THE ECONOMIC CONSEQUENCES OF FINANCIAL REGIMES: A NEW LOOK AT THE BANKING POLICIES OF MEXICO AND BRAZIL, 1890-1910

CONSECUENCIAS ECONÓMICAS DE LOS REGÍMENES FINANCIEROS: UNA NUEVA PERSPECTIVA DE LAS POLÍTICAS BANCARIAS DE MÉXICO Y BRASIL, 1890-1910

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Abstract. This paper compares the consequences of different financial policies adopted in Mexico and Brazil in the decades before World War I. In the 1890s, the national governments of Mexico and Brazil pursued strikingly different policies toward banking regulation. In Brazil, after the fall of the monarchy, authorities briefly experimented with financial liberalization. In Mexico, in the same era, public officials created a banking system with more constraints and regulations. We compare the costs and benefits to the financial systems and the macroeconomic effects of these different banking regimes, thereby revisiting two classic concerns of financial historians, the costs of financial fragility versus the benefits of financial liberalization. We look at the outcomes for financial sectors and consider the differences in broad measures of overall economic performance under stress.

Key words: financial regulation; financial crises; encilhamento; financial liberalization; financial repression.

Resumen. Este trabajo compara las consecuencias de las diversas políticas financieras adoptadas en México y en Brasil en las últimas décadas antes de la primera guerra mundial. En la década de 1890, los gobiernos nacionales de México y Brasil persiguieron sorprendentemente diferentes políticas de regulación bancaria. En Brasil, después de la caída de la monarquía, las autoridades experimentaron brevemente con la liberalización financiera. En México, en la misma época, los funcionarios de la administración pública habían creado un sistema bancario con más restricciones y regulaciones. Comparamos los costos y beneficios de los sistemas financieros y los efectos macroeconómicos de estos regímenes bancarios diferentes; así, se revisan dos problemas clásicos de la historia financiera, los costos de la fragilidad financiera frente a los beneficios de la liberalización financiera. Observamos los resultados de los sectores financieros y consideramos las diferencias en las medidas generales de los resultados económicos globales bajo estrés.

Palabras clave: regulación financiera; crisis financieras; encilhamento; liberalización financiera; represión financiera.

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Introduction

The economic histories of Brazil and Mexico during the two decades between 1890 and 1910 provide a natural experiment for understanding the economic consequences of alternative financial policies. In the case of Brazil, economic historians have long suggested that the government's banking and financial policies provided an important stimulus to the growth of the textile industry (Fishlow, 1972; Haber, 1998; Stein, 1957). More recently, historians have compared Brazil's experiences with that of Mexico and concluded that Mexico's more restrictive financial policies distorted its nascent textile industry. Comparative microeconomic studies are a good start towards an understanding of the effects of national financial policies. Nevertheless, alongside the case studies of specific industries, it is important to consider the overall economic impacts of differing financial policies since it is impossible to infer the macroeconomic consequences of policy based on the study of one or two industries. Our contribution widens the focus to examine the relation between differing financial policies in Mexico and Brazil and their respective macroeconomic performances. Our study leverages the recent creation of macroeconomic statistical series in order to make a preliminary assessment of comparative macroeconomic performance.

This study of comparative financial policies and their relation to macroeconomic performance is motivated by longstanding questions and problems in financial and banking history that are concerned with how national financial and banking policies affect the gross domestic product (GDP). Moreover, alongside the problems of generating economic growth, economic historians have long been interested in measuring financial fragility, including both the costs of fragility, as well as policies that tend to promote or discourage it (Bordo et al., 2001; Eichengreen, 1999; Gorton, 2012; Kindleberger, 1978; Minsky, 1975; Obstfeld and Taylor, 2004; Reinhart and Rogoff, 2009). The Minsky model of financial instability (1975) was turned into a historical narrative by Kindleberger (1978) and has served as a useful framework for a number of quantitative economic historians interested in deriving robust empirical hypotheses about the growth effects of financial regulations. Do the positive growth effects of a freer financial system outweigh a potential increase in the probability of a financial

crisis? Are there ways to limit financial fragility that nevertheless permit a country to obtain the advantages of a well functioning financial system? Achieving the delicate balance between too much and too little control over the financial system has been a difficult challenge for policy makers at least since the first wave of financial globalization in the nineteenth century; economic history has been a constant source of information about the successes and failures of different policies. Our study uses both the relatively new macroeconomic data of Maddison (Bolt and Van Zanden, 2013; Maddison, 2010b) and others in order to examine the much older concerns about financial stability, financial development, and economic growth. Virtually none of the existing economic history literature on Brazil and Mexico discuss the high costs of fragility or how financial policies may minimize the likelihood of a crisis while still encouraging economic growth at the macroeconomic level.

In 1890, Brazil and Mexico shared similar levels of income, infrastructure development, and positions in the world economy. According to the Maddison dataset (Bolt and Van Zanden, 2013), Brazil's 1890 per capita income was somewhat less than Mexico's ($794 versus $976 in 1990 Geary Khamis international dollars).[1] Nevertheless, Brazil developed its railroad

[1] It is easy to forget that GDP was not routinely measured by national statistics agencies until after World War II; hence there are no archival sources for GDP. The first manual for estimating GDP was produced by Richard Stone in 1952, and was published by the Organisation for European Economic Co-peration, OEEC (Maddison, 2010a). Nearly all estimates for the years before then are the work of academic economists. Brazil is no exception. The Fundação Instituto Brasileiro de Geografia e Estadística (IBGE) breaks Brazilian GDP statistics into two periods, with 1947 the dividing line. GDP data prior to 1947 are not comparable to data after. The earlier years rely on independent researchers and research teams to estimate values based on census and other data. Data from 1947 and after are estimates from official government statistical offices. IBGE (1990) provides three estimates for years before 1947. Haddad's estimates (1974) cover 1900 to 1947 and are the most relevant, although the IBGE only reports his estimates for 1900 to 1939. All of the IGBE's reported values for the years before 1947 are indexes from which growth rates can be inferred, but not levels. Estimates of GDP per capita for years before 1900 are not given by IBGE, but the estimates of Goldsmith (1986) are widely used. For example, Araújo, Carpena, and Cunha (2008) combine data from Goldsmith (1986), Haddad (1974), and IBGE, to create a series of GDP estimates for 1850-2000. This is the only long-series estimate for Brazil, other than that of the Maddison Project which is built on the same dataset as Araújo, Carpena, and Cunha, but adjusted for purchasing power parity (PPP). Goldsmith remains a widely cited data source for the years relevant to this paper (for example, see Accominotti, Flandreau, and Rezzik, 2011).

