0.014	0.046	0.000	0.908
lnpop20	9.929	9.874	0.835	7.978	13.953
shforborn	0.038	0.004	0.069	0.000	0.362
shgerman	0.001	0.000	0.004	0.000	0.063
shitalian	0.016	0.001	0.036	0.000	0.192
shportuguese	0.005	0.000	0.014	0.000	0.205
shspanish	0.006	0.000	0.018	0.000	0.139
shjapanese	0.001	0.000	0.008	0.000	0.163
shottherfor	0.008	0.001	0.027	0.000	0.347
lnlandarea	7.490	7.281	1.443	2.912	13.875
shliterate	0.201	0.186	0.086	0.039	0.565
shagric	0.798	0.832	0.126	0.067	0.974
shpeatot	0.234	0.228	0.036	0.094	0.508
shindust	0.098	0.078	0.070	0.005	0.512

Table 3 Summary statistics in municipalities with low and high shares of foreigners (above and below mean of 3% foreigners)

	<u>Low % of foreigners</u>		<u>High % of foreigners</u>		Diff. of means test
	mean	median	mean	median	
branchpc	0.001	0.000	0.019	0.000	***
branchpc40	0.010	0.000	0.055	0.052	***
branchpc50	0.024	0.000	0.103	0.104	***
branchpc60	0.037	0.000	0.137	0.136	***
branchpc70	0.055	0.032	0.179	0.171	***
branchpc80	0.092	0.070	0.214	0.190	***
branchpc90	0.103	0.083	0.202	0.185	***
branchpc00	0.081	0.061	0.165	0.152	***
branchpc07	0.075	0.060	0.163	0.152	***
Ln(incpc)	-1.638	-1.592	-0.668	-0.632	
Income pc	0.236	0.204	0.541	0.531	
Pop density	0.020	0.012	0.036	0.023	
Ln(pop)	9.893	9.858	10.050	10.000	
Ln(area)	7.564	7.380	7.245	6.879	
Sh. Literate	0.178	0.168	0.278	0.256	
Sh. Pop agric.	0.815	0.844	0.744	0.797	
Sh. Pop in LF	0.232	0.226	0.240	0.235	
Sh. Pop in ind.	0.094	0.076	0.110	0.088	

Table 4 Determinants of Bank Branches Per Capita in 1920

	(1)	(2)	(3)	(4)	(5)	(6)	(8)
VARIABLES in 1920	Baseline	Sh. literate	Labor in ind	State & capital dummy	RJ & SP dummy	Regional dummies	#RR est 1920
<b>shforborn</b>	<b>0.088***</b>	<b>0.078***</b>	<b>0.079***</b>	<b>0.051***</b>	<b>0.054***</b>	<b>0.083***</b>	<b>0.052***</b>
	<b>[0.014]</b>	<b>[0.015]</b>	<b>[0.015]</b>	<b>[0.018]</b>	<b>[0.018]</b>	<b>[0.015]</b>	<b>[0.018]</b>
railin1920	0.002	0.001	0.001	0.001	0.001	0.001	0.003*
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
lninc	0.002***	0.002***	0.002***	0.002***	0.002***	0.002***	0.003***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.001]	[0.001]
density	-0.024**	-0.025	-0.029*	-0.011	-0.009	-0.034**	-0.016
	[0.009]	[0.016]	[0.016]	[0.016]	[0.017]	[0.015]	[0.017]
lnlandarea	-0.001**	-0.001**	-0.001**	0.000	0.000	-0.001*	-0.000
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
shliterate		0.023***	0.019***	0.022**	0.021**	0.022***	0.024***
		[0.007]	[0.007]	[0.009]	[0.009]	[0.008]	[0.009]
shindust			0.012**	0.008	0.009	0.013**	0.011
			[0.006]	[0.007]	[0.007]	[0.006]	[0.008]
lninc2						0.000**	0.001***
						[0.000]	[0.000]
estacoos1920							-0.001***
							[0.000]
Constant	-0.013***	-0.013***	-0.013***	-0.030***	-0.031***	-0.021***	-0.040***
	[0.004]	[0.004]	[0.004]	[0.006]	[0.006]	[0.006]	[0.007]
<u>Add'l controls:</u>							
State dummies	N	N	N	Y	Y	N	Y
Rio & SP City dumm	N	N	N	Y	Y	N	Y
Region dummies	N	N	N	N	N	Y	N
Observations	951	950	950	950	950	950	950
R-squared	0.238	0.249	0.251	0.298	0.301	0.259	0.307
Adjusted R-squared	0.234	0.244	0.245	0.272	0.275	0.248	0.280

