# Can Civil Law Countries Get Good Institutions? Lessons from the History of Creditor Rights and Bond Markets in Brazil

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**Abstract**

Does a legal tradition adopted in the distant past constrain a country's ability to provide the protection that investors need for financial markets to develop? This paper contributes to the literature that studies the connection between law and finance by looking at the relationship between legal origin and the development of bond markets. The paper shows that there is too much variation over time in terms of bond market size, creditor protections, and court enforcement of bond contracts to assume that the adoption of a legal system can constrain future financial development. The paper examines in detail the evolution of bond markets in Brazil, a French civil law country, and provides preliminary results of similar variation for a small cross-section of countries.

# Introduction

There is growing consensus that there are causal links between financial development and economic growth. Yet, there is less agreement on why some countries have more developed financial systems than others. Lately, financial economists have defended the idea that the legal traditions countries follow are a likely source of exogenous variation that may explain differences in financial development across countries. Because legal regimes were adopted or inherited before most modern financial markets arose, legal origin, the argument goes, might be what determines a country's ability to provide the legal protections that investors need for financial markets to flourish.[1]

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[1] Economists and economic historians have been able to demonstrate some significant causal links between financial development and economic growth. For instance, King and Levine show in "Finance and Growth" that the level of financial intermediation is a good predictor of long-run economic growth, and Levine and Zervos, in "Stock

For instance, using a cross-section of 49 countries in 1995, La Porta et al. find that those with more legal protection for investors had larger financial markets. They argue that the more protection the legal environment affords, the more likely investors will be to participate in financial markets. Then, using legal origin as an exogenous variable to explain legal protections for investors across countries, the authors' statistical work shows that "common law countries have the strongest protection of outside investors—both shareholders and creditors—whereas French civil law countries have the weakest protections."[2]

The paper contributes to this debate by subjecting the relationship between legal origin and the development of bond markets to closer scrutiny. It asks the question: Does the adoption of a legal tradition in the distant past constrain a country's ability to provide the protection investors need for financial markets to develop? It shows that creditor protections vary too much, both over time and within and across countries, to support the assumption of a stable relationship between legal origin and creditor rights, and between creditor rights and bond market development.

Because most of the research that criticizes the work of La Porta [1998] emphasizes shareholder rights and equity markets, I focus on the less documented case of creditor rights and bond markets. For instance, Rajan and Zingales have already raised doubts about the posited relationship between legal origin and the development of stock markets. They even found that in 1913 stock market capitalization over GDP ratios were, on average, higher for French civil law countries than for their common law counterparts. (Figure 1 plots the weighted averages by legal

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Markets," demonstrate that stock market liquidity and banking development also lead to future growth. There is also evidence that firms that rely more strongly on external sources of finance to expand operations have grown disproportionately faster in countries that have more developed financial markets (see Rajan and Zingales, "Financial Dependence"). More recently, Rousseau and Sylla showed, in "Financial Revolutions," that development of a sophisticated financial system in the wake of independence caused some of the rapid growth in the United States during the first part of the nineteenth century. A good survey of the works that link finance to growth can be found in Rousseau and Sylla's "Financial Revolutions." Examples of works that use legal origin to explain financial development are provided in the following footnote.

[2] La Porta et al., in "Law and Finance," "Legal Determinants," and "Investor Protection," divide the world into four legal families—common law, French civil law, German civil law, and Scandinavian civil law—that reduce to two legal traditions, common and civil law. Other studies that have extended the empirical work of La Porta et al. argue that financial development is determined not only by the legal tradition countries follow, but also by how former European colonies adapted these legal systems to their economic regimes and created a flexible system that could adapt to changing circumstances. See Berkowitz et al., "Economic Development," and Beck, Demirguç-Kunt, and Levine, "Law and Finance."

family using their data.) We do not know, however, if the bond market followed the same trajectory as equity, and whether its development is explained by variations in creditor rights.[3]

To answer these questions, I begin by using Brazil as a case study, because it is currently a French civil law country with a profile of inadequate creditor protection and contract enforcement. If we believe that the legal system generates institutions that persist across time, then we will expect Brazil to have given creditors little protection in the past too, and we will expect its bond market to have suffered as a result. I then present results for a small cross-section of countries for which I am able to compile creditor protections and bond market data circa 1910. There too we would expect to find the same two relationships that La Porta [1998] detected in modern cross sections, with a legal system determining whether creditors are protected, and credit protection governing the fate of the bond market.[4]

I show that these two relationships disappear in the historical data, whether we look at evidence from Brazil over the years 1885-2003or at the small cross-section of countries. To begin with, in Brazil strong creditor rights had only a tenuous relation with bond market development. Even though Brazil had strong creditor rights, both on paper and in practice, until at least 1930, the once thriving bond market declined rapidly after 1915.The supposed fixed and path-dependent relationship between legal origin and creditor rights also varies over time over time in Brazil. Although the country today affords creditors only weak protections, it actually gave them strong rights before 1945. The variation in creditor rights is thus simply too great to square with the existence of a "stable," path-dependent relationship between the protection afforded creditors and a country's legal origin. Instead, I argue that the variation in creditor rights in Brazil are explained by political economy, and the decline of the country's bond market after World War I (WWI) can be traced back to changes in international capital markets and macroeconomic causes.[5]

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[3] According to Rajan and Zingales, in "Great Reversals," incumbent businesses opposed financial development because they feared it would breed competition when international cross-border trade and capital flows diminished post World War I. They then argue that countries which were open to trade experienced less radical reversals in financial development following the Great Depression.

[4] La Porta et al., "Law and Finance."

[5] The idea that a political process gives rise to creditor protections is not new. Mark Roe, in *Political Determinants* and "Legal Origins," studied the political determinants of investor protections in Europe following World War II, and Marco Pagano and Paolo Volpin propose in "Political Economy" a model that explains the variation in protections for shareholders across countries of the Organization for Economic Cooperation and Development (OECD) according to the electoral structure of the country (i.e., proportional vs. majoritarian). Finally, Enrico Perotti and Ernst-Ludwig von Thadden advance in "Political Economy" a model to explain the differences in

The results are similar in my small 1910 cross-section of common and French civil law countries. There I find a striking reversal of the expected relationship between legal origin and creditor rights. Some of the common law countries that today have strong protections for creditors in fact sported pro-debtor bankruptcy laws back in 1910, whereas French civil law countries that have pro-debtor bankruptcy laws today actually protected creditors in 1910. There is thus no stable relationship between legal origin and the protection afforded creditors.

The link between bond market development and creditor rights is also weak in the cross-sectional data. The United States, for example, developed the largest bond market in the world by the 1920s, despite weak protection for creditors in 1910. French and German civil law countries in the sample had huge bond markets in the world before 1900, when they had strong creditor rights. After that, their bond markets declined rapidly, even though they continued to have strong creditor protection. It is thus virtually impossible to establish a clear and durable relationship between the development of a country's bond market and the origins of its legal system.

My paper begins with the Brazilian case and lays out the Brazilian data I have collected. In Section III then shows that the claims I make for Brazil can be generalized to the small cross-section of countries circa 1910. Section IV presents my conclusions.

## The Brazilian Case

We begin with the case study of Brazil, and the evolution of its creditor rights and bond markets. After explaining how I compiled my Brazilian data, I show that the country had strong creditor protections on paper between 1850 and 1945 and demonstrate that these creditor guarantees were strictly enforced by the commercial courts in the capital, Rio de Janeiro. All this protection runs counter to what one would expect for a civil law country like Brazil, which would presumably do little to defend creditors. And that is not the only surprise to emerge from the Brazilian case study. It also turns out that all the protection afforded creditors could not keep bond markets from declining rapidly after 1915. I argue that the waning of the bond markets perhaps had more to do with the reduction of international capital flows and increase in inflation

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investor and labor protections across Europe in the wake of the inflationary shock of the 1920s, and Erik Berglof and Howard Rosenthal explored in "Political Economy" the degree to which the populist and other debtor movements in the United States influenced the variation in bankruptcy laws over time.

after the 1920s than with changes in creditor protections, which in any case were not determined by the civil law legal system.