The Maddison Database is an improvement over others in that it estimates comparable cross-country purchasing power parity GDP. It is the most widely cited source of comparative historical GDP data. The updates to the original Maddison Database are provided by Bolt and van Zanden (2013) and their team of researchers at the Groningen Growth and Development Center. These are an update of the original Maddison Database (Maddison, 2010b), and reflect the work of the Maddison Project which was initiated to continue the work of Angus Maddison after his death.

The Maddison Database also provides a set of annual purchasing power parity estimates of GDP per person for Mexico for 1900 and after. For the years prior to 1900, the estimates are at 5-year intervals (1895, 1890, etc.). Maddison's dataset is drawn from estimates provided by Ins-

infrastructure ahead of Mexico, as coffee and rubber exports began to take off, and it started a profound social and political transformation with the ending of slavery in 1888 and the establishment of a republican form of government in 1889. During the last decades of the nineteenth century, Mexico rapidly transformed its economy with industrial developments under the dictator Porfirio Diaz and his positivist advisers, the so-called *científicos.* Both economies depended on commodity exports as a source of foreign exchange, including coffee and rubber in Brazil and silver, gold and copper in Mexico, and both relied mainly on foreign sources of financing for their industrial development (Thorp, 1998). Although through most of the nineteenth century Brazil and Mexico had had different financial trajectories, by 1890 both countries possessed fledgling banking systems and both had access to international capital markets.[2]

After 1890, the economies of Mexico and Brazil diverged radically for two decades. And so did their financial policies. Mexico's industrial development outpaced Brazil's over the 1890s and 1900s, and the income per capita in Brazil fell from 81% of Mexico's in 1890 to 51% in 1900 and 45% in 1910 (Bolt and van Zanden, 2013). In spite of its lagging performance and the fact that it did not recover its 1890 level of per capita income until 1911, the financial policies pursued by Brazil have been compared favorably to Mexico (Haber, 1997a, 1997b) and its regulatory and institutional reforms in the first years of the Republic have been cited as a key element of industrial success (Fishlow, 1972; Haber, 2000; Hanley, 2005; Stein, 1957). Stein (1957) and Fishlow (1972), writing during the era of import substitution industrialization, viewed the regulatory and financial policies of the last years of the empire and the first years of the republic as a precursor to the types of industrial support familiar to them. In contrast, Haber (2000) and Hanley (2005), writing during a period of enthusiasm for financial liberalization, viewed these policies in a positive light, as the precursor of the Washington Consensus and free market liberalism. Nevertheless, in a

tituto Nacional de Estadística y Geografía (INEGI) and are adjusted for purchasing power parity. INEGI's most recent estimates are continuous on an annual bases from 1895 and after and were produced after the Maddison Database was updated. They are not adjusted for PPP. We have adjusted the INEGI data for the years 1896-1899 using Maddison's implicit price adjustment factor, to produce a consistent, purchasing power parity set of estimates of GDP per capita for Mexico for 1890 and 1895-1910. Unfortunately, we are not aware of any estimates for the years 1891-1894.

Not all economic historians agree that that the recreation of GDP data is valid. For example Riguzzi (2009, p. 350) argues that the number for Mexico are wildly inaccurate. While we recognize that the numbers are estimates, at best, and there are likely to be significant errors, until we have a better dataset, we will use the one that is most widely cited by economic historians.

[2] Prior to the 1890s, Brazil enjoyed a long era of political and financial stability which affected respective attitudes and capacities toward financial reforms. Brazil had a fledgling banking system and strong ties to foreign capital (through the London Rothschilds), while Mexico had virtually no banks until the 1880s, and its foreign debt was in default from the 1820s to 1880s.

pioneering work that explored Brazil's banking history from 1889 to 1930, Gail Triner introduced a note of caution with respect to interpretations of the Encilhamento. She observed that although some scholars had pointed to the positive effects of the Encilhamento on industrial development, the issue and problem remained "underexplored" (Triner, 2000, p. 69).

In this paper, we argue that the reforms that deregulated the banking sector in Brazil resulted in a severe and prolonged financial crisis with deep macroeconomic costs. We show that the sequence of events in Brazil associated with its brief episode of financial liberalization culminated in a sovereign default in 1898 and a final banking crisis that began in 1900 and continued until 1905. In short, Brazil's brief episode of financial liberalization resulted in a lost decade and a half. We suggest that what has been described as three separate crises in Brazil, were all parts of one longer, evolving crisis.[3] By contrast, Mexico's economy labored under financial restrictions imposed in part by foreign creditors and in part by the institutional weaknesses of the Mexican state, both of which constrained the national government's ability to expand its banking sector. Industrial activities grew rapidly in spite of the limits on finance –or perhaps in part because of those limits and because foreign creditors provided the government the resources and financial stability that drove economic growth– and per capita incomes grew nearly 74% in real PPP terms from 1890 to 1910.