Robust standard errors in brackets

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

Table 5 Bank Branches per capita and Share of Foreign Born by Nationality, 1920

VARIABLES	(1) Baseline2	(2) Shforeign high deciles	(3) By nationality
shforborn	0.054*** [0.018]		
shfor30-60 percentile		-0.002 [0.001]	
shfor >60 percentile		0.011*** [0.003]	
shgerman			-0.034 [0.186]
shitalian			0.095** [0.041]
shportuguese			0.038 [0.093]
shspanish			0.008 [0.092]
shjapanese			0.048 [0.153]
shotherfor			0.025 [0.032]
Constant	-0.217*** [0.040]	-0.205*** [0.041]	-0.204*** [0.041]
<u>Add'l controls:</u>			
State capital	N	N	Y
City of Rio & SP	N	N	N
Observations	950	950	950
R-squared	0.318	0.326	0.324
Adjusted R-squared	0.289	0.297	0.292

Robust standard errors in brackets

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

\*Controls include: ln(income), population density, railroad station dummy, literacy rates, share of labor in manufacturing, state dummies, state capital dummies, and a Rio & SP city dummy.

Table 6 Bank Branches per Capita in 1940 and 1950 (OLS)

VARIABLES	(1) DV: Branchpc 1940 Baseline2	(2) DV: Branchpc 1940 Shforeign high deciles	(3) DV: Branchpc 1940 By nationality	(4) DV: Branchpc 1950 Baseline2	(5) DV: Branchpc 1950 Shforeign high deciles	(6) DV: Branchpc 1950 By nationality
shforborn	0.127*** [0.033]			0.234*** [0.049]		
shfor 30-60 pctile		-0.017*** [0.004]			-0.023*** [0.005]	
shforborn >60 pctile		0.021*** [0.006]			0.041*** [0.008]	
shgerman			0.213 [0.315]			-0.343 [0.370]
shitalian			0.202*** [0.072]			0.422*** [0.091]
shportuguese			0.015 [0.121]			0.134 [0.216]
shspanish			0.033 [0.120]			-0.003 [0.178]
shjapanese			0.310*** [0.115]			0.108 [0.186]
shotherfor			0.071 [0.053]			0.182** [0.088]
Constant	0.045*** [0.014]	0.046*** [0.015]	0.052*** [0.016]	0.062*** [0.021]	0.060*** [0.021]	0.061** [0.024]
Observations	950	950	950	950	950	950
R-squared	0.454	0.465	0.459	0.577	0.588	0.585
Adjusted R-squared	0.434	0.445	0.436	0.562	0.572	0.567

Robust standard errors in brackets

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

\*Controls include: ln(income), population density, railroad station dummy, literacy rates, share of labor in manufacturing, state dummies, state capital dummies, and a Rio & SP city dummy.