*The Data: Creditor Rights in Brazil*

Devising a way to study the extent of creditor protections can be complicated because it is not clear what specific provisions in bankruptcy laws are essential for credit markets work. Thus, in this paper I follow the methodology of La Porta [1998] in creating indices of creditor rights that are comparable across time and countries. I identified the following rights: secured creditors have the right to repossess collateral in the event of default (no automatic stay on assets for debtors); secured (i.e., collateralized) creditors are paid first; creditor approval is required to reorganize a firm or to reschedule the service of a firm's debt; original managers do not remain in power during a firm's reorganization (i.e., no debtor-in-possession reorganization). According to La Porta [1998], the more of these rights embodied in a country's bankruptcy law, the larger the expected size of its debt markets.

Following the methodology used by La Porta [1998] I added the number of rights present in each of Brazil's bankruptcy laws (see the compilation of rights in Table 1). I read and coded the bankruptcy legislation included in the Commerce Code of 1850; Joint Stock Company Laws of 1882, 1890, and 1891; and Bankruptcy Laws of 1902, 1908, 1929, 1945, and 2005. The sum of the rights as suggested by La Porta et al., was then used to create a creditor-rights index (bottom row of Table 1). I then followed the same methodology for tracing changes in bankruptcy law over time and when comparing my results across countries (see Table 2).

La Porta et al.'s categorization gives high scores to countries with bankruptcy systems that strongly protect creditors. The logic of the La Porta et al. methodology is twofold. First, in countries in which legislation does not give secured creditors (among them, bondholders) priority or the capacity to repossess collateral, investors and banks expect a high premium to compensate for the uncertainty likely to be faced in the event of bankruptcy. In many countries, for example, companies are permitted to keep assets pledged as collateral until their fate is decided by a judge, and workers' compensation and unpaid taxes are given priority over bonds and secured debts.[6]

[6] Today, there is an open debate as to which is better: bankruptcy law that is tough on debtors or bankruptcy law that emphasizes their rehabilitation. One side argues that a bankruptcy system that favors

Second, bankruptcy laws that permit company reorganizations without creditor approval and under the direction of incumbent management provide incentives for negligence. Managers who make bad or risky decisions are rewarded under such "lenient" bankruptcy legislation with more time to try to undo their actions, against the interests and at the expense of creditors. This provides less of an incentive for investors to buy corporate bonds and for banks to lend to companies.

*The Data: Bond Markets in Brazil, 1885–2003*

I also needed data on the size of Brazil's financial markets, particularly its bond market during the years 1882–1942, and data for recent years (1994–2003). To estimate equity and bond market market capitalization, I relied primarily on the annual summaries for the Rio de Janeiro Stock Exchange that were published in the *Jornal do Commércio* and the *Retrospecto Comercial do Jornal do Commércio*, the city's most important financial newspaper (see Figure 2). The bond market figures I use in my Brazilian case study cover debentures only—in other words, corporate bonds with real assets as collateral. Additional stock and bond market capitalization data are estimated using the annual reports of the Stock Brokers Association of Rio de Janeiro (Câmara Sindical, *Relatório*) and the *Anuário da Bolsa de Valores do Rio de Janeiro* (1926–1942). Information for São Paulo, when available, is added to the total estimations of stock market capitalization. But the source of most of the data is the Rio de Janeiro Stock Exchange, which until the 1920s was Brazil's largest financial center and was the principal center for bond trading for most of the twentieth century. Data for stock market capitalization and total stock of debentures after 1990 are from the *Brazil Company Handbook*, 1993–2003, and the Brazilian Debenture Service.[7]

continuation of a going concern, with debtors running its reorganization, provides incentives for entrepreneurship and greater risk taking. For bankruptcy practices around the world see Claessens, "Bankruptcy."

[7] São Paulo data were taken from Hanley, "Business Finance," and the *Anuário da Bolsa de Valores de São Paulo*, 1932–1950; they do not include figures for the bond market capitalization. The omission of bond data for São Paulo introduces a bias against what I am arguing—namely, that bond markets were large before 1930 when creditor rights were stronger. I was careful not to double-count equity market capitalization for companies that cross-listed in both the São Paulo and Rio exchanges. Brazil also had a small market for mortgage bonds issued by specialized mortgage banks, but I ignored it in the estimates of bond market capitalization because it was relatively small and also because the legal provisions to protect its holders were much simpler than those protecting debenture holders. In any case, the exclusion of these bonds just biases my estimates of the stock of private bonds downwards.

*The Patterns: The Variation over Time in Creditor Rights and Bond Market Size*

On paper, Brazil had relatively strong creditor rights between 1850 and 1945 (see Table 1). The Commercial Code of 1850, which established a bankruptcy procedure that was highly protective of creditors, incorporated all four of the provisions considered by La Porta et al. to be important for the development of debt markets. Following independence (1821-1824), Brazil adopted the Napoleonic Commerce Code of 1807, which applied only to merchants (i.e., not to farmers or salaried workers) but was strict with debtors. The Brazilian Commerce Code of 1850 continued the Napoleonic tradition of strong creditor protections; when creditors were victims of debtor deception or fraud, bankruptcy could be considered a crime and punishment included jail sentences.[8] The same four legal provisions in fact remained in place up to 1908 (Table 1), and three of the four provisions were in force as late as 1945. Brazil thus once had what would seem like robust protection for creditors, at least if one judges by the criteria in La Porta [1998]. That is hardly what a reading of La Porta [2000][**change and reference here ok?**] would lead us to expect for a country with a French civil law legal system.

[Table 1 around here]

Given all this protection we might also presume that Brazil would have had a strong corporate bond market early on, but despite all the protections in place since 1850, corporate bond markets only emerged much later in Brazil. Indeed, they did not arise until after the Brazilian Congress introduced regulations in the Joint Stock Company Law of 1882 that allowed companies to issue bonds. Figure 2 plots the growth of the stock of bonds relative to GDP; the ratio goes from zero before 1882 to around 5% in the late 1880s. Clearly, the relationship between creditor protection and bond market development is more complicated than the scoring system in La Porta [1998] would suggest.

One reason bond markets did not expand earlier is that bondholders were not properly recognized as secured creditors with a senior claim until 1890; under a previous 1882 law bondholders had only been considered unsecured creditors, that is, creditors without privilege). The greater security creditors gained in 1890 came about because of the sort of political changes that do not enter in simple scoring of legislation.

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[8] For the severity of punishment under the Napoleonic Code of Commerce see Sgard, "Do Legal Origens Matter?"

After having been a constitutional monarchy for nearly 70 years, Brazil in 1889 became a federalist republic with contested elections at all levels of government. The republican movement, led by a number of generals and an important group of thinkers set about transforming the structure of the Brazilian economy. Republican ideologue Rui Barbosa took over the ministry of finance and in early 1890 rapidly passed reforms that included the adding legal provisions to protect small investors and tailoring joint stock company laws to facilitate entry to new entrepreneurs. Barbosa was responsible for the law passed in January 1890 that accorded bondholders the status of secured creditors and gave them a senior claim during bankruptcy.[9]

[Figure 2 around here]

But this was not the only measure affecting the corporate bond market, because Barbosa almost simultaneously passed three other critical measures. First, in 1890, he reduced the initial capital requirement to register a corporation from one-fifth to one-tenth of total capital. The number of joint stock companies formed and traded on the exchanges of Brazil subsequently grew rapidly, with almost half issuing corporate bonds. Second, he altered the incentives for companies to issue debt versus equity. Whereas chartered corporations generally could issue debentures only up to the value of their registered capital, in 1891 firms engaged in public services that required government approval (e.g., railways, shipping companies, utilities, and public works companies) were permitted to issue debentures for more than the declared value of their paid up capital.[10]

Finally, Barbosa promoted rapid expansion of the money supply by establishing an official system of regional banks charged with expanding the emission of bank notes. The expansion of the money supply generated a short-term boom in securities markets. These

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[9] For the changes in creditor priority see Decrees 164 of January 17 and 917 of October 24, 1890 and Decrees 434 of July 4 and 603 of October 20, 1891.