Given these similarities in starting points, with the exception of financial liberalization and the fact that Brazil's financial liberalization has been spotlighted as a positive development for industrial development and a more favorable environment for growth than occurred in Mexico, comparison of the two economies and their financial policies in the 1890s and 1900s is a worthwhile exercise for shedding light on the macroeconomic consequences of different financial regimes. In what follows we argue that Mexico's superior macroeconomic performance from 1890 to 1910 was partly the result of selective restrictions in the financial sector, and that Brazil's inferior performance resulted from liberalization policies that went too fast and too far. We do not assert that financial restrictions are always superior, but wish to emphasize that the macroeconomic data do not sup-

[3] Bordo and Eichengreen (1999) classify Brazil's financial problems between 1889 and 1901 as three separate crises: A "twin crisis" (currency crisis and a banking crisis) from 1889 to 1991; another twin crisis (currency and debt) from 1897 to 1998; and a banking crisis from 1900 to 1901. We will argue that the three crises were not separate and that they conform to the typical pattern documented in Reinhart and Rogoff's landmark study of historical financial crises (Reinhart and Rogoff, 2009, pp. 260-273). Whether it is one long crisis or three separate ones, it was punctuated by periods of greater distress that grew out of each other. Between the periods of intense crisis, there were periods of relative calm with little or no positive economic growth.

port the generally accepted view that financial liberalization was a grand success in Brazil, nor that its absence held back Mexican industrial development. Brazil in the 1890s is an example of rapid financial liberalization leading to severe and persistent macroeconomic problems and nearly two decades of stagnant income growth. Mexican leaders, on the other hand, recognized their inability to provide oversight, as well as the costs of financial speculation, and responded by limiting the growth of the financial sector. This recognition of their institutional weaknesses caused additional indirect restrictions of the financial sector as well as the direct ones, since it forced the Mexican government to accede to their foreign creditor's demands for banking restrictions in return for public finance. Consequently, stability in Mexican finance was partly the result of foresight by leaders who understood the difficulties of regulating far-flung banks across a large territory with difficult geographical barriers, and was partly the unwitting and fortuitous outcome that resulted from the limits and restrictions imposed on the country by its foreign creditors.[4]

Theories and practice of banking regulation

Following the theoretical work of Hellman, Murdock, and Stiglitz (1997) we distinguish between financial repression and financial restrictions. While the two can be similar with respect to the rules and limits they impose, they have a fundamental difference with respect to the rents that are created under those rules and limits. Financially repressive regimes use a variety of limits on the banking and financial system to extract rents from the private sector that are captured by the government. By contrast, financially restrictive regimes create rents which remain in the private sector and create incentives for avoiding unnecessary risks. A smaller number of banks increases the profitability of each one, reduces competition, and creates a reason to limit unnecessary risk. There is a fine line between financial repression which limits or prevents financial deepening, and financial restriction which can promote it. For example, a state that imposes interest ceilings, limits the scope of financial institutions, and forces banks to hold high levels of reserves that are invested in government securities, can gain significant resources but at the cost of increased financial sector

[4] Leaders in Mexico, including the Minister of Finance Limantour, clearly understood Adam Smith's view of banking regulation: "Such regulations may, no doubt, be considered as in some respect a violation of natural liberty. But those exertions of the natural liberty of a few individuals, which might endanger the security of the whole society, are, and ought to be, restrained by the laws of all governments; of the most free, as well as or the most despotical" (Smith, 1776 [1937], p. 308).

fragility and less financial intermediation. In this case, banks earn rents that are extracted by the state. On the other hand, deposit interest ceilings and limits on financial activity, particularly entrance of new firms, generate economic rents that accrue to the banks and to their borrowers. This can promote financial deepening as banks have an interest in expanding the deposit base and in avoiding bad loans that harm their profits and the value of their franchise (Hellman, Murdock and Stiglitz, 1997). Mexico's 1897 banking law had precisely this goal.

The differences between a moderate amount of financial restriction as a component of financial regulation and outright financial repression is useful to consider because it helps explain Mexico's banking legislation of the 1890s and 1900s. Limited franchises for banks, in particular, created economic rents but those rents accrued mostly to the banks themselves and to some extent to their borrowers. This may have promoted financial deepening even in the face of limits on the banking system.

We now turn to the case studies of Mexico and Brazil, which illustrate the contrasting consequences of regimes that pursue moderate financial restrictions and those that embark on rapid financial liberalization.

Financial restriction in Mexico

From Mexico's independence in 1821 down to 1876, postcolonial conflict provoked civil wars, secession crises, and foreign invasions, wreaking havoc on the economy and retarding the formation of economic policies. Apropos of our interests here, no laws were created to establish and govern Mexican financial institutions or practices. Lending was done ad hoc by private creditors, typically merchants who extended loans largely along kin, client, and ethnic lines. Outside of this private web, a few banks focused on highly specialized business, namely foreign exchange or small loans to the poor. Mexico's public finances also suffered. In the 1820s, amidst the London bubble of lending to newly independent Latin American governments, Mexico contracted loans on the London market, but this debt quickly fell into default, closing access to foreign lending throughout the era. Alongside occasional forced loans, the wealthiest of the merchant-creditor class (the so-called *agiotistas*) provided irregular public finance.

The modern era of Mexican banking began in the dictatorship of Porfirio Diaz (1876-1911), or more precisely during the interregnum of General Manuel Gonzalez who served a four-year presidential term from 1880 to 1884. In the early 1880s, during the Gonzalez presidency, several banks were founded before national legislation was passed to govern financial institutions. The largest of these banks, Banco Nacional Mexicano

(henceforth Banamex), established by foreign investors, sought monopoly privileges in return for providing the government public finance.[5] The government initially resisted this demand, but in 1884 during a severe financial crisis, the government, in return for an emergency loan supported legislation (incorporated into the Mexican Commercial Code of 1884) that granted Banamex broad monopoly privileges. Over the next few years, bankers, politicians, and policymakers fought overtly and covertly over the implementation of these financial restrictions. Significantly, no bank was forced to close, despite pressure on the government from Banamex's principal foreign shareholders.