Table 7. Baseline Regressions Controlling for Racial Composition in 1890

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	DV:														
	Branchpc 1920	Branchpc 1920	Branchpc 1920	Branchpc 1920	Branchpc 1920	Branchpc 1940	Branchpc 1940	Branchpc 1940	Branchpc 1940	Branchpc 1940	Branchpc 1950	Branchpc 1950	Branchpc 1950	Branchpc 1950	Branchpc 1950
VARIABLES	Baseline2	Sh. Whites	Sh. blacks 1890	Sh. black&mul	Sh. black&mul	Baseline2	Sh. Whites	Sh. blacks 1890	Sh. black&mul	Sh. black&mul	Baseline2	Sh. blacks 1890	Sh. Whites	Sh. black&mul	Sh. black&mul
shforborn	0.097*** [0.021]	0.096*** [0.023]	0.096*** [0.023]	0.096*** [0.023]	0.092*** [0.023]	0.133*** [0.040]	0.138*** [0.040]	0.138*** [0.040]	0.138*** [0.041]	0.127*** [0.043]	0.236*** [0.066]	0.249*** [0.070]	0.251*** [0.068]	0.250*** [0.070]	0.277*** [0.067]
shliterate	0.010 [0.011]	0.020** [0.009]	0.019** [0.009]	0.019** [0.009]	0.025*** [0.008]	0.013 [0.023]	0.041** [0.017]	0.041** [0.017]	0.037** [0.017]	0.049*** [0.017]	0.052* [0.029]	0.044 [0.028]	0.050* [0.027]	0.043 [0.028]	0.047* [0.027]
shwhite1890		-0.001 [0.004]					0.001 [0.008]					0.007 [0.014]			
shblack1890			-0.007 [0.008]					-0.005 [0.020]					0.026 [0.033]		
shblackmix1890				-0.003 [0.003]					-0.010 [0.006]					-0.011 [0.012]	
nucleo					-0.001 [0.002]					-0.003 [0.005]					-0.008 [0.006]
Constant	-0.008 [0.005]	-0.005 [0.005]	-0.003 [0.005]	-0.003 [0.006]	-0.007 [0.005]	-0.014 [0.012]	-0.014 [0.013]	-0.012 [0.011]	-0.008 [0.012]	-0.014 [0.012]	0.006 [0.017]	0.004 [0.018]	0.000 [0.019]	0.011 [0.019]	-0.004 [0.017]
Observations	430	384	384	384	366	430	384	384	384	366	430	384	384	384	366
R-squared	0.582	0.629	0.630	0.630	0.667	0.533	0.599	0.599	0.601	0.596	0.671	0.695	0.696	0.696	0.713
Adjusted R-square	0.553	0.599	0.600	0.600	0.638	0.500	0.567	0.567	0.569	0.562	0.648	0.671	0.671	0.671	0.688

Robust standard errors in brackets

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

All regressions include the following controls: Ln(income 1920), Pop density 1920, Rail station dummy, Ln(area in 1920), Sh of labor in manuf, state & capital dummies, Rio and SP city dummies

Table 8. Path-Dependence in Banking Development: Changes in Bank Branches Per Capita regressed on its past values

	(1)	(2)	(3)	(4)
	D.branchespc	D.branchespc	D.branchespc	D.branchespc
L.branchespc	-0.2476*** (0.015)			
L2.branchespc		-0.4328*** (0.029)		
L3.branchespc			-0.9565*** (0.089)	
L4.branchespc				-0.8906*** (0.125)
_cons	0.0365*** (0.001)	0.0388*** (0.001)	0.0327*** (0.002)	-0.0145*** (0.002)
r2	0.10	0.12	0.14	0.05
r2_a	0.10	0.12	0.14	0.05
N	3,807	2,854	1,902	951

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 8. OLS Regressions of GDP per capita in 2000 and Bank Branches per capita

	(1)	(2)	(3)	(4)
	lnpibpc2000	lnpibpc2000	lnpibpc2000	lnpibpc2000
branchpc1980	0.582*** (0.224)			
lnpibpc1980	0.747*** (0.020)			
branchpc1960		1.885*** (0.390)		
lnpibpc1960		0.538*** (0.033)		
branchpc1940			3.314*** (0.579)	
lnpibpc1940			0.664*** (0.029)	
branchpc1920				4.801*** (1.327)
lnpibpc1920				0.625*** (0.025)
_cons	0.384*** (0.022)	1.135*** (0.030)	1.546*** (0.035)	2.061*** (0.046)
r2	0.74	0.52	0.46	0.41
N	951	951	951	951

Standard errors in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Note: AMCs are 1920 minimum comparable areas. Robust standard errors, clustered at the city level

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