[10] This measure provided a strong incentive to issue debentures because it facilitated the initial collection of funds for new ventures. Companies established before 1890 could operate with only 20% of the face value of their shares fully paid (called up), 40% if the company was established after 1890. Because bonds could be issued for up to 100% of the registered value of capital even if only 20% or 40% of equity had been called up, companies could effectively raise 1.4 times the value of capital (100% in debentures and 40% in equity) in little time and with little investment by shareholders. The process of raising capital was made even easier for many companies once the privilege of issuing more bonds than equity was extended to firms in public services that required government approval . See Decrees 434 of July 4 and 603 of October 20, 1891.

banking reforms were phased out by 1895, but the other two regulatory changes mentioned above had a lasting effect on bond markets.

[Figure 3 around here]

Because Barbosa changed creditor rights and passed these measures almost simultaneously, it is hard to disentangle how much of the increase in bond issues between 1890 and 1915 (see Figure 2) resulted solely from the seniority that creditors gained in 1890. Moreover, international conditions also favored bond market development. Figure 3 shows the boom in bond issues, separating domestic annual bonds issues by whether they were denominated in domestic or foreign currency and converting all the figures into pounds sterling to facilitate comparisons across time.[11] Most of the domestic bond issues during Brazil's golden era of bond markets were denominated in sterling, francs, and other European currencies to facilitate sales to European investors. Not coincidentally, this was also the period when Brazil first adhered to the gold standard (1906-1914) in order to contain the appreciation of the local currency, the mil reis. With exports booming as a consequence of the coffee valorization program, and in a scenario of large foreign capital inflows, both coffee exporters and the federal government agreed to regulate the inflows and outflows of gold through a currency board. [12]

In sum, Table1, and Figures 2 and 3 suggest that strong creditor rights on paper might have provided incentives for investors to buy bonds, promoting the rise of bond markets between 1882 and 1915. But the effects of changes in creditor rights are not as clean as we would want. The rise of bond markets during this period could have been affected by other things, such as the monetary policy of the early 1890s, the increase in the legal limit to issue bonds relative to equity, the increases in capital flows, or the higher export revenues after the coffee stabilization program in 1906.

*Enforcement of Creditor Rights in Brazilian Courts*

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[11] All of the bonds accounted for in my estimates (in Figures 2, 3, and 4) were issued by companies chartered in Brazil. That is, none of my estimates include bonds issued by foreign companies operating in Brazil.

[12] The best summary of the political economy of the coffee valorization program and the adoption of the gold standard is in Bates, *Open Economy,* chapter 2.

The growth of bond markets also depended on whether creditor rights were enforced by Brazilian courts—a further complication blurring the relationship between rights enshrined in laws and the development of markets. For example, changes in bankruptcy law in 1908 could have hurt bondholders because they now stood behind the Treasury on the list of creditors to be repaid if there were unpaid taxes. Yet this legal change, which cut Brazil score from 4 to 3 in Table 1, did not immediately become practice, as court cases show that Brazilian courts enforced creditor rights strongly until at least 1916.[13]

The evidence from such court cases (which are available at Brazil's National Archive) reveals two important things. First, the enforcement of creditor rights was very different in the past and varied over time—hardly what one would expect if creditor rights were simply determined by the civil law legal system. While Brazilian bankruptcy judges today are ambiguous about the interpretation of the law and take five to ten years to resolve a case, their predecessors between 1850 and 1916 strictly enforced the creditor rights in Table 1 and took only couple of years to render a decision. Yet even this strong enforcement cannot by itself explain what happen to the bond market—the second point to emerge form the judicial archives. Indeed, bond markets declined rapidly after 1915, even though judges were still supporting creditors' rights.[14]

In the bankruptcy rulings before 1916, secured creditors had senior claims, bankrupt companies were run by a trustee selected from among the creditors, and managers of corporations were not permitted to stay during reorganization. Although in many instances creditors retrieved collateral or liquidated a company, it was more common for them to put the company into receivership and try to reorganize it.[15]

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[13] For an example, see Corte de Apelação, "Companhia Nacional Mineira."

[14] Both the World Bank, *Doing Business Report* and the experience of bankruptcy lawyers in Brazil indicate during the second half of the twentieth century it took judges between five to ten years to solve a bankruptcy case. Interviews with Luis Fernando de Paiva and Giuliano Colombo, bankruptcy specialists from Pinheiro Neto Advogados, and Thomas Felsberg, of Felsberg & Associados, São Paulo, Brazil, November 11, 2005. For more recent data see World Bank, *Doing Business*.

[15] Space considerations prevent me from describing in detail the enforcement of creditor rights before the 1890s. Brazil's most renowned bankruptcy case in perhaps that of the Viscount of Mauá, the most famous entrepreneur of the nineteenth century, who was left with virtually nothing after creditors took over his assets. See Maua, *Autobiografia*. Evidence from other court cases shows that the enforcement of creditor rights was virtually the same between 1850 and 1890, with the caveat that bondholders did not have absolute priority until 1890. Even after the legal change in priority for bondholders in 1908, courts continued to give them first priority in practice; for an example, see Corte de Apelação, "Companhia Nacional Mineira."

To see how all this worked in favor of creditors, consider the bankruptcy of the Leopoldina Railway Company. In 1895, the Leopoldina, one of the largest joint stock companies in Brazil, stopped paying the coupons on its pound sterling bonds. The company was declared bankrupt in 1897 after Edward Herdman, representing its British debenture holders, showed proof of suspension of payments for two years (the minimum to request bankruptcy was six months). Because he represented a significant portion of the company's debt holders, Herdman became a trustee of the company's receivership, together with the Banco da República, Brazil's largest bank. The trustees serviced the company's debt with its profits and later mediated an agreement between bondholders and shareholders whereby the former swapped their bonds for equity instead of liquidating the company. The bankruptcy process was begun in 1897. By the summer of 1898 the company had swapped its former gold-denominated bonds for new ordinary shares and made a new issue of 4% bonds. It began paying coupons in January 1899. These bonds traded at 83% of par in their first year.[16]

In such cases, judges not only enforced creditor rights but also set precedents that changed how the protection of creditors worked in practice. For instance, foreign creditors of the railroad company Sapucaí were among those who benefited from the precedent set by the Leopoldina case. After the Leopoldina case, the jurisprudence stated that "the foreign creditor with an address outside of the country can request a bankruptcy procedure for a debtor established here [in Brazil], without having to register the firm in the local registry." So when in 1899 the management of the Sapucaí Railway stopped servicing the company's bonds in pounds sterling. The firm's shareholders and ex-directors proposed a swap of equity with the English bondholders, who had created a bondholders' association. The swap was a sweet deal for bondholders because the Minas Gerais state government had guaranteed a dividend of at least 6% on the company's shares. Moreover, the government offered the concession of a new line only if the company was reorganized. Bondholders accepted the deal and ended up owning 80% of total equity.[17]

Reorganizations of this sort were also undertaken in the cases of smaller companies. In the 1915 reorganization of the Companhia Industrial e de Construções Prediais "O Prédio" (a

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[16] Corte de Apelação, "Estrada de Ferro Leopoldina," and *Investor's Monthly Manual,* foreign railways section, 1894–1898.

[17] For jurisprudence see *Revista de Jurisprudencia* vol. 2, pp. 84–86, 1897. For bankruptcy case see Corte de Apelação, "Viação Férrea Sapucaí" and Viação Férrea Sapucaí, "various."

construction company), for instance, privileged creditors took control of the company and scheduled payments for the other creditors.[18] And even in simple liquidations, courts enforced creditor rights in accordance with the law. In 1892, for example, creditor trustees took over the Companhia Anonyma Coudelaria Cruzeiro (a horse breeding farm), auctioned the assets, and used the proceeds not only to repay bondholders but to provide nonprivileged creditors 25% of their credits.[19]

Yet even if judges enforced creditors' legal rights right up to 1945, they were not enough to sustain bond market, which declined after 1915 (Figure 2). The bond market capitalization in fact never recovered its 1915 level. In the first two decades of the twentieth century the stock of bonds represented between 6% and 15% of GDP, whereas during the 1990s it represented between 2.5% and 3.5%.

[Figure 4 around here]

The volume of debenture trading in Rio de Janeiro paints an even darker picture of the decline in bond markets. Figure 4 shows that the volume of corporate bonds traded in Brazil (as a percentage of GDP) declined after 1912, even though bondholders were strictly protected on paper and by the courts. Clearly, the development of the Brazilian bond market was affected by more than creditors' legal rights or their enforcement by the courts.