However the government's freedom to pursue more independent financial policies increased significantly when in April 1888 it contracted a foreign loan with the Bleichroeder Bank of Berlin.[6] The access to the foreign bond market immediately relaxed the grip that Banamex had on the government's finances, and the government jumped to overhaul the banking system. Until the Mexican government contracted its foreign loan through Bleichroeder, it was entirely dependent upon Banamex for financial credit. This dependency constrained its ability to pass more liberal banking legislation because Banamex (specifically its foreign shareholders) demanded monopoly privileges in return for credit advances. Within weeks of signing the foreign loan contract, the government sent several initiatives related to reforms to the banking system to Congress. The most significant initiative was a bill that Diaz's Finance Minister Manuel Dublan introduced (and which met no opposition) that provided for a two-year window in which the executive was free to establish as many new banks as it saw fit.[7] In the next years, independent, provincial banks were founded throughout the republic: two banks in 1889, and in 1890-1891 three more banks in Durango, Zacatecas, and Nuevo Leon. Many more banks were granted charters and concessions by the government, but given the relative lack of financial surplus in Mexico, the reluctance of small savers to place funds in banks, and short-term economic obstacles, most of these banks never opened and the potential for financial deepening in the Mexican economy was not realized. These factors all combined to produce a

[5] The origins of Banamex, and its main rival, were first studied by Leonor Ludlow (1986 and 1990). Carlos Marichal has written extensively on the relationship of Banamex and the Porfirian government, emphasizing more their collaboration than conflict (Marichal, 1994). For a revisionist interpretation of the Porfirian government's strategy and activities with respect to banks and foreign debt, see Passananti (2007).

[6] For a detailed account of México's 1888 foreign loan with the Bleichroeder bank, see Passananti (2006).

[7] "Se faculta igualmente al Ejecutivo para contratar el establecimiento de instituciones de crédito que sean convenientes para fomentar el comercio, la agricultura y la minería. Esta facultad durará dos años." Cámara de Diputados (May, 24, 1888, *Diario de los Debates*, p. 802).

curious era of "free banking," in which the loosening of regulations was met with only a tepid response from financial entrepreneurs. Policy uncertainty may have also been a factor, since it was widely known that a government commission was debating general bank legislation modeled after the U.S. system. However in 1892 the legislation was aborted. Why the government scotched its plans at overhauling the banking system are not precisely known, but it is likely that the gathering recession temporarily increased Banamex's capacity to block reforms aimed at reducing further the bank's legal privileges and concessions.

In 1892-1893 financial shocks pushed the Treasury to the brink of default. Default was only staved off thanks to a series of emergency bridge loans from Mexico's creditors (Banamex and its foreign partners) who lent the government the funds necessary to continue to service its past debt to them. Although evidence is scant, it seems clear that these bridge loans carried a rider that forced Mexico to declare a de facto moratorium on new banks. In May 1893 in the midst of the crisis, Limantour decreed that no bank could open without approval from the treasury minister and in accordance with the Code of Commerce –and none did until the late 1890s (McCaleb, 1920, 105-106). Correspondence between Banamex and its foreign board and other foreign lenders reveals that Mexico's finance minister had asked Mexico's creditors for a two trimester delay in servicing the foreign debt (1893. Archivo Histórico, Banamex, Dirección Reservado, núm. 1). This occurred after initial steps had strengthened rival banks and established several new ones. Now, the system and the government's plans were frozen. The abortive reforms of 1888-1889 had an impact, nonetheless. In 1890 the circulation of bank-notes was dominated by Banamex with 67%; Banco de Londres had 27%, and the state banks only 6%. By 1895 Banamex's portion dropped to 56%, while Banco de Londres and the state banks had enlarged their shares to 31% and 13%, respectively.

Also in 1895 policymakers began to contemplate an overhaul of Mexico's banking laws and institutions. The timing of the financial reforms and initiatives is attributable to the growing financial power of the Mexican state. In February 1896 as the Mexican finance minister began private negotiations with Banamex to abrogate its de jure monopoly concession, the Treasury carried a cash balance of some 2 937 940.84 pesos (February 4, 1896. Archivo Histórico, Banamex, Cartas al Comité de París). For the first time in its history, the Porfirian state was negotiating from unquestioned financial strength. The Mexican economy and state had emerged from the depression of the early 1890s stronger. The reasons are familiar to historians. In 1894 the Mexican economy resumed growth, responding to surging demand for primary products from the industrial economies of the North Atlantic. Mexico's newly laid railroads helped meet this demand

by carrying the products of mines and ranches and haciendas efficiently to frontiers causing custom receipts to swell.[8] In addition, a brief cyclical recovery in silver bullion prices was an added boon to the Mexican Treasury since it collected taxes in silver pesos, but paid its external debt in gold-denominated currency.

Targeting the commercial banking sector and public finance, the government's new banking legislation had three main goals. First, the law sought to dynamize the economy by implementing provisions designed to accelerate financial deepening through every state in the republic. Second, the bank law sought to shield the fledging system and the economy more generally, from the risks posed by a rapid liberalization of the financial sector. Protecting the nascent system from speculation, and instilling confidence in these impersonal institutions, were critically important goals of Mexican policymakers. Third, the reform sought to increase the state's freedom of action by establishing domestic alternatives for public finance. In November 1896, Finance Minister Limantour introduced the law to the Mexican Congress, explaining that, "there arose the necessity of entering without delay on the preparation of laws and regulations intended to serve as a complement and corollary to the suppression of the tolls on interstate traffic *by facilitating the expansion of commerce, agriculture, and all branches of industry by a well-planned and far-sighted development of the institutions of credit*" (Limantour, 1897, Appendix A, pp. 110-111).

In short, the Mexican government hoped to aid and stimulate the economy through new credit legislation.