*Changes in the Brazilian Bond Market After 1915*

If creditor rights were not sufficient to sustain bond market development, then we need a different explanation for the decline of the bond market. The evidence suggests that the decline was likely connected with diminishing international capital flows and higher inflation rates after WWI, rather than with changes in creditors' rights. As we can see in Figure 5, which plots British capital exports to Brazil, the flow of capital from Britain dropped after WWI, especially in the railway sector. Because many of the bond issues were denominated in foreign currency and cross-listed in Europe, Brazilian companies ran into difficulty when they could not reissue their bonds because of the post-war disruption in capital flows and exchange rate instability.

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[18] Corte de Apelação, Companhia Industrial e de Construções Prediais "O Prédio," 1915.

[19] See Corte de Apelação, Companhia Vidraria Carmita, 1916; Companhia Anonyma Coudelaria Cruzeira, 1892; Estrada de Ferro Leopoldina, 1897; and Companhia de Fiação e Tecidos Santa Maria, 1909.

(Brazil was on and off the gold standard during the 1920s and abandoned it altogether in the 1930s). The difficulties hit railway companies particularly hard because their bonds were usually sold in London and Paris (Figure 5). Foreign investment in other sectors did not decline nearly as radically until the early 1930s.

Since capital flows were still significant in the late 1920s, we cannot attribute the decline in bond markets after WWI entirely to external conditions. It must be related to the state of the Brazilian economy too, given that the volume of bonds traded domestically (normalized by GDP) also dropped after 1910 (Figure 4). One likely cause was the higher inflation after World War I, which sapped bondholders' real returns. I explore this hypothesis by estimating an index of average real corporate bond yields (weighted by the value of each issue) from 1905 to 1930 (Figure 6). Yields turned negative between 1915 and 1925, which might explain why bonds were barely traded during this period. Before they became positive again in the late 1920s, there was a brief period of intensive capital inflows into sectors other than railways (Figure 5), but both yields and capital inflows plummeted in the 1930s. Even during the brief period of higher real yields and capital inflows, the domestic bond market remained shallow, neither trading nor capitalization really recovering their pre-war levels.

Three fatal blows then struck the bond market. First of all, real yields fell steadily as inflation rates accelerated over the course of the 1930s and 1940s. Then nonvoting shares with fixed dividends (preferred shares), close substitutes for bonds, were introduced in the 1930s and popularized in the 1940s and 1950s. Finally, in 1945, a government reform of bankruptcy law eliminated most of the legal protections for bondholders.[20]

While the reforms to bankruptcy law in 1908 and 1929 introduced only minor procedural changes while respecting the general protection of creditors, the 1945 law radically altered creditor protections. The bankruptcy law reform of 1945 was drafted by the authoritarian government of Getúlio Vargas with the aim of improving labor protections and facilitating the survival of companies as going concerns. Under this new law, debtors could avoid liquidation by filing for a composition scheme called *concordata preventiva*, which gave debtors two years to

[20] Preferred shares were introduced in 1932, but did not become widely traded until the late 1940s. For example, the 1942 edition of the *Anuário da Bolsa de Valores do Rio de Janeiro* shows that only a handful of companies actually issued preferred shares and the total trading of these shares was below 4% of total trading between 1926 and 1942, on average (bonds usually represented above 30% of total trading). Estimates of total trading exclude government bonds and are compiled using the total amounts traded by each security published in the *Anuário da Bolsa de Valores do Rio de Janeiro*, 1932 –1942.

reorganize and pay all debts. Creditor approval was not always necessary, and the current management was permitted to continue operating the company under bankruptcy protection. In theory, the restructuring and rescheduling of debts applied only to unsecured credits (secured creditors could supposedly collect collateral and not be part of the deal), but in practice secured creditors rarely recovered anything, for debts owed for social security payments and labor injury compensation took precedence over other credits, and the process to collect collateral became slower over time. After 1945, bankruptcy became a sluggish judicial process that tended to last, on average, five to ten years. Delays and the post-1940s high-inflation scenario lowered the real expected recovery rate for secured creditors to zero and when, after a few years, creditors were finally able to repossess collateral, the assets seized tended to be useless.[21]

Brazil did not see another bankruptcy law with less of a pro-debtor bias until 2005, following ten years of congressional negotiations during which congressmen from leftist parties tried to protect the priority of labor, and the National Treasury fought to preserve its priority over secured creditors. In the end, an agreement among congressmen limited the maximum amount labor could claim as privileged credits and gave secured creditors priority over debts owed to the Treasury.

The historical evidence from Brazil casts doubt on two of the key assertions about the relationship between law and the development of financial markets. First, Brazil's strong protection for creditors between 1850 and 1945 contrasts sharply with the weak guarantees protections it offered after 1945. The contrast raises questions about the claim that legal systems determine creditor rights in stable and path dependent way. The second piece of evidence is the discovery that the decline of Brazil's bond markets after 1915 was apparently not driven by any change in creditor rights. The implication here is creditor rights do not seem to be strongly related to bond market development over time. If bond market development had been more strongly linked to creditor rights, it would not have varied that much, while creditor rights remained strong. Macroeconomic conditions, such as the level of capital inflows or the rate of

[21] Brasil. Decree-Law 7661, June 21, 1945 for the actual law and Santos, "Brevíssima," on the history of bankruptcy law. Delays and the post-1940s high-inflation scenario lowered the real expected recovery rate for secured creditors to zero and when, after a few years, creditors were able to repossess collateral the assets tended to be useless. Inflation correction for assets and liabilities of bankrupt firms was forbidden by law until 1984. The changes in foreclosures are based on the experiences of lawyers interviewed for this piece. Interviews with Luis Fernando de Paiva and Giuliano Colombo, bankruptcy specialists from Pinheiro Neto Advogados, and Thomas Felsberg, of Felsberg & Associados, São Paulo, Brazil, November 11, 2005.

inflation, seem to be more important drivers of bond market size than any legal change in bankruptcy laws. Obviously Brazil is just one country, and it could be an atypical case. That is why the next section asks whether the patterns found in Brazil hold for other countries.

## Is Brazil Unique? Creditor Rights and Bond Markets in Other Countries circa 1910

To see whether my findings for Brazil are representative, I study creditor rights (on paper) in a cross-section of common and civil law countries circa 1910 and then provide some evidence of the long-term evolution of bond markets in these and other countries since 1895 The section makes two main points. First, there are no clear differences in the extent of creditor protections in French civil law countries and their common law counterparts circa 1910. Second, there is a tenuous relation between creditor rights and bond markets once we look at the variation in bond market size both across countries (c. 1910) and over time. Once again, the links between the legal system and creditor protection and between creditor protection and bond market development are tenuous at best, as in Brazil.

*Creditor Rights and Legal Families*

Table 2 shows the level of creditor rights in a cross-section of four common law countries and five French civil law countries circa 1910. At first glance, we can see that Brazil is not an outlier; most French civil law countries had strong creditor rights in 1910. The evolution of creditor rights from 1910 to 1995 can also be deduced from the table. French civil law countries started with pro-creditor laws in 1910 and ended up, on average, with pro-debtor laws in 1995.

[TABLE 2 AROUND HERE]

Although the legal family made a clear difference in the way creditors were protected in 1995, those differences are less clear back in 1910. On average French civil law countries then had creditor protections similar to those in common law countries (the mean for both legal families in Table 2 is 3 protections). Some common law countries or colonies in fact had more lenient bankruptcy laws for debtors in 1910 because they let judges have more power to approve corporate reorganizations and to decide whether creditors could repossess assets. According to

one student of bankruptcy, for instance, the United States "has long distinguished itself as a nation with a special fondness for debtors."[22]

In contrast, most French civil law countries circa 1910 strictly enforced repossessions and let creditors run receiverships and liquidate companies. Table 2 is actually coded in a way that biases the results toward finding that French civil law countries are debtor-friendly because it classifies them as permitting management to stay during reorganization. But that was not always the case. Reorganizations run by incumbent management in French civil law countries had to be approved by the creditors, and there was no debtor-in-possession reorganization under the protection of the court that applied across the board, as in the United States and Hong Kong. Furthermore, in French civil law countries, if the creditors did not approve reorganizations (compositions), companies went into liquidation under the management of selected trustees, mostly from the largest creditors.[23]

Australia and Canada are included among the common law countries in Table 2 even if they did not have consolidated bankruptcy laws. Each province in Canada and each territory in Australia had its own bankruptcy code at the time, all with different procedures. Some legal writers argue that most provinces in Australia began to follow the British bankruptcy proceedings around 1900. This also seemed to be the case in Canada, but bankruptcy laws looked very different in terms of their procedural provisions. For simplicity I include Canada and Australia in Table 2 as having the four provisions to protect creditors. Even after including them, there is no difference on the average protection for creditors in common law and French civil law countries (the averages are presented in the last two columns).[24]

My evidence and historical evidence presented in other recent works suggest that the decline of creditor rights in civil law countries and emergence of strong creditor protections in common law countries took place primarily during the twentieth century. For example, using more comprehensive indices of debtor punishment, Jerome Sgard found the bankruptcy laws of common law countries to be more lenient than those of civil law countries throughout the

[22] Moss, *When All Else,* p. 126.

[23] See Benito, *Commercial*. At the beginning of the twentieth century most French civil law countries in Europe had adopted a bankruptcy procedure that allowed debtor-in-possession reorganization, called *concordat préventif* in France and Belgium. But this procedure required approval of a large majority of creditors and an upfront payment to all creditors. For instance in Italy, this upfront payment was of 50% of total debts. See Sgard, "Do Legal Origins Matter?" p. 404 –407, Hautcoeur and Levratto, "Bankruptcy law," and for Italy see Di Martino, "Approaching Disaster," p.28.

[24] Brown, "Comparative."

nineteenth century. Civil law countries' harsh punishments for debtors were eliminated only in the second half of the nineteenth century. In addition, most European countries adopted procedures that facilitated reorganization (e.g., the *concordat préventif*, a form of debtor-in-possession reorganization) and continuation of the going concern (but only with creditor approval). The reason for this joint movement toward a more lenient bankruptcy system are not straightforward, but they probably have to do with the fact that there was close communication among lawyers and policy makers across countries at the time. According to Sgard, businessmen pressured lawyers and law-makers for a more uniform set of laws across the continent.[25]

Beyond the need for standardization the fact that all French civil law countries ended up with weak protections might have something to do with shocks after WWI. For instance, inflation in the 1920s or the Great Depression perhaps mobilized labor across countries to demand more protections (and entrepreneurs to demand more lenient bankruptcy laws). Enrico Perotti and Ludwig von Thadden make such an argument in their work on the political economy of dominant investors. For them the inflationary shocks in Europe explain many changes in corporate governance after the 1930s. But we still do not have a good explanation of why shocks like the Great Depression did not mobilize labor and entrepreneurs in the same way in Great Britain, South Africa, Canada, or Australia. Thus, we still do not understand clearly why most common law countries ended up with strong creditor protections at the end of the twentieth century after they began with somewhat low indices of creditor protections circa 1910.[26] But even without such an explanation, it is clear that creditor rights are not determined once and for all by a country's legal system. Credit rights simply change too much for this to be true.

*Bond Markets around the World, 1895–1978*

There is also significant cross-sectional variation in bond market size that is not related to either creditor rights or a country's legal origin. In Table 3 I calculate the value of the stock of bonds in different countries following the estimates of Raymond Goldsmith (*Comparative National Balance Sheets*), who compiled figures for the stock of corporate bonds and stock market capitalization for 10 countries between the 1870s and 1978 (the number of estimates

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[25] Sgard, "Do Legal Origins Matter?" especially pp. 407–409. For a narrative of the changes in bankruptcy laws in France since 1807 and some of the political and economic circumstances behind such changes, see Hautcoeur and Levratto, "Bankruptcy law."

[26] Perotti and von Thadden, "Political Economy."

varies over time). I complement Goldsmith's data with estimates of ministers of finance, directors of stock exchanges, and statisticians compiled by Alfred Neymarck in the *Bulletin de l'Institut International de Statistique*, 1895–1911.[27]

[TABLE 3 AROUND HERE]

In the estimates of the stock of bonds over GDP across countries presented in Table 3, we can see that civil law countries had some of the largest bond markets in the world before 1913. For instance, the ratio of bond market capitalization to GDP in France, Spain, and Belgium in 1900 was 88.4%, 17.4%, and 31.3%, respectively. German civil law countries such as Switzerland and Austria (Austria-Hungary) also had significantly large bond markets, with capitalizations of 46% and 21% of GDP, respectively. Bond markets in French civil law countries and some German civil law countries, even though they had strong creditor protections, begin to decline by 1913 (see Table 2). Thus, creditor protections do not seem to be strongly related to bond market movements in these civil law countries either, just as in Brazil.[28]

In common law countries we find a similar tenuous relationship between creditor rights and bond market size. Although the United States and United Kingdom had the largest bond markets among common law countries, with capitalizations of 36.6% and 37%, respectively in 1913, by the 1920s the United States had the largest bond market in the world. This is important because the United States developed bond markets notwithstanding the lack of creditor

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[27] For countries for which I have data from both Neymarck and Goldsmith I obtain surprisingly similar results. In fact, Goldsmith used Neymarck for some of his estimates (e.g., France in 1913). For countries not included in the Goldsmith or Neymarck estimates, it was necessary to build new estimates using various official publications.Neymarck's estimates usually separate bonds by sector or broad categories such as railway and industrial shares, corporate bonds, preferred shares, government bonds, and government-guaranteed railway bonds. I try not to take government-guaranteed bonds into account in my estimates of the size of corporate bond markets because creditor rights were not that important if the government was backing the payment of the bond coupons and principal. But I decided to leave the hundreds of bonds with government guarantees in the London bond market estimates until more carefully crafted figures can be developed. This does not alter my conclusions because it in fact biases the evidence in favor of finding that bond markets in common law countries were actually larger than those in French civil law countries.

[28] In Table 3, I include two estimates of the size of bond markets in France based on significantly different methodologies. The first, higher bound estimate, which relies on records of taxes on fixed-income assets, represents the size of the total bond market, including foreign and domestic bonds as well as those with government guarantees. French sovereign debt was not included in these estimates because the interest payments on government debt was exempt from taxes. See Saint Marc, "Introduction Aux Statistiques." The second, lower bound estimate is from Pierre-Cyrille Hautcoeur's "Le Marché," whose figures underestimate the size of bond markets for France as a whole because he focuses on domestic (non-government) bonds traded either in the Paris Bourse or the *coulisse*. These figures exclude securities with government guarantees.

protections in its bankruptcy laws and the discretionary power accorded judges to protect debtors.[29]

Argentina, Canada, and Australia, with somewhat strong creditor rights (estimated creditor rights indices of 3, 4, and 4, respectively), had quite small bond markets circa 1913. In these cases, creditor rights did not seem to matter much because companies in these countries could place bond issues in London. The dominance of the London market might thus explain more of the financial underdevelopment of these countries than any legal variable.

In sum, the clear differences that we find today in the size of credit markets among countries of different legal traditions does not seem to be stable over time. According to the evidence of this section, different legal traditions have dominated bond markets at different times, for reasons having nothing to do with creditor rights. In fact, over time creditor rights had only a tenuous correlation with bond market size. The same clear-cut differences in creditor protections across legal families that we find today cannot stand up to the test of time either. Back in 1910 French civil law countries had protections just as good as under the common law countries.

## Conclusions

The findings presented in this paper have important implications for the literature that has focused on the relationship between legal origin and financial development. First, there does not seem to be a strong relationship, over time, between creditor protections and bond market development. At most, creditor rights seem to have been a necessary (but far from sufficient) condition for bond market development. In the case of Brazil, the variation in bond markets over time bore more of a relation to international capital flows and macroeconomic stability than to legal variables.