The 1897 law was not as liberal as the scotched plan of the early 1890s.[9] Still, its principle restrictive feature, granting only the first bank in each state tax-free status, was designed, to accelerate the founding of credit institutions. Other restrictive provisions were flexibly enforced, for example permitting state banks to operate in more than one state to allow for past development.[10] The key provision granted tax-free status to the first bank established in any state, and penalized later banks with an additional 2% tax. This statute has been interpreted as evidence of the law's restrictive nature. Its author did cite the fear that given the early stage of banking in Mexico, a more liberal law might create too many credit institutions and admitted "the new law will no doubt give birth, at least in the early years of

[8] Coatsworth (1981) has suggested that the real economic benefits of the railroads were concentrated in the era after the mid-1890s.

[9] In addition to other works cited throughout, the 1897 law has been studied in Charles Conant (1910); for an institutional history of the 1897 banking legislation, see Ludlow and Salmerón (1997).

[10] Because Banco de Nuevo Leon had operated in four states, its new concession permitted it to continue to do so. Also the Banco Oriental de México was allowed to operate in different states.

its operation, to a sort of banking oligarchy" (Limantour, 1897, p. 117). In this sense, the law was janus-faced. It sought to induce the rapid expansion of competitive banking into all states (the new state banks and Banamex and Banco de Londres' branches), and to regulate and restrict the growth as a guard against speculative over expansion. As an early historian commented: "Clearly it was Limantour's purpose to make the prize worth the seizing on the instant –in short, so great the inducement that the organization of banks in the several states would be pressed at the earliest possible moment" (McCaleb, 1920, p. 107).

More recently historians have been reluctant to recognize the *subsidy* nature of this provision, instead stressing the ways in which this provision restricted growth. Contemporaries feared that charters would be taken out willy-nilly, as they had after 1889, simply as a speculative flier rather than as a first step to opening up a bank. Overcoming this obstacle was a goal of the law.

The effects of the reform on Mexico's credit system were large.[11] If we look at the banks of emission and their percentage of bills in circulation, we find that in 1895 Banamex had 56%; Banco de Londres, 31%, and the state banks, 13%. Five years later, or three years after the bank reform, we find a much different environment. Banamex's share had dropped to 36%, that of Banco de Londres had fallen to 29%, and the state banks share had risen to 35%. In terms of market share, Banamex had lost more than one-third of its share, Banco de Londres some 7%, but state banks had experienced almost a 200% increase.

In absolute terms, note circulation had expanded dramatically. On June 30, 1897, just three months after the reform was enacted, total notes issued stood at almost 42 340 491 pesos, of which Banamex had almost 24 000 000, and the remaining banks just over 18 000 000. A year later total outstanding currency had grown almost 25%, but almost none of the gain (only 235 000 pesos) was attributed to Banamex. This trend continued over the next years. For example in June 1901 total notes had grown to 63 000 000, but Banamex's notes had actually decreased to 23 300 000 pesos (*Boletín de Estadística Fiscal*, 1901, núm. 225, pp. 101-102). If we look just four years later in 1905, we find Banamex market share had dropped to 28%, Banco de Londres had fallen to 21%, and the state banks had surpassed 51%. Indeed in the wake of the monetary reform when a new burst of foreign capital invested in new and old banking houses, Great

[11] For several essays that detail how regional banking thrived in the aftermath of the 1897 legislation, see the relevant chapters in the excellent collection, Cerutti and Marichal (2003).

Britain's minister in Mexico reported of talk that the country "is being over-banked" (Max Muller to E. Carey).[12]

It would be misleading to attribute this growth in banking assets entirely to government policies. The expanding economy swelled bank ledgers, notes in circulation, and loans. Instead of the reforms played a crucial role. Moreover, it seems reasonable to conclude that the 1897 bank law (and related initiatives) sparked a more competitive era of banking, namely causing interest rates to fall, the larger banks to lose market share, and the government to have a wider range of public finance options. It is also noteworthy that the expansion of the credit market was not a temporary boom followed by a bust, the pattern that afflicted the contemporaneous Brazilian experience, known as the Encilhamento.[13] In fact when an international recession hit Mexico in 1907, the banking system was shaken, but the system fared quite well, with serious problems confined to only one state, Yucatán. In the aftermath of the crisis, the Finance Ministry intervened, making several financial reforms, including founding an agricultural bank focused on providing longer term credits, authorizing the merger of several of the weakest provincial banks, and allowing institutional adjustments so that banks of emission could be transformed into investment banks (Gómez, 2011). In other words, the external financial shock of 1907 severely tested Mexico's banking system, but given the regulations in place in the financial system and given a few specific reforms, it was able to continue to perform reasonably well down to the Mexican Revolution.

Financial liberalization in Brazil

Mexico's nineteenth century political history contrasts sharply with that of postcolonial Brazil, where relatively stable and conservative monarchical rule prevailed and economic growth was fueled by commodity exports (especially coffee after mid-century), as increased international demand was met by opening new lands in the south and redeploying slavery there. However, despite, or perhaps because of this conservative rule and commodity-driven growth, the development of financial institutions proceeded slowly in Brazil as well. Overall, Gail Triner's summary of nineteenth century Brazilian financial history until 1890 was largely true for Mexico as well (Triner, 2000). Triner observed of Brazil: "Throughout the nineteenth century, borrowers obtained domestic credit through personal connec-

[12] August 3, 1906. Public Records Office, Foreign Office, 368, Mexico.

[13] For a recent examination of the collapse of a liberalized banking system in 1890s Brazil, see Triner and Wandschneider, 2005.

tions. Investments requiring finance in amounts larger than entrepreneurs could raise within their personal networks were opportunities foregone" (Triner, 2000, p. 24).

Unlike Mexico, though, Brazil witnessed short-lived attempts to create a government bank (several iterations of a Banco do Brazil), and a longer-lived but notable domestic private bank failure. And, whereas in Mexico, only one British-based bank opened an office in the 1860s, in Brazil during the 1860s, several British-owned banks opened in order to support British commercial interests. A final difference was that throughout the nineteenth century, Brazil enjoyed access to international capital through the London Rothschilds, whereas Mexico, whose 1820s London debt remained in default until the mid-1880s, was not able to borrow on international capital markets.