Second, the ranking of legal families according to the protection they accord creditors is not constant over time. Although cross-sectional evidence for today reveals significant differences in creditor protections across legal traditions, these differences were minimal circa

[29] Even if some estimates of bond market size are overestimations, the relationship between market size and creditor protection would still be tenuous, and my conclusions would not be altered. For instance, the estimate of bond market size in England is a quite high upper bound estimate that includes all foreign corporate bonds traded on the London Stock Exchange and tens or hundreds of bonds with government guarantees. In the case of South Africa, I added all the registered bonds in South Africa, even those not traded on the Johannesburg Stock Exchange.

1910. The evidence presented in this paper shows that common and French civil law countries actually gave creditors quite similar protection.

The cross-sectional evidence in fact suggests that the differences in creditor protection today are of a quite recent origin. Most French civil law countries with strong creditor rights in 1910 ended up with weak protections in the 1990s. In contrast, some common law countries ) such as Hong Kong and Singapore that had weak creditor rights when they were still British colonies ended up with strong creditor rights in 1995. It thus seems unlikely that investor protections—in this case creditor rights—are really a consequence of the legal traditions countries follow.

Now, even if investor protections were not determined by legal origin and if bond markets before 1913 were more developed in French civil law countries than in common law countries, it could still be the case that legal traditions could have affected financial development in the long run. Perhaps common law countries were better at *adopting* and *keeping* the institutions and macroeconomic policies that made financial markets thrive earlier in the twentieth century, whereas the political economy of investor and labor protections in civil law countries led to an equilibrium in which these countries *lost* the institutions and the macroeconomic stability that had aided the initial development of their financial markets. Such a story could perhaps be traced back to the fact that in French civil law countries lawmaking is highly centralized, making it more easily captured by interest groups. In common law countries, by contrast, judges have an easier time adapting statutes and guaranteeing that the rules that work best in practice end up prevailing. Even if this is the case, the starting point for this adaptation process was not hundreds of years ago (when legal systems were introduced), but only a few decades ago and, in any case, the effect of legal origin should manifest itself primarily in the interaction between financial institutions and politics. If so, then we need a new explanation for why politics and twentieth-century economic shocks made most civil law countries in continental Europe and Latin America converge on a significantly different institutional model than that in common law countries.[30]

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[30] The idea of centralized and decentralized law-making processes in common vs. civil law countries is from Glaeser and Shleifer, "Legal Origins."

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Figures and Tables

**Table 1. Creditor Rights in Brazil since 1850**

| Source: | Commerce Code of 1850 | Law 3150, 12/04/1882 | Decree 917, 01/17/ 1890 | Decree 603, 1891 | Law 859, 8/16/1902 | Law 2024, 1908 | Decree 5746, 9/12/1929 | Decree-Law 7661, 6/21/1945 | La Porta et al. [1998] | Law 11, 101, 2/92005 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. Secured creditors can repossess collateral (no automatic stay) | 1 | 1 | 1 | 1[a] | 1 | 1 | 1 | 0 | 0 | 1 |
| 2. Secured creditors have first priority[b] | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 3. Approval of creditors for reorganization | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 4. Management does not automatically stay for reorganization | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |

Source: Brazil, *Coleção das Leis*. For 1945, Decree Law 7661, see Bevilaqua, *Falência*. Data for 1995 is not a law, it corresponds to the coding for Brazil from La Porta et al., "Law and Finance." For 2005 Law (Law 11,101 2/9/2005) see www.planalto.gov.br.
Notes: (a) Even though this right was not explicit in the decree, the previous law continued to rule.
(b) Bondholders did not have first priority until 1890.

**Table 2. Creditor Rights in Selected Countries in 1910 and 1995**

| | Common law countries | | | | | | French civil law countries | | | | | Means | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | United Kingdom | United States | Canada | Australia | Hong Kong | Singapore | France | Belgium | Spain | Argentina | Brazil | Common law | French civil law |
| **Creditor Rights in 1910** | | | | | | | | | | | | | |
| No automatic stay on assets | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0.5 | 1.0 |
| Secured creditors have first priority | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1.0 | 0.8 |
| Creditors approve reorganization | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1.0 | 1.0 |
| Management does not stay during reorganization | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.5 | 0.2 |
| **Creditor Rights Index 1910** | **4** | **2** | **4** | **4** | **2** | **2** | **3** | **3** | **3** | **3** | **3** | **3** | **3** |
| **Creditor Rights in 1995** | | | | | | | | | | | | | |
| No automatic stay on assets | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0.7 | 0.4 |
| Secured creditors have first priority | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0.8 | 0.6 |
| Creditors approve reorganization | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0.5 | 0.2 |
| Management does not stay during reorganization | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0.0 |
| **Creditor Rights Index 1995** | **4** | **1** | **1** | **1** | **4** | **4** | **0** | **2** | **2** | **1** | **1** | 2.5 | 1.2 |

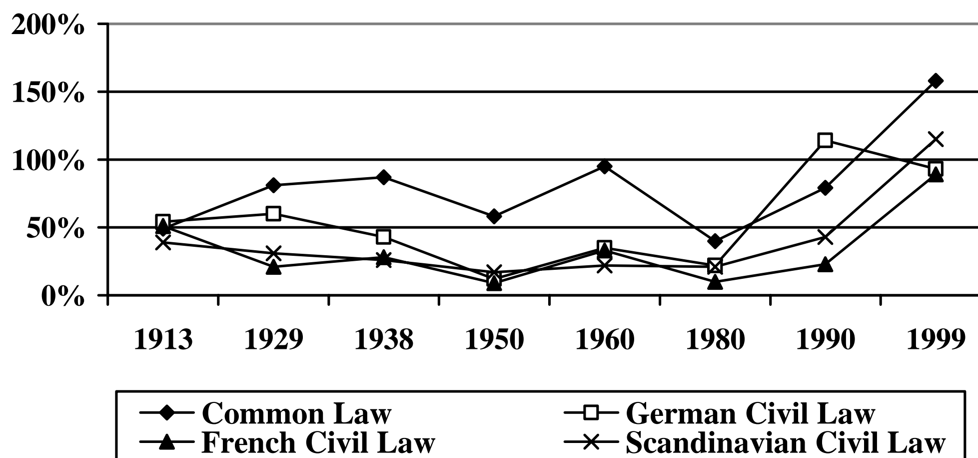
Sources: All creditor rights for 1995 from La Porta et al., "Law and Finance," Table 4. Creditor rights for 1910 from United Kingdom, *Companies (Consolidation) Act 1908*; United States from Huberich, *Commercial Laws*; Hong Kong, *Bankruptcy Ordinance No. 7 1891*; Strait Settlements, *An Ordinance to Amend the Law of Bankruptcy no 2 1888* (3d December 1888); France from G. Horn, *Commercial Law*; Belgium from Hennebicq, *Commercial* (based on the Commercial Code of 1872 as amended to 1910); Spain from Benito, *Commercial*; Argentina from Quesada, *Commercial*; Brazil, *Lei 2024, December 17, 1908*, in Brazil, *Colecção das Leis.* Australia and Canada coded as following British bankruptcy law according to the accounts of Brown, "Comparative."