Notwithstanding roughly parallel developments of banking throughout much of the nineteenth century, in 1889 the government of Brazil embarked on a credit policy experiment that sharply distinguished it from Mexico. As Brazil's monarchy gave way to the First Republic, Brazil adopted an ambitious scheme of financial liberalization, known as the Encilhamento. At the heart of the Encilhamento were a series of bills passed by the last finance minister of the monarchy and the first of the republic. Their combined impact was to dramatically liberalize the financial and stock markets, leading to the rapid increase in banks and capital available to firms. As a result, the number of banks in Brazil more than quintupled over the course of three years, from thirteen in 1888 to 68 in 1891. This was due in part to lower reserve requirements and to efforts to stimulate the growth of regional issuing banks (Triner, 2000, p. 69). Liberalization and promotion of capital accumulation included interest-free loans from the government and fewer restrictions on bank lending. These policy changes and their impact on the economy were further encouraged by the shift from private ownership to limited liability corporations under the institutional reforms of 1890. Triner describes a period of " rapid corporate formation and unbridled share trading" (2000, pp. 44-45). Bordo and Eichengreen (1999) cite Subercaseaux that in 1890 Brazil experienced a shortage of names for new companies. The bubble was in full development.

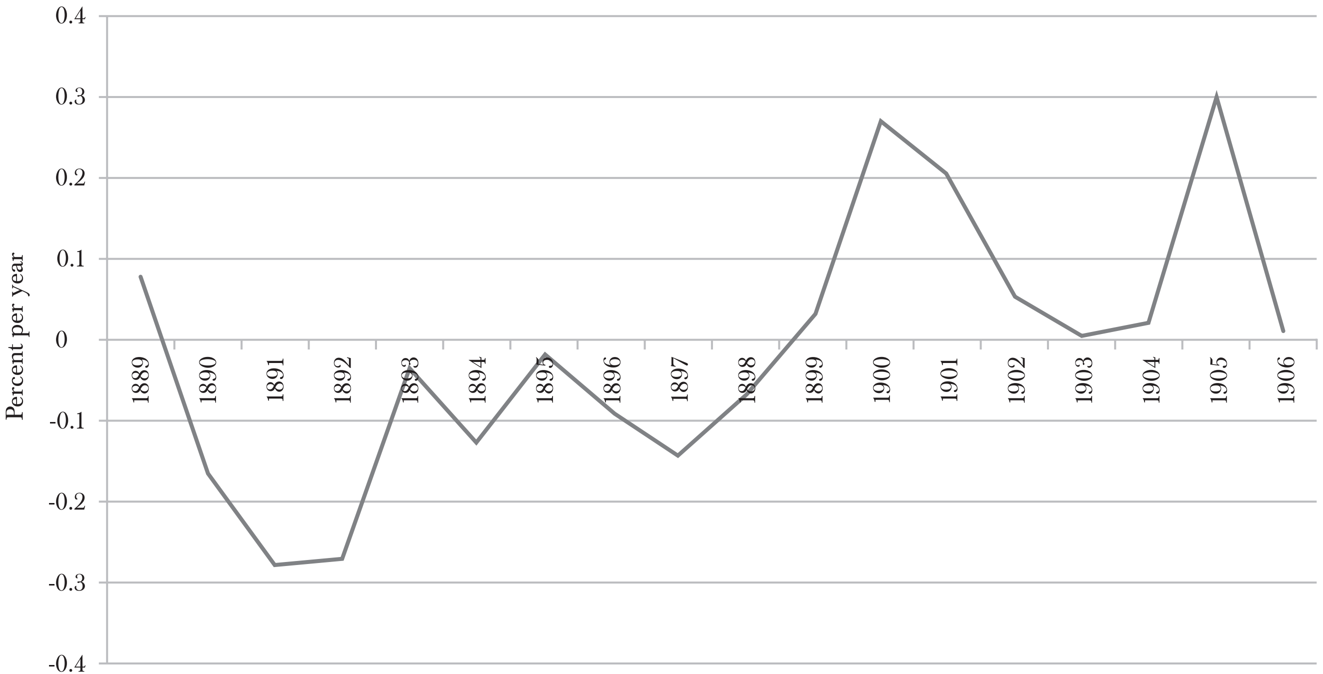
The expansion of banking and the number of banks authorized to issue notes, together with the other policy changes designed to liberalize the financial system had several negative consequences. First, it led to a nearly 300% expansion of central bank note circulation between 1889 and 1898, from 197 000 000 milreis to 778 000 000 (Flandreau and Zumer, 2004). Not surprisingly, inflation took off. From 1889 to 1898, prices rose 118%, with most of the increase coming in 1891, 1892, and 1893, and again in 1897, the year before the government's debt crisis was solved by loan from

their London banker, the Rothschilds. Nor was inflation the only problem. The increase in the money supply also undermined confidence in the milreis and led to a decade-long collapse of the currency. Figure 1 shows the yearly percentage change in the value of the milreis against the British pound from 1889 to 1906. Between 1889, when it appreciated by 7%, and 1898, when the Rothschild's loan to the government finally halted the currency slide, the milreis fell from 27.195 British pence to 7.202, a cumulative decline in value of 73.5% (IBGE, 1990, Table 11.10).