**Table 3. Stock of Bonds as a % of GDP across countries, 1895-1978**

| | 1895 | 1900 | 1913 | 1929 | 1939 | 1950 | 1965 | 1973 | 1978 |
|---|---|---|---|---|---|---|---|---|---|
| **Common law** | | | | | | | | | |
| Australia | 2.9 | 1.2 | 1.0 | | | 3.9 | 3.1 | 3.4 | 2.9 |
| Canada | | | 9.6 | | | 18.0 | 18.5 | 15.5 | 15.2 |
| UK | 62.4 | | 37.0 | 25.5 | 25.8 | 6.3 | 10.3 | 8.9 | 8.8 |
| South Africa | | | 4.1 | | | | 11.4 | 13.5 | 13.0 |
| US | | 26.1 | 36.6 | 38.9 | 33.6 | 13.7 | 16.5 | 18.8 | 18.8 |
| **German civil law** | | | | | | | | | |
| Austria | | 21.0 | 20.0 | | | | | | |
| Germany | 3.9 | 5.8 | 7.0 | 4.9 | 2.7 | 1.6 | 2.1 | 3.2 | 2.4 |
| Japan | | 5.0 | 1.8 | 18.7 | 10.0 | 7.4 | 24.8 | 21.5 | 25.0 |
| Switzerland | | 46.0 | 18.0 | 18.1 | 17.3 | 6.0 | 12.7 | 12.3 | 15.8 |
| **French civil law** | | | | | | | | | |
| Argentina | | 1.0 | 1.0 | | | | | | |
| Belgium | 18.1 | 17.4 | 25.0 | 4.4 | 9.6 | 2.1 | 3.9 | 4.5 | 4.9 |
| Brazil | 8.4 | 5.1 | 14.8 | 2.2 | 2.5 | | | | |
| France (high) | 121.5 | 88.4 | 70.6 | 35.8 | | 2.4 | 8.8 | 5.5 | 5.8 |
| France (low) | 4.3 | 4.7 | 5.4 | 3.0 | 3.9 | | | | |
| Italy | 9.2 | | 4.7 | 0.4 | 0.3 | 1.5 | 7.1 | 7.2 | 6.0 |
| Spain | | 31.3 | 31.4 | | | | | | |
| Uruguay | | | 1.2 | | | | | | |
| **Scandinavian civil law** | | | | | | | | | |
| Denmark | | 2.5 | 3 | 3.9 | 2.7 | 3.3 | 4.5 | 5.8 | 6.2 |
| Norway | | | 3.6 | 5.9 | 4.8 | 4.2 | 19.2 | 9.8 | 17.3 |
| Sweden | | | | | | | 5.1 | 6.2 | 7.9 |

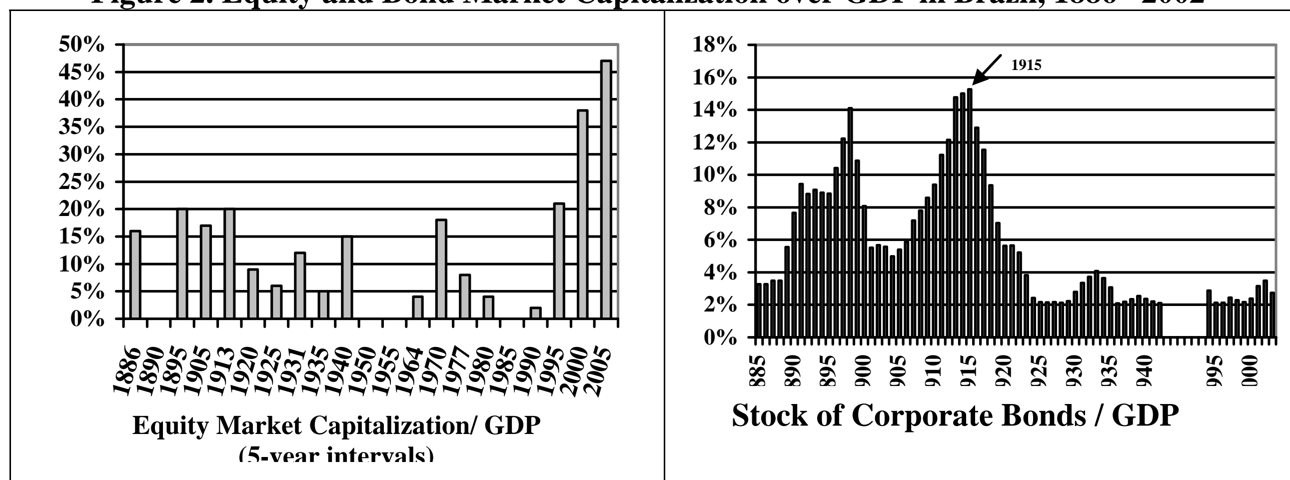
Source: Estimated by the author from data in Goldsmith, *Comparative*. Other bond market data by country was estimated as follows: 1895 and 1900 bond and GDP data for Australia are from Davis and Gallman, *Evolving Financial Markets*, Table 5, pp. 4–8 (1895 estimated using the 1889 data over 1895 GDP), 1913 data were estimated by adding the new issues of bonds in Australia from 1900 to 1913 from Drummond, *Capital Markets*, Table B, p. 293 (this is clearly an overestimate). Canada's 1913 figure uses 1912 estimate of stock of bonds from Wood, *Review*. For South Africa the estimate of bonds in 1913 is from Union of South Africa, *Official Year Book*, No. 2, 1918, p. 729 (this is clearly an overestimate because it counts all the bonds registered in South Africa; Lyndon Moore found no bonds traded in the Johannesburg Stock Exchange). For Austria, data for 1900 are from Neymark, *Congrès,* Tome I and for 1912 from Neymarck, "Statistique" Vol XX, Tome II. Data for Germany are from Deutsche Bundesbank, *Deutsches*, Table 1.01a. Data for Japan in 1910 taken from Neymarck "Statistique" Vol. XIX. Data for Belgium in 1895 and 1900 based on estimates of Neymarck, *Congrès,* Tome I and data for 1913 kindly provided by Marc Deloof and Franz Bulens using the *SCOB Database*, University of Antwerp, Belgium. For Brazilian data, see Figure 2. High boundary estimates for France are from Saint Marc, "Introduction", pp. 72–104 (this is an overestimation because it counted railway bonds with government guarantees and foreign railway bonds). The low boundary estimate are from Hautcoeur, "Le Marché" (includes bonds traded or registered in Paris, either at the *parquet* or the *coulisse*, and excludes French colonial companies, foreign companies, and companies with government guaranteed dividends or bonds). For Argentina, I use the scant data on bonds quoted in Buenos Aires obtained from the *Boletin de la Bolsa de Buenos Aires* and the *Argentine Yearbook 1914*. For Uruguay I use the *Anuario Estadistico de la Republica Oriental del Uruguay* 1915, Montevideo 1917 (and GDP estimates from Bertola, *El PBI)*. For Spain, 1900 proxied with data from 1902 obtained from Neymarck "Statistique" XIV, p. 388, and data for 1913 proxied with the figure for 1911 obtained from BIIS XX (GDP from Prados, *Progreso*). For most countries I use the GDP from Mitchell, *International*.

**Figure 1. Equity Market Capitalization in 23 Countries by Legal Family (Weighted Averages), 1913–1999**




Source: Rajan and Zingales, "Great Reversals," Table 3. The average for each legal family was estimated as the sum of stock market capitalization (in US dollars) over the sum of GDP (in US dollars) for all the countries in that family. Countries included by legal family are Australia, Canada, India, South Africa, the UK, and the US for common law; Austria, Germany, Japan, and Switzerland for German civil law; Argentina, Belgium, Brazil, Chile, Cuba, Egypt, France, Italy, Netherlands, and Spain for French civil law; and, Denmark, Norway, and Sweden for Scandinavian civil law.

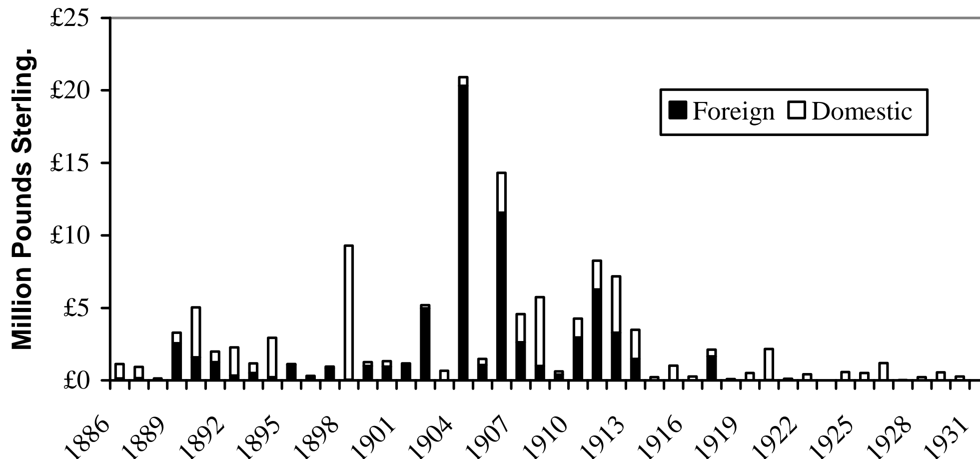
**Figure 2. Equity and Bond Market Capitalization over GDP in Brazil, 1886 –2002**




Source: *Jornal do Commércio, Retrospecto Comercial do Jornal do Commércio*, Câmara Sindical, *Relatorio* (1905–1926) and the *Anuário da Bolsa de Valores do Rio de Janeiro* (1926–1942). São Paulo data are from Hanley, "Business Finance," and from the *Anuário da Bolsa de Valores de São Paulo*, 1932–1943. Data for stock market capitalization and total stock of debentures after 1990 are from *The Brazil Handbook*, 1992–2002, and the Brazilian Debenture Service. GDP data are from Goldsmith, *Brasil*, Tables 3.1 and 4.2.