Even as inflation began to take off and the currency began to lose value both at home and abroad, other factors fed the initial boom. The supply of cheap credit from government loans, the encouragement of stock trading, and the formation of corporations, all created new opportunities for banks and entrepreneurs. Given the lack of controls on finance, however, it is not surprising that these new opportunities led to a deterioration in bank balance sheets, fed by risky lending, bank speculation in real estate and currency markets, and the financing and trading of newly issued stock for industrial companies. The accumulation of non-performing debt led to the insolvency of many banks and the crash of the Encilhamento. By the end of 1892, only fourteen banks of the 68 banks in operation in 1891 were still publicly traded. Spillovers from finance into the real economy were ubiquitous, which is to be expected given the centrality of finance and the fact that the collapse in the financial system was systemic and not limited to one or two institutions. For example, imports of machinery declined dramatically after peaking in 1891. As Figure 2 shows, machinery imports, measured in constant value British pounds, tracked down through the entire decade of the 1890s until they finally bottomed out in 1901, by which time they were at less than a third of their previous peak during the Encilhamento (IBGE, 1990, Table 7.6).

Brazil's stagnant economy after 1891 made it impossible for banks to recover. In addition, high rates of inflation and the falling value of its currency increased the real value of government debt. The sequence of negative growth and stagnant banking after 1892 continued to develop. Between 1889 and 1897, the year before Brazil's default, public debt rose from 693 000 000 milreis to 2 192 000 000 (Flandreau and Zumer, 2004). By late 1897, the debt was unsustainable and the Brazilian government was forced into taking a loan from its London bankers in order to postpone debt repayment until 1901. In addition to restructuring the debt burden, the loan imposed limits on new money issuance and new lending. In other words, austerity was imposed by an outside rescuer. The policies of austerity imposed by foreign lenders restricted credit and reinforced economic stagnation. Hanley (2005) argues that these policies were deeply flawed since they favored foreign creditors over the domestic economy, but as

FIGURE 1. AVERAGE ANNUAL CHANGE IN THE VALUE OF THE MILREIS



Source: IBGE, 1990, Table 11.10

FIGURE 2. BRAZILIAN IMPORTS OF INDUSTRIAL MACHINERY

Source: IBGE, 1990, Table 7.6.

usual under these conditions, nineteenth century lenders and borrowers were less motivated by the interests of workers and households than they were by the interests of creditors and finance. Had the Brazilian government refused the funding loan, it would have been cut off from global financial markets, its coffee and rubber producers would have suffered, and the economy might have seen even steeper declines.

After the sovereign rescue, the decade-long decline in economic activity that began in 1891 continued to erode bank balance sheets. A third intensification of the crisis began with the failure of the largest bank, the Banco da República, in 1900 and led into another wave of bank failures that continued the economic stagnation. By 1905, only ten banks survived. In that year Brazilian policymakers adopted more restrictive financial policies, including a currency board to manage the money supply, the creation of the Banco do Brasil, and a return to the gold standard. Brazil's banking system was rebuilt along the more conservative lines of contemporary Mexico and by 1906, the long period of instability was over.

The treatment of the Encilhamento by historians

How have economic historians interpreted the consequences of the spectacular boom and bust of Brazil's banking sector? Most previous research had focused almost exclusively on just one industry, cotton textile manufactures. The cotton textile industry expanded dramatically as a result of new infusions of capital made possible by the sudden availability of investment funds from the banking sector. Historians had long credited the Encilhamento for laying the basis of Brazil's textile industry. More than fifty years ago Stanley Stein offered a strong defense of the Encilhamento:

> The political, social, and economic turmoil that characterized the downfall of the Imperial regime and the onset of the First Republic in the three years 1889-1892 has obscured the significance of Brazil's short-lived boom and, in particular, the contributions of the state to industrial growth. Most Brazilians aware of the boom associate with it solely its stock-jobbing aspects and the fraudulent activities of speculators. Such an appraisal of the boom and its sequel, the campaign for state assistance to credit-short industrialists, is superficial. Despite heavy speculation, textile mills survived, new ones were founded, and the cotton manufacture embarked upon a promising future. By liberalizing the chartering of joint-stock finance, by widening the banks' range of economic activity, and by increased note issue, the republican government accelerated the process of capital formation. In effect, the paper money inflation supplied the textile industry with liquid capital which otherwise would probably have taken a longer period of time to accumu-

> late. It was the ability of industrialists to perceive the value of concerted effort in pressuring the republican government that brought financial assistance in 1892; the same spirit of association enabled the cotton industry in the nineties to obtain the protection judged necessary to assure its future development (Stein, 1957, p. 96).

Subsequent revisionists have built on Stein's argument that the expansion of the textile industry proved long lasting. In a 1972 essay written to honor Raul Prebisch, and to champion what he suggested was an important precursor to import-substitution policies, Albert Fishlow (1972) deepened this revisionist interpretation of the Encilhamento, lauding it for contributing significantly to Brazil's industrialization through the easy credit it offered to textile industrialists. The revisionist thesis regarding the positive consequences of the Encilhamento has been followed by many economic historians in the subsequent two generations.

In the early 1990s Maria Barbara Levy observed that the revisionist evidentiary base was thin:

> all revisionist theses as to the Encilhamento's role in industrialization are based on the performance of cotton textile manufacturers. Credit expansion favored their growth. It must be made clear, however, that most of these companies existed publicly previous to the stock market boom. They were available to profit from current conditions to become publicly held share companies. Many of these "new" companies had been operating for some time as family concerns (Levy, 1992, p. 362).

In other words, Levy qualified the positive re-evaluation of the Encilhamento in two ways. Not only was the positive review narrowly based on the performance of one industry, but also because the credit boom did not create many of the companies in that industry, it simply allowed them to become public. The first critique really opens the larger, more relevant question about the macroeconomic effects of the Encilhamento, since generalizations based on the credit liberalization effects in one industry may or may not be suggestive, or they may be of spurious value and perhaps serve as a qualifier, or outlier.

While Levy's work and her note of caution were available, economic historians since the 1990s (Haber, 1997a, 1997b, 2000; Hanley, 2005) continued to draw broad-based conclusions about the salutary effects of the financial reforms of the Brazil's early republic, especially focused on comparing the success of Brazil's financial reforms to failure in Mexico, rooted in its more restrictive financial system. Many of the arguments were concentrated on the textile industry or a particular region, showing that it grew dramatically in the era after 1890. Haber argued, for example that

"Mexico did not, however, undertake the kinds of financial market regulatory reforms that Brazil did, and where legal reforms did mirror those of Brazil, it did not enforce the new laws. The result was that the Mexican textile industry grew slowly" (Haber, 1998, p. 297).