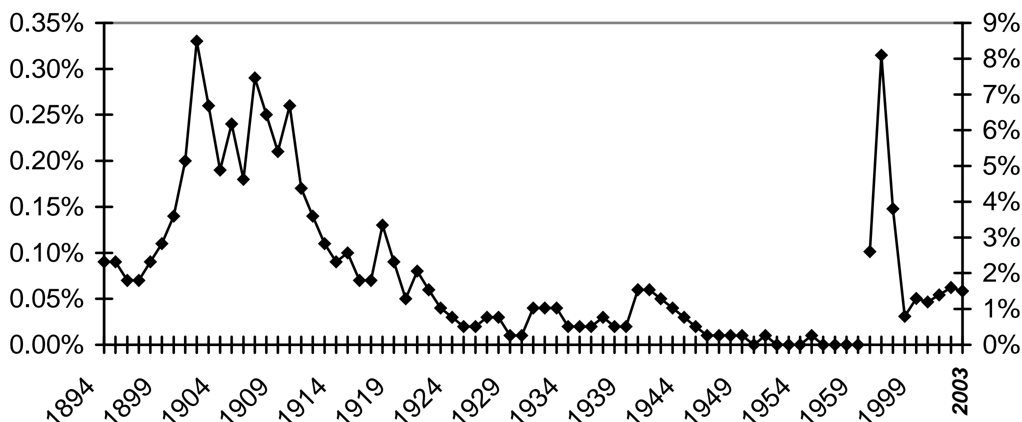
Notes: São Paulo Stock Exchange data are missing for 1920, 1925, and 1935. Data for 1947–1964 are excluded because legislation forced all joint stock companies to register at the stock exchange, thus creating data not comparable to other periods and other countries.

**Figure 3. Corporate Bond Issues Per Year, Rio de Janeiro Stock Exchange, 1890–1930**



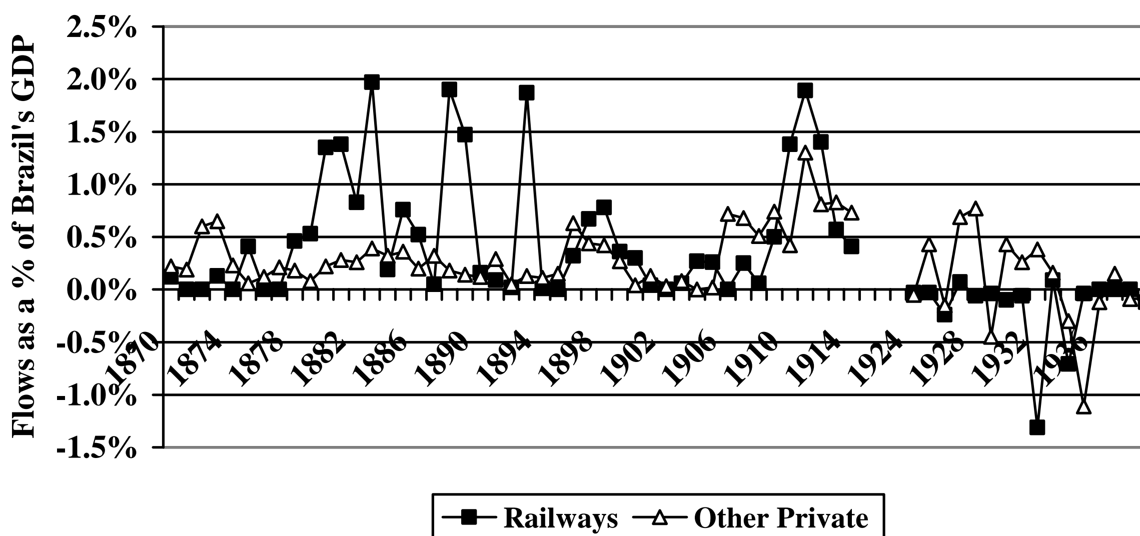

Source: See figure 2.

**Figure 4. Value of Corporate Bonds Traded as a % of GDP, 1894–1959**



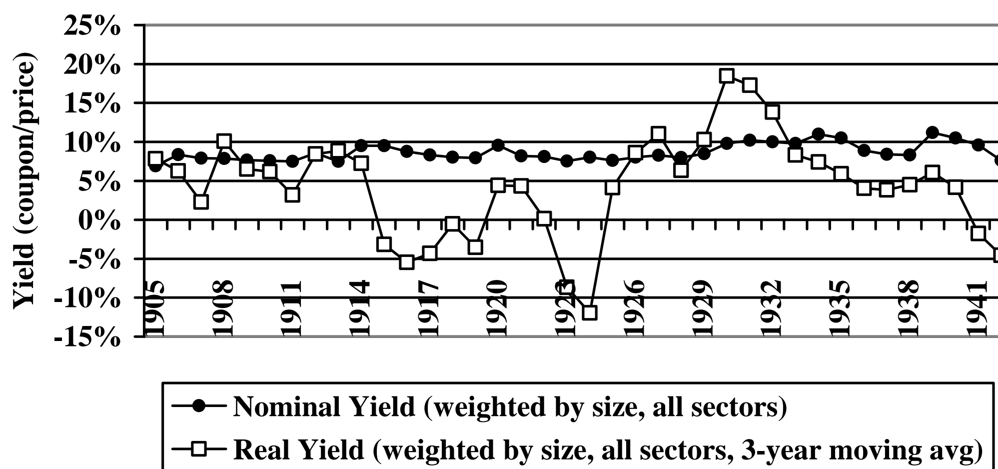

Source: Bond turnover rates before 1960 are from Levy, *Bolsa*, Tables 23, 26, 35, 41, 43, 44, 58, 61, and 62. Data for the years 1934, 1935, and 1939 were corrected by the author using the reports of the stock brokers association and the *Anuário da Bolsa de Valores do Rio de Janeiro*. GDP measures are from Goldsmith, *Brasil*, Tables III-1, IV-2, and VI-2. Data from 1994 to 2003 are from Brazil's National Debenture Service: www.debenture.com.br, normalized using GDP from Ipea, Brazil: www.ipeadata.gov.br.

**Figure 5. British Capital Exports to Brazil (as a % of GDP), 1870–1939**




Source: Data for 1870–1914 from Stone, *Global Export*, pp. 102–111; data for 1915–1923 are not available. Data for 1924–1939 represent annual net flows and were estimated by taking the differences of the total annual stock of British investments in Brazil as reported in "British Investments in Brazil," *South American Journal*, Feb. 4, 1950. Everything is normalized using the GDP estimates from Goldsmith, *Brasil*, Tables III-1 and IV-2

**Figure 6. Nominal and Real Average Yields of Corporate Bonds, 1905–1942**




Source: Estimated using a sample of bonds denominated in domestic currency (between 23 and 45 bond issues per year, mean=31, median=30) of multiple sectors (textiles, manufacturing in general, shipping, ports, railways, etc.). Real average yields are estimated using annual yields (i.e., coupon payment in mil reis / average annual price) and subtracting the annual inflation using the GDP deflator. Average yields represent the weighted average of yields of the 30 or so bonds I included per year. The yields were weighting using the size of each bond issue relative to the total amount of bonds included in each sample year. Because the sum of bond issues included in the estimation of the weights did not vary much year to year, the variation in the yield attributable to weighting issues was minimal. Bond prices come from Câmara Sindical, *Relatorio* 1905–1930, and the amounts issued come from the annual summaries in the *Jornal do Commércio*. From 1930 to 1942, all data are from Bolsa de Valores, *Anuário da Bolsa.*