Again, what is noteworthy in this and other analysis is the absence of any effort to measure the cost of the financial collapse of the Encilhamento, the subsequent banking failures that resulted, and the decline in overall economic activity.

Macroeconomic consequences

Economic historians that have written favorably of the Encilhamento as the beginning of Brazilian industrial development have not sought to temper their conclusions by assessing the costs of the ensuing volatility. In part, that may be explained by the fact that they did not have the ability to draw on the scholarship of financial crises, which has grown dramatically in recent years. Thus, it may be helpful to examine the effects of the Encilhamento and its ensuing collapse on the broader Brazilian economy. Below we note in general terms how the Brazilian economy performed in the years after the collapse of financial liberalization. Again, Levy has observed that "All indicators point to a substantial decline in real per capita product during the 1890s [. . .]. Contador and Haddad estimate 35 percent, whereas Goldsmith arrived 11 percent" (Levy, 1992, p. 360).

Financial liberalization led to an accumulation of stocks, foreign currencies, and industrial loans on bank balance sheets. As the value of the stocks and industrial loans became questionable, and as banks plunged into crisis, the supply of loans dried up and the demand for business equipment and other intermediate inputs was depressed. Businesses throughout the economy were trying to eliminate debt and offset nonperforming assets. Both gross economic performance and banking sector indicators in Brazil showed a significant and prolonged reduction in economic activity after the onset of the crisis.

Table 1 shows estimates of the annual average rates of growth of per capita GDP, measured at purchasing power parity over five-year intervals. The data are from the Maddison dataset (Bolt and van Zanden, 2013). Mexico outperforms Brazil in every 5-year period except the last one, by which time Brazil had adopted a restrictive banking system that was similar to Mexico's. In addition, Mexico felt some contagion from the US-based Panic of 1907, Brazil to a lesser degree. Brazil's per capita income growth is negative in nine of the ten years from 1890 to 1900. In 1890 it had per capita income equal to 78.5% of Mexico's, but by 1900 the ratio had fallen

to 49.7%. In total, Brazil had negative per capita growth in eleven of the fifteen years between 1890 and 1905.

Conclusion

The debate between opponents and proponents of financial liberalization will continue, and many matters remain unsettled. It is within this context that the experiences of Mexico and Brazil in the 1890s provide economic historians with a natural experiment for testing the costs and benefits of financial liberalization. Brazil liberalized and saw a booming financial sector, followed by a collapse which became generalized throughout the economy and was associated with a decline in per person income that did not recover its 1890 value until 1911. Some industries, cotton for example, were able to take advantage of the financial boom and added capacity to an already significant sector, but the subsequent macroeconomic decline erased gains of the boom, and left the country poorer in 1900 than it had been in 1890. Finance is a powerful force, both for economic good and bad. Brazil unleashed its banks and entrepreneurs but it lacked the capacity to ensure prudential regulatory oversight. In their case as with so many others, the economic gains that accrued from efficiencies in the allocation of capital resulting from financial liberalization were easily destroyed by a macroeconomic collapse caused by a financial crisis.

Economic historians should not be surprised by the relatively superior performance of Mexico in the 1890s, even though its financial system was riddled with inefficiencies and controls that created monopoly profits for some and shut others out of capital markets completely. First, financial management in Mexico achieved stability and avoided the extreme costs of a macroeconomic collapse. Questions related to how restrictive Porfirian financial policies were in practice (as opposed to in law) and why Porfirian policymakers placed restrictions on the banking system are disputed among scholars. Given Mexico's long nineteenth century history of financial insolvency and virtual absence of banks, we have argued that policy makers set financial stability as the highest priority in order to attract both foreign and domestic capital into productive investments. Nevertheless, policymakers exercised a surprising degree of flexibility in applying legal restrictions, thereby permitting in practice a more competitive system than recent scholarship has acknowledged. Other historians have asserted that these restrictions were rigidly enforced and the exclusive result of the tight integration of financial and political elites in Porfirian Mexico, whereby the latter obtained public finance from the former and in return restricted financial markets. Ultimately, however, for the purpose

TABLE 1. COMPOUND AVERAGE ANNUAL GROWTH RATES OF GDP PER CAPITA

Country	*1890-1895*	*1895-1900*	*1900-1905*	*1905-1910*
Brazil	-0.25	-2.83	1.14	1.37
Mexico	2.28	3.82	3.59	0.77

Source: Author's calculations; Bolt and van Zanden (2013).

of assessing macroeconomic consequences, the question of *why* Porfirian policymakers restricted the market (fear of volatility or implicit collusion) is beside the point. The results were the same with respect to financial stability and an absence of volatility. Second, financial restrictions were consistent with economic growth and even abnormally high rates of growth, both in theory and in practice. Even scholars who have pointed to the inefficiency costs of Porfirian regulations and restrictions have acknowledged that the Mexican economy grew rapidly during the Porfiriato. What they have not acknowledged is how the restrictions and regulations shielded the banking system and the economy from the potentially high costs of financial fragility and volatility. Although it is beyond the methods available to economic historians to assign a precise macroeconomic value to financial stability and the avoidance of financial crises, it is easy to underestimate their value. Given one's taste or tolerance for counter-factual history, one might speculate as to the costs and consequences to the Mexican economy had Porfirian policymakers experimented with an episode of financial liberalization akin to Brazil's Encilhamento. Rather than pursuing such speculation, in this essay we have asserted that the positive value of avoiding financial and banking crises is at least imperfectly glimpsed by comparing Porfirian Mexico with its Brazilian counterpart, which grappled with the high costs of financial fragility for almost fifteen years after its immodest embrace of financial liberalization.